Chapter: 10

Gaseous Exchange

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Objective

1. A disease involving the breakdown of air sacs of the lungs is:
   (A) Asthma (B) Bronchitis (C) Pneumonia **(D) Emphysema**

2. What type of blood vessels surrounds the alveoli?
   (A) Vein (B) Arteriole (C) Artery **(D) Capillary**

3. Which process does NOT occur in the nasal cavity?
   (A) Humidification of the inhaled air **(B) Exchange of gases**
   (C) Trapping of large dust particles (D) Warming of the inhaled air

4. Stomata are present in:
   (A) Phloem (B) Xylem (C) Endodermis **(D) Epidermis**

5. Taking in oxygen and giving out of CO_2 is called?
   (A) Respiration **(B) Gaseous exchange**
   (C) Anaerobic respiration (D) Aerobic Respiration

6. Venule unit to form:
   (A) Alveoli (B) Trachea (C) Pulmonary artery **(D) Pulmonary vein**

7. A muscular passage common to both food and air is:
   (A) Trachea (B) alveoli **(C) pharynx** (D) larynx

8. Place of gaseous exchange in lungs is called:
   (A) esophagus **(B) alveoli** (C) larynx (D) Trachea

9. The gift of speaking is given only to:
   (A) man (B) parrot (C) crow (D) monkey

10. A thick muscular layer beneath lungs is called:
    (A) Ureter **(B) Diaphragm** (C) Kidney (D) Bladder

11. Which structure helps in taking air out of lungs:
    (A) Bronchus (B) Bronchiole **(C) Diaphragm** (D) Nasal Cavity

12. The cavity in which lungs are located is called:
    (A) Abdominal cavity (B) Buccal cavity (C) Oral cavity **(D) Thoracic cavity**

13. The number of lobes in right lung is:
    (A) 4 (B) 1 (C) 2 **(D) 3**

14. Number of Ribs in man are:
    (A) 22 Pairs (B) 20 Pairs **(C) 12 Pairs** (D) 10 Pairs

15. The chest wall is made up of pairs ..... of ribs.
    (A) 20 **(B) 12** (C) 16 (D) 8

16. The muscles of ribs are called:
    (A) costal muscles (B) smooth muscles
    (C) intercostal muscles (D) cardiac muscles

17. Percentage of Oxygen in inhaled air during breathing is:

(A) 0.04% (B) 21% (C) 4% (D) 79%

18. In normal condition human respiration rate is:

(A) 15 to 20 (B) 12 to 15 **(C) 16 to 20** (D) 20 to 25

19. Mesophyll cell are found in:

(A) Fishes **(B) Plants** (C) Birds (D) Animals

20. It is a form of, Allergy in which there is inflammation of the bronchi occurs:

(A) Amphysema (B) Pneumonia **(C) Asthma** (D) Bronchitis

21. Rate of breathing depends upon concentration of which gas in the blood:

(A) Hydrogen (B) Nitrogen (C) Oxygen **(D) Carbon dioxide**

22. Percentage of carbon dioxide in the exhaled air is:

(A) 10% (B) 8% (C) 5% **(D) 4%**

23. Which gas is absorbed through stomata of plants during night?

(A) hydrogen (B) nitrogen **(C) oxygen** (D) Carbon dioxide

24. Glottis is a narrow opening at the floor of:

(A) Larynx **(B) Pharynx** (C) Nostril (D) Nasal cavity

25. The length of trachea is ..... approximately.

(A) 12cm (B) 16cm (C) 14cm (D) 10cm

26. Percentage of Oxygen in expired air is:

(A) 22% (B) 30% **(C) 16%** (D) 80%

27. The Sound Production Box is called:

(A) Alveoli **(B) Larynx** (C) Bronchi (D) Trachea

28. A narrow opening present at the floor of Pharynx is called:

(A) Nostril (B) Trachea **(C) Glottis** (D) Larynx

29. Larynx is a box made up of:

(A) Muscles (B) Adipose (C) Bone **(D) Cartilage**

30. After larynx, air enters into:

(A) esophagus (B) bronchi (C) pharynx **(D) trachea**

31. The acute bronchitis usually lasts about:

(A) four weeks (B) three weeks **(C) two weeks** (D) one week

32. The empty space present in nose is called:

(A) Eardrum **(B) Nasal Cavity** (C) Pharynx (D) Bronchi

33. Stoma are abundantly present:

(A) In Xylem cells (B) In Phloem cells
(C) on stem **(D) on upper epidermis of leaf**

34. If both lungs are infected the disease is called:

(A) Double Pneumonia (B) Gout (C) Arthrites (D) Typhoid

35. In non-smokers who are exposed to second hand smoke increase their heart diseases risk by:

(A) 30-45% **(B) 25-30%** (C) 20-30% (D) 15-20%

36. Major types of Bronchitis are:

(A) 4 (B) 3 **(C) 2** (D) 1

37. The Larynx is also called this:

(A) Voice Box (B) Alveoli (C) Bronchioles (D) Trachea

38. In human larynx is made up of:

(A) hard bones (B) alveoli (C) bronchi **(D) cartilage**

39. Many chemicals in smoke increase the production of …… blood cells.

(A) Red (B) Osteocytes **(C) Platelets** (D) White

40. The cartilaginous rings in the wall of trachea are:

(A) N-Shaped **(B) C-Shaped** (C) V-Shaped (D) U-Shaped

41. Disease in which destruction of walls of Alveoli is found:

(A) Bronchitis **(B) Emphysema** (C) Pneumonia (D) Asthma

42. Total chemicals in tobacco smoke are:

(A) 2000 (B) 3000 **(C) 4000** (D) 1000

43. Cigarette smoke contains at least ..... carcinogens.

(A) 20 (B) 70 (C) 80 **(D) 50**

44. Every "World no Tobacco Day" is celebrated on:

(A) 22 March (B) 30 May (C) 31 March **(D) 31 May**

45. Bronchitis may be caused by:

(A) ascaris (B) plasmodium **(C) bacteria** (D) yeast

46. In the developing countries smoking rate is rising by ……. per year.

(A) 3.4% (B) 4.3% (C) 34% (D) 43%

47. Nasal cavity opens into:

(A) Lungs (B) Trachea (C) Esophagus **(D) Pharynx**

48. The amount of nitrogen in expired air is:

(A) 59% (B) 89% **(C) 79%** (D) 69%

49. In aerobic respiration …… is used.

(A) Hydrogen **(B) Oxygen** (C) Carbon (D) Nitrogen

50. Lungs are enclosed by membranes which are called:

(A) Pleural (B) Bronchi (C) Diaphragm (D) Alveoli

51. Pneumonia is an infection of:

(A) Blood **(B) Lungs** (C) Heart (D) Kidneys

52. The patient's skin colour may change and become dusky or purplish in which disease?

(A) Asthma (B) Bronchitis **(C) Pneumonia** (D) Emphysema

53. The lenticels allow to pass through them:

(A) Glucose (B) Water (C) Air **(D) Lipids**

54. Asthma is actually:

(A) Allergy **(B) Hepatitis** (C) Cancer (D) Tuberculosis

55. Energy produced in cellular respiration is transformed into?

(A) ATP (B) NADP (C) ADP (D) AMP

56. The Respiratory center is sensitive to the concentration of ..... Gas in the blood.

(A) N_2 (B) O_2 (C) NH_3 (D) CO_2

57. Most of the gaseous exchange in a leaf occurs through:

(A) Stomata (B) Cuticle (C) Lenticels (D) General surface

58. How many bronchi are there in the air passageway?

(A) Many (B) Two (C) One (D) None of these

59. Where does the gaseous exchange occur in humans?

(A) Trachea (B) Bronchi (C) Alveoli (D) Pharynx

60. Which structure actively helps in taking the air out of lungs?

(A) Bronchiole (B) Bronchus (C) Nasal cavity (D) Diaphragm

61. The primary chemical stimulus for breathing is the concentration of:

(A) Carbon dioxide in muscles (B) Carbon dioxide in blood
(C) Oxygen in muscles (D) Oxygen in blood

62. Which disease is caused by streptococcus pneumonia?

(A) Emphysema (B) Pneumonia (C) Asthma (D) Bronchitis

63. Which disease is not related to lungs:

(A) Myopia (B) Pneumonia (C) Emphysema (D) Asthma

64. All the Alveoli of one combine to form:

(A) Liver (B) Testes (C) Lung (D) kidney

65. The respiratory center is present in:

(A) Nose (B) Brain (C) Muscles (D) Lungs

66. The rate of breathing during exercise or death hard physical work is:

(A) 30-40 times (B) 40-50 times (C) 20-30 times (D) 10-20 times

Chapter : 10 Gaseous Exchange

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Subjective

Q1: ***How lenticels are different from stomata?***
Or, What are lenticels?

Ans: ***Lenticels:***

Lenticels are the pores in the layer of bark in woody stems and mature roots for the exchange of gases.

Q2: ***Define cellular respiration.***

Ans: ***Cellular respiration:***

Respiration is the process in which the C-H-bond in food is broken by oxidation reduction reaction and energy is transformed into ATP.

Figure Lenticels on a stem and the internal view of a lenticel

Q3: ***What is Aerobic Respiration?***

Ans: ***Aerobic Respiration:***

The type of Respiration in which oxygen is used and there is complete oxidation of food material is called aerobic respiration.

Q4: ***What is meant by gaseous exchange?***

Ans: ***Gaseous exchange:***

Taking in oxygen and giving out of carbon dioxide is called gaseous exchange.

Q5: ***Differentiate between respiration and breathing.***

Ans: Difference between respiration and breathing is:

Respiration	Breathing
Respiration is the process in which the C-H-bond in food is broken by oxidation reduction reaction and energy is transformed into ATP.	*The breathing is used for the process through which animal takes air in their bodies to get oxygen from it and then give out the air for getting rid of carbon dioxide.*

Q6: ***Write a short note on gaseous exchange in Plants.***

Ans: Plants have no organ or system for exchange of gases with the environment. Every cell of the plant body exchanges gases with the environment by its own.

Q7: ***What is the difference between daytime respiration and night time respiration?***

Ans: Difference between daytime respiration and night time respiration:

Daytime respiration	Night time respiration
During the daytime when the mesophyll cells of leaves are carrying out photosynthesis and respiration side by side, the O_2 produced in photosynthesis is utilized in cellular respiration. Similarly the CO_2 produced during cellular respiration is utilized in photosynthesis	*During night when there is no photosynthesis occurring the leaf cells get O_2 from the environment and release CO_2 through stomata.*

Q8: ***Differentiate between stomata and air spaces.***

Ans: Difference between stomata and air spaces:

Stomata	Air spaces
The leaves and young stems have stomata in their epidermis. The gaseous exchange occurs through these stomata.	*The inner cells of leaves (mesophyll) and stems also have air spaces among them, which help in the exchange of gases.*

This diagram is just for understanding.

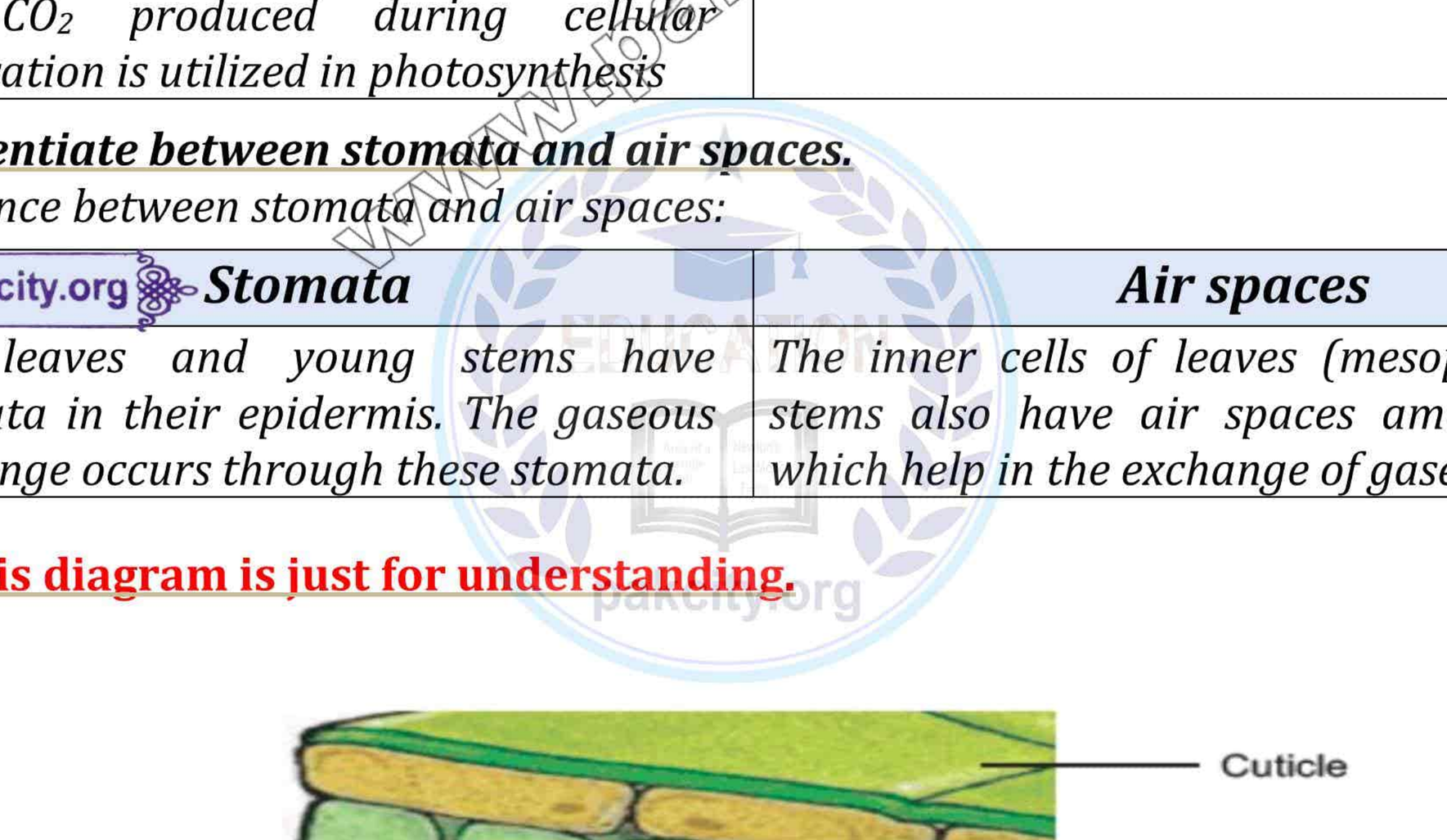
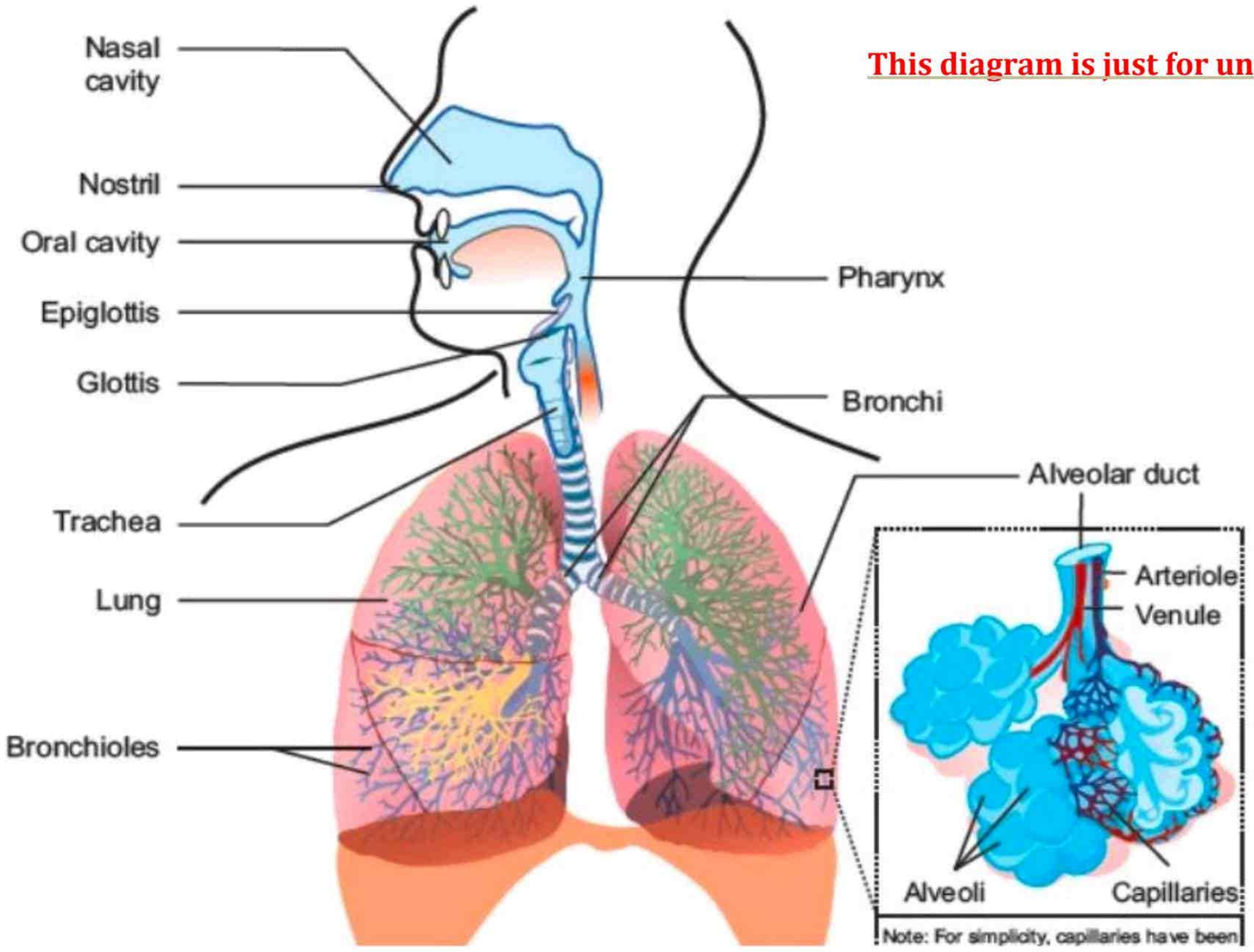


Figure : Gaseous exchange in a leaf



This diagram is just for understanding.

Figure . : The air passageway and the lungs

Q9: ***Define nasal Cavity.***

Ans: ***Nasal Cavity:***

The nose encloses the nasal cavity. It opens to the outside through the openings called the nostrils. Nasal cavity is divided into two halves by a wall.

Q10: ***What is the function of mucous present in nasal cavity?***

Ans: Nasal cavity contains mucous which filter the dust particles from air. The mucous also warms the incoming air and keeps its temperature nearly equal to that of body.

Q11: ***Define epiglottis. Write its function.***

Ans: ***Epiglottis:***

Glottis is guarded by a flap of tissue called epiglottis.

Function:

- *Its function is to protect the glottis.*

Q12: ***Differentiate between glottis and epiglottis.***

Ans: Difference between glottis and epiglottis:

Glottis	Epiglottis
Glottis is a narrow opening at the floor of pharynx which leads into larynx.	*Glottis is guarded by a flap of tissue called epiglottis. Its function is to protect the glottis.*

Q13: ***What is the role of epiglottis in the respiration?***

Ans: The role of epiglottis in the respiration is:

It is just like a lid which covers the glottis during swallowing the food.

Q14: ***Differentiate between bronchi and bronchioles.***

Ans: Difference between bronchi and bronchioles:

Bronchi	Bronchioles
On entering the chest cavity, the trachea divides in two smaller tubes called bronchi.	*The Bronchi continue dividing in the lungs until they make several fine tubes called bronchioles.*

Q15: ***What is role of pharynx in the respiration?***

Ans: The role of pharynx in the respiration is:

Pharynx is a muscular passage and is common to both food and air. It extends to the opening of the esophagus and the larynx. The air goes from the pharynx into larynx.

Q16: ***What are Alveoli?***

Ans: *Each alveolar duct opens into a cluster of pouches called Alveoli. The alveoli form the respiratory surface in human body.*

Q17: ***Describe trachea.***

Ans: *Larynx continues to the trachea, which is also called the windpipe. It is about 12 cm long tube which lies in front of the esophagus. There are C-shaped cartilaginous rings in the wall of trachea. The cartilages keep the trachea from collapsing even when there is no air in it.*

Q18: ***Write the structure and function of alveolus.***

Ans: ***Alveolus:***

Each alveolar duct opens into a cluster of pouches called alveolus (Singular: Alveoli).
Each alveolus is a sac like structure lined by a single layer of epithelial cells.

Q19: ***Write the importance of trachea in the respiratory system.***

Ans: *The importance of trachea in the respiratory system is:*

- *The trachea is also lined with ciliated and glandular cells.*
- *These cells secrete mucous which moistens the air.*

Q20: ***What are Alveolar ducts and Alveoli?***

Ans: ***Alveolar duct:***

The Bronchioles progressively lose the cartilages as they became narrower. The bronchioles end as fine tubules called alveolar ducts.

Alveoli:

Each alveolar duct opens into a cluster of pouches called alveoli.

Q21: ***What are lungs?***

Ans: ***Lungs:***

All the alveoli on one side constitute a lung. There is a pair of lungs in thoracic cavity. The left lung is slightly smaller than that of right lung.

Q22: ***Define and give the function of diaphragm.***

Ans: ***Diaphragm:***

A thick muscular structure is called diaphragm present below the lungs which protects our lungs. It also goes up and down during inspiration and expiration.

This diagram is just for understanding.

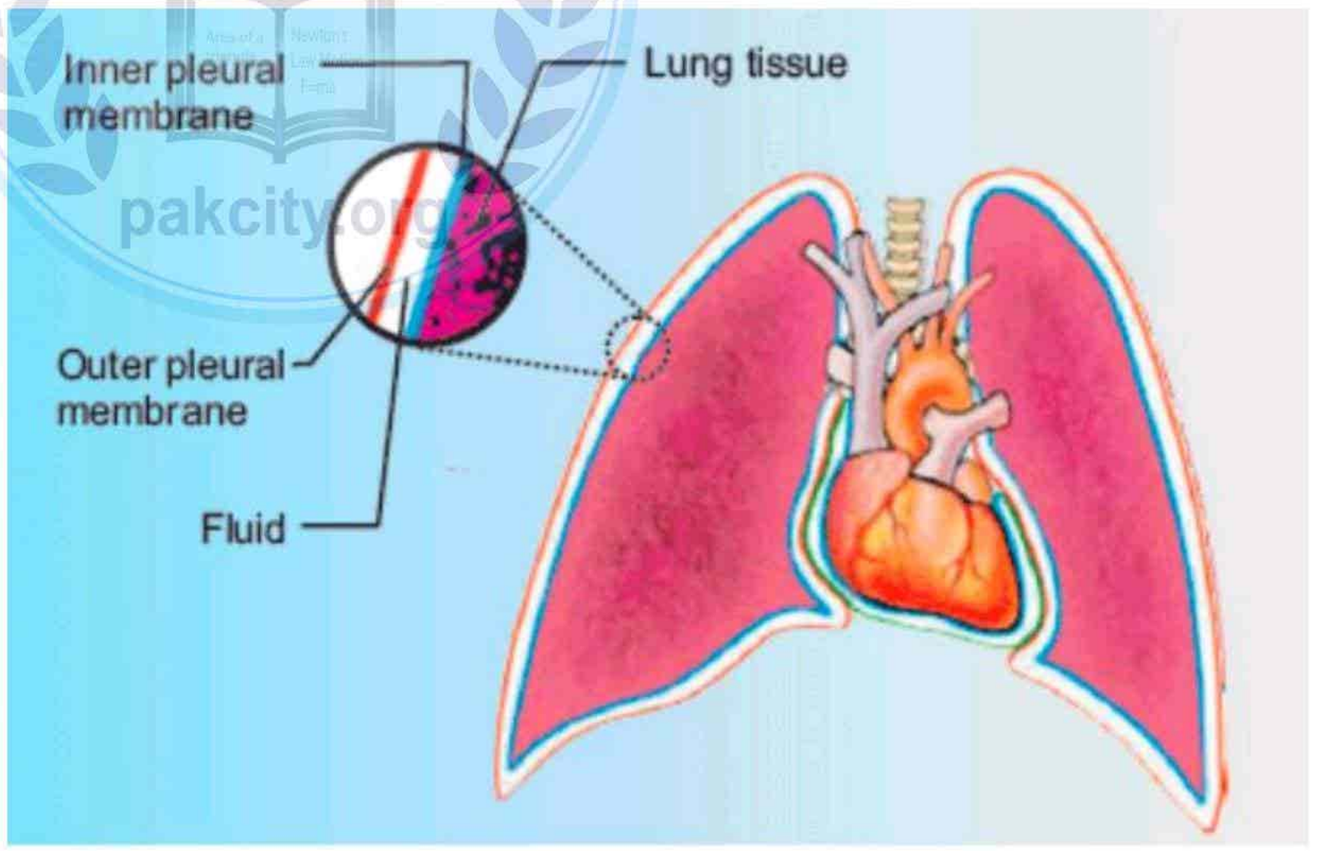


Figure Lungs and Pleural membranes

Q23: ***What are intercoastal muscles?***

Ans: ***Intercoastal muscles:***

The chest wall is made up of 12 pairs of ribs and the rib muscles called intercoastal muscles.

Q24: ***What are pleural membranes? Write down their function.***

Ans: *Each lung is enclosed by two membranes called:*

- *Inner pleural membrane.*

- *Outer pleural membrane.*

Functions:

This membrane enclosed a fluid which provides lubrication for the free expanding of lungs.

Q25: ***Define oxygenated blood.***

Ans: ***Oxygenated blood:***

Blood which contains oxygen is known as oxygenated blood. During blood circulation oxygenated blood moves from lungs to heart.

This diagram is just for understanding.

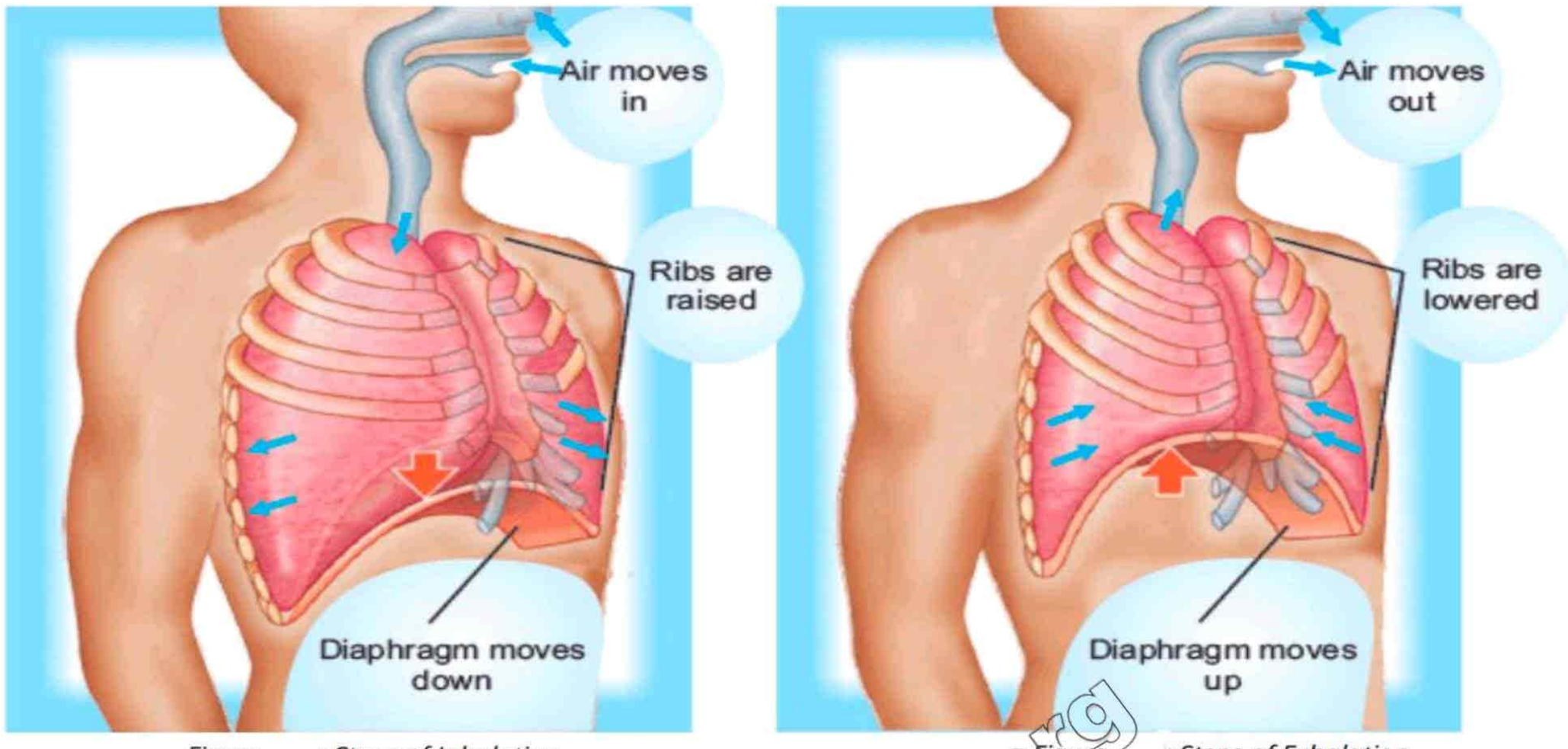


Figure : Steps of Inhalation

Figure : Steps of Exhalation

Q26: ***Define breathing and write name of its two processes.***

Ans: ***Breathing:***

The physical movement associated with the gaseous exchange is called breathing.

Name of the breathing processes are:

- *Inhalation or inspiration.*
- *Exhalation or Expiration.*

Q27: ***What is difference between the terms Inhalation and exhalation?***

Ans: Difference between Inhalation and exhalation:

Inhalation or inspiration	***Exhalation or Expiration***
During inspiration, the phase of breathing in which the air is drawn into the lungs.	*The phase of breathing in which the air is expelled from the lungs.*

Q28: ***What is Bronchitis? Write the names of its two types.***

Ans: ***Bronchitis:***

Bronchitis is the inflammation of the bronchi or bronchioles.

The name of its two types is:

- *Chronic bronchitis.*
- *Acute bronchitis.*

Q29: ***Define acute bronchitis.***

Ans: ***Acute bronchitis:***

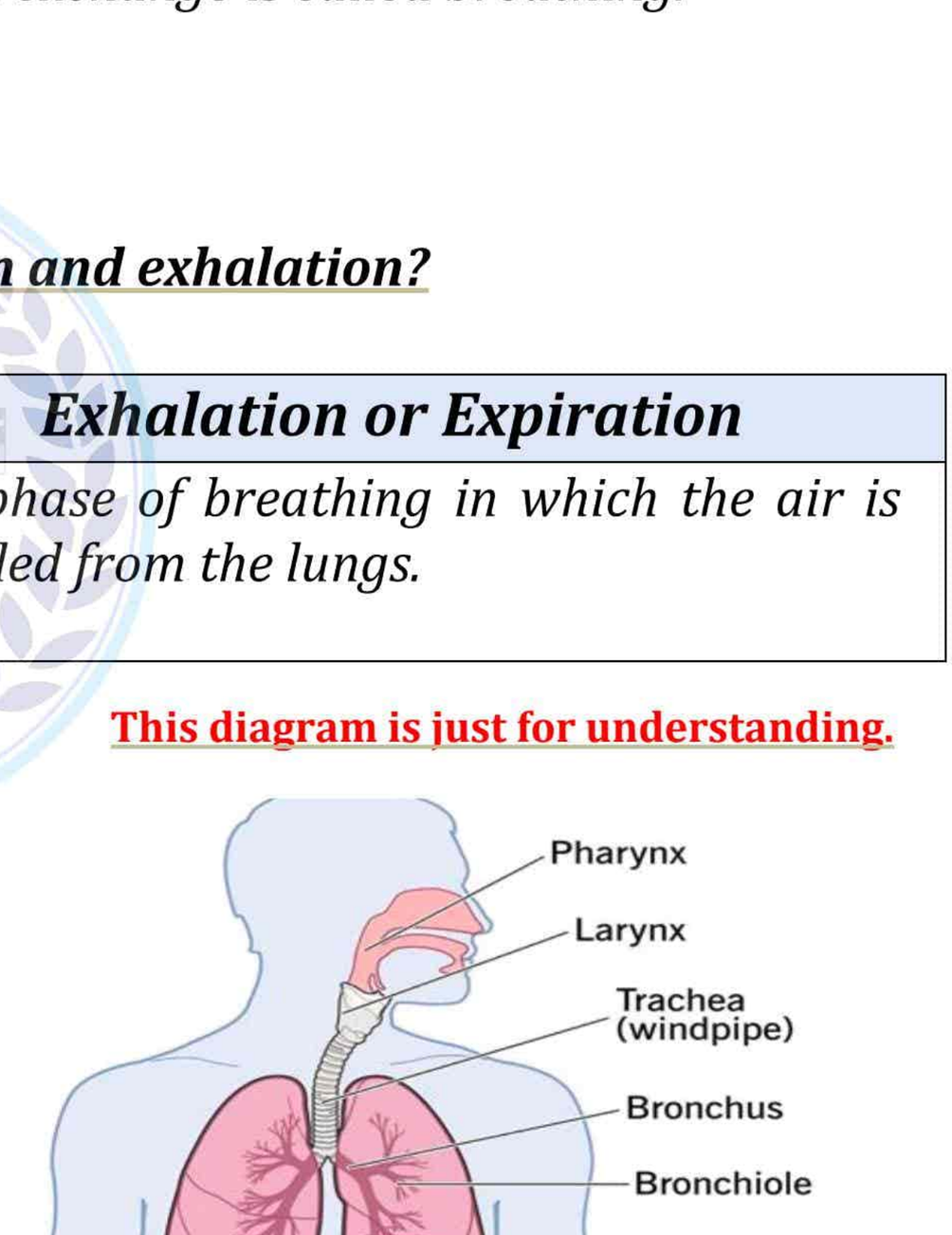
It usually lasts about two weeks and patient recovers with no permanent damage t bronchi.

Q30: ***Define Chronic bronchitis?***

Ans: ***Chronic bronchitis:***

In this the bronchi develop chronic inflammation. It usually lasts about 3 months to 2 years.

This diagram is just for understanding.



Q31: ***What are the causes and symptoms of bronchitis?***

Ans: ***Bronchitis:***

Bronchitis caused by viruses, bacteria or exposure to chemical irritants.

Example:

- *Tobacco smoke.*

Symptoms:

Symptoms of bronchitis include a cough, mild, wheezing, fever and shortness of breath (especially when doing hard job).

Q32: ***What is emphysema? Write its symptoms.***

Ans: ***Emphysema:***

Emphysema is the destruction of the walls of the Alveoli. It results in larger sacs but with less surface area for gaseous exchange.

Symptoms:

Its symptoms shortness of breath, fatigue, recurrent respiratory infections and weight loss.

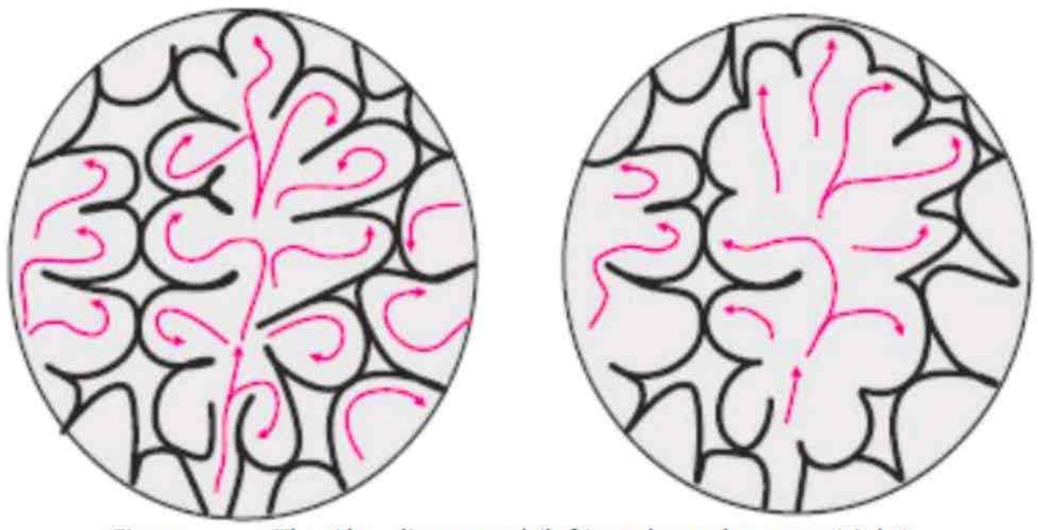


Figure : The Alveoli; normal (left) and emphysema (right)

Q33: ***What is difference in Pneumonia and double Pneumonia?***

Ans: Difference between Pneumonia and double Pneumonia is:

pakcity.org **Pneumonia**	**Double Pneumonia**
❖ *Pneumonia is an infection of lungs.* ❖ *Its symptoms include a cold that is followed by a high fever, shivering and a cough with sputum production.*	❖ *Pneumonia is an infection of lungs. If these infections affect both lungs then it is called double pneumonia.* ❖ *The most common cause of pneumonia is a bacterium, streptococcus pneumonia.*

Q34: ***What is pneumonia? Write down is symptoms.***

Ans: ***Pneumonia:***

Pneumonia is an infection of lungs.

Symptoms:

Its symptoms include a cold that is followed by a high fever, shivering and a cough with sputum production.

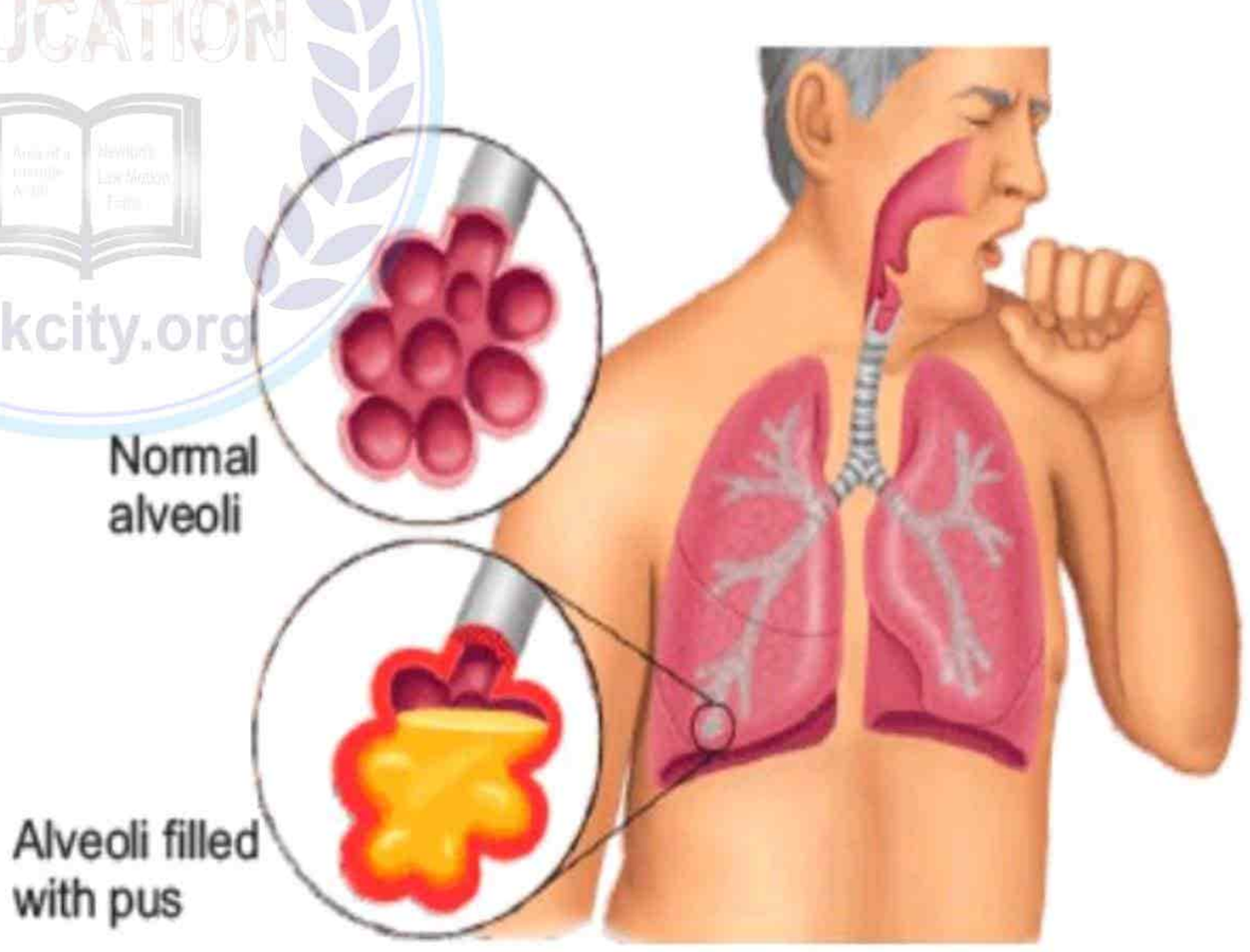


Figure : Pneumonia

Q35: ***What is double pneumonia?***

Ans: ***Double pneumonia:***

Pneumonia is an infection of lungs. If these infections affect both lungs then it is called double pneumonia.

The most common cause of pneumonia is a bacterium, streptococcus pneumonia.

Q36: ***What is Asthma? Write its symptoms.***

Ans: ***Asthma:***

Asthma is a form of allergy in which there is inflammation of bronchi, more mucous production and narrowing of airways.

Symptoms:

The major symptoms include shortness of breath, wheezing, cough and chest tightness.

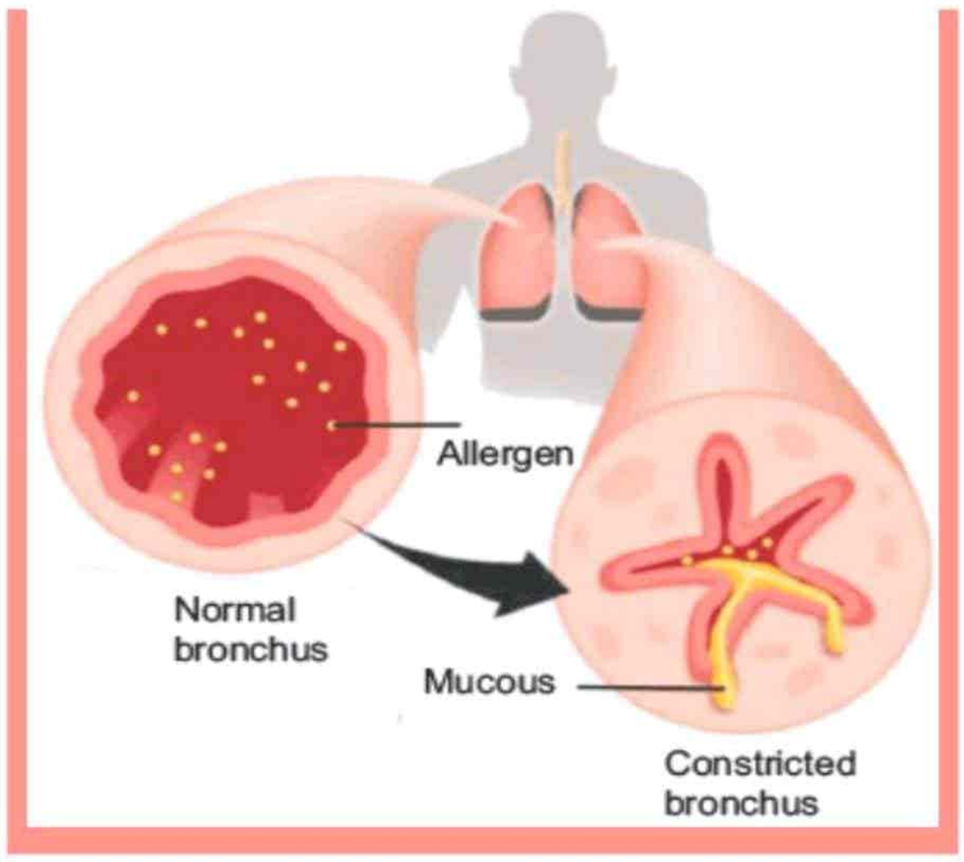


Figure : Asthma

Q37: ***Write treatment of a asthma.***

Ans: Treatment of asthma:

The chemicals with ability to dilate bronchi or bronchioles are used in the treatment of Asthma. Such medicine is given in the form of inhalers.

Q38: ***What is lung cancer? Give its two causes.***

Ans: Lung cancer is a disease of uncontrolled cell divisions in the tissues of the lungs.

Causes:

- *Smoking.*
- *Ionizing radiations.*
- *Viral infection.*
- *Carcinogens.*

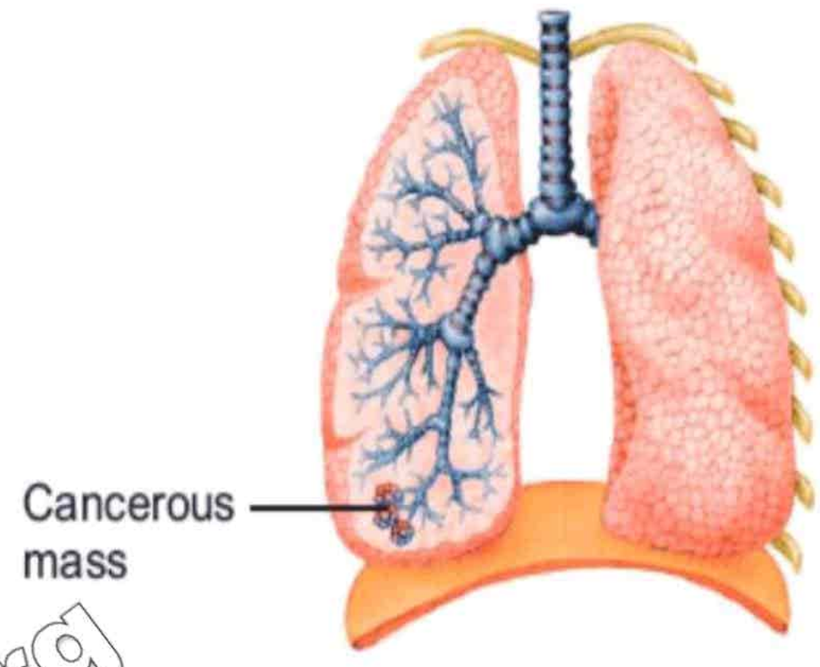


Figure Lung Cancer

Q39: ***What is meant by Passive Smoking?***

Ans: ***Passive Smoking:***

The Inhalation of smoke from another's smoking is called passive smoking.

Q40: ***What are Carcinogens?***

Ans: ***Carcinogens:***

The Compounds that causes Cancer Such as those in cigarette smoke are called Carcinogens.

Q41: ***What is Nicotine?***

Ans: ***Nicotine:***

It is a powerful poison and was widely used as an insecticide in the past.

Q42: ***What is primary goal of WHO regarding prevention of Lung cancer?***

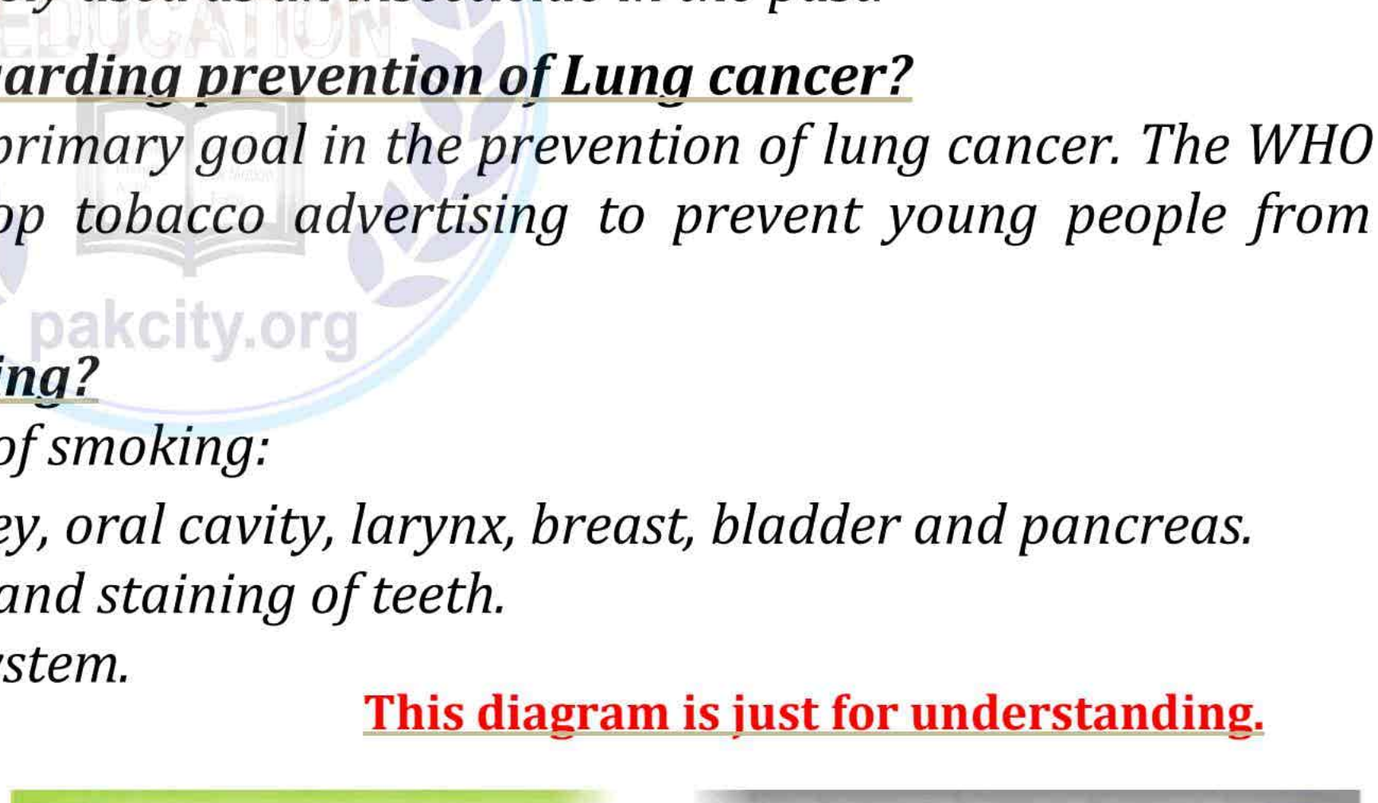
Ans: Eliminating Tobacco smoking is a primary goal in the prevention of lung cancer. The WHO has called for governments to stop tobacco advertising to prevent young people from taking up smoking.

Q43: ***What are the bad effects of smoking?***

Ans: These are the following bad effects of smoking:

- *Smoking lead to cancer in kidney, oral cavity, larynx, breast, bladder and pancreas.*
- *It is responsible for weakening and staining of teeth.*
- *It is also effect on circulatory system.*
- *It creates infection in lungs.*

This diagram is just for understanding.



Q44: ***What are the effects of smoking on teeth?***

Ans: Smoking is harmful due to chemical in cigarette and smoke.

Effect on teeth:

- *Smoking in responsible for the weakening.*
- *Staining of teeth.*
- *Tooth loss is 2 to 3 times higher in smokers than non-smokers.*

Q45: ***What are endonuclease and Ligase?***

Ans: ***Endonuclease and Ligase:***

The enzyme which breaks, called endonuclease and the enzyme which is join is called ligase.

Q46: ***Define arterial-sclerosis.***

Ans: ***Arterial-sclerosis:***

It is the hardening of arteries. It occurs when calcium is deposited in the walls of arteries.

Q47: ***Increased number of platelets in the blood causes which disease?***

Ans: Increase number of platelets in the blood cause arteriosclerosis.

Q48: ***How the chance to develop cancer decreases?***

Ans: If a person stops smoking, the chance to develop cancer decreases as damage to the lungs is repaired and contaminant particles are gradually removed.

Q49: ***What is the percentage of Nitrogen inhaled and exhaled air?***

Ans: The percentage of nitrogen inhaled is 79 % and exhaled is 79 %.

Q50: ***What is the percentage of carbon dioxide inhaled and exhaled air?***

Ans: The percentage of inhaled carbon dioxide is 0.04 % and the percentage of carbon dioxide exhaled is 04 %.

Conceptual Question

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Q1: ***How smoking affects the social life of a person?***

Ans: Smoking also affects the social life of a person. Smokers may face social un-acceptance because other people may not want to be exposed to other's smoke.

Q2: ***Does smoking affect only lungs?***

Ans: ***No,*** *smoking may also affect other organs of body.*

Examples:

- *Kidneys*
- *Oral cavity*
- *Larynx*
- *Breast*
- *Bladder*
- *Pancreas etc.*

Q3: ***How much risk of tuberculosis and pneumonia are increased by smoking?***

Ans: Smoking increases the risk of Tuberculosis by two to four times and of pneumonia by four times.

Q4: ***What is normal rate of respiration in human? How it is controlled brain?***

Ans: Human breathes 16-20 times per minute in normal circumstances (at rest). The rate of breathing is controlled by the respiratory centre in brain. The respiratory centre is sensitive to the concentration of carbon dioxide in blood.

Q5: ***What are pleural membranes? Write down their function.***

Ans: Each lung is enclosed by two membranes called:

- *Inner pleural membrane.*
- *Outer pleural membrane.*

Functions:

This membrane enclosed a fluid which provides lubrication for the free expanding of lungs.

Q6: ***Describe the function of Nasal Cavity?***

Ans: Nasal cavity is lined by fine hairs and mucus that filter the dust particles from air. The Mucus also moistens and warms the incoming air and keeps its temperature nearly equal to that of the body.

Q7: ***Why we should not sleep under trees during night?***

Ans: During night the leaf of trees get oxygen from the environment and release carbon dioxide through stomata. So, the amount of oxygen decreases which may lead to death. That is the reason that we should not sleep under trees at night.

Q8: ***Define Vocal Cords? OR***
How sound is produced in larynx? OR
Why larynx is called voice box?

Ans: The larynx is a box, made up of cartilage. It is present between pharynx and trachea. It is also called the voice box.

Two pairs of fibrous bands called vocal cords are stretched across the larynx. The vocal cords vibrate when the air passes through them. This vibration produces sounds.

Q9: ***Describe the changes which take place during expiration or exhalation in the chest cavity? OR***
Describe the changes which take place, during inspiration or inhalation in the chest cavity.

Ans: ***Inspiration:***

During inspiration, the rib muscles contract and ribs are raised. At the same time dome shaped diaphragm contracts and is lowered. These movements increase the area of thoracic cavity, which reduce the pressure on lungs. As a result, lungs expand and air pressure within them also decreases. The air from outsides rushes into lungs to equalize the pressure on both sides.

Expiration:

After the gaseous exchange in lungs, the impure air is expelled out in exhalation. The rib muscle relaxes, bringing the ribs back to original position. The diaphragm muscles also relax and it gets rise its dome shape.

Q10*:* ***Why dose blood become thick due to smoking? OR***
What is arteriosclerosis?

Ans: Many chemicals in smoking increase the production of blood platelets. When platelets are more than the normal numbers, they make the blood viscous and it can lead to arteriosclerosis.

Q11: ***How passive smoking is injurious to health?***

Ans: Passive smoking (the inhalation of smoke from another's smoking) is also a cause of lung cancer. The smoke from the burning end of a cigarette is more dangerous than the smoke from the filter end.

Q12: ***How smoking effects on circulatory system?***

Ans: Smoking also has effects on circulatory system. The carbon monoxide present in tobacco smoke lessens the oxygen carrying capacity of hemoglobin. Many other Chemicals in smoke increase the production of blood platelets when platelets are more than the normal numbers, they make the blood viscous and it can lead to arteriosclerosis.

Q13: ***How specific sound for talking is produced?***

Ans: The vibrations in vocal cords and the movement of lips, cheeks, tongue and Jaws produce specific sounds which result in speech. Speech is an ability that only humans are gifted with and this is one of the characteristics which has put human beings superior to all.

Q14: ***How does gaseous exchange occur in aquatic plants?***

Ans: The aquatic plants get the oxygen dissolved in water and release carbon dioxide in the water.

Q15: ***How does gaseous exchange occur in stems and leaves of plants?***

Ans: The leaves and young stems have stomata in their epidermis. Maximum gaseous exchange occurs through these stomata.

*Q16: **How many membranes in lungs? And describe its function.***

Ans: Each lung is enclosed by two membranes called the outer pleural membrane and the inner pleural membrane. The membranes enclose a fluid which provides lubrication for the free expanding and contracting of the lungs.

Chapter : 10	Gaseous Exchange

Imp.Long Questions

Q.1: Write a detail note. How gaseous exchanges take place in human?
Q.2: Describe the functions of nasal cavity, voice box, pharynx and alveoli. V.imp
Q.3: Explain Gaseous exchange in Plants.
Q.4: How plants remove extra oxygen and carbon dioxide?
Q.5: Give two features and two functions of human lungs.
Q.6: What is Bronchitis? Write its types. V.imp
Q.7: Describe the causes and symptoms of Bronchitis and Emphysema. V.imp
Q.8: Write a complete note on lungs Cancer.
Q.9: Write a note on emphysema and asthma. V.imp

Chapter: 11

Homeostasis

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Objective

1. Secretions secreted by conifers are called:

Ⓐ Gums Ⓑ Latex Ⓒ Mucilage **Ⓓ Resins**

2. What waste products are excreted by kidneys?

Ⓐ Urea & salts **Ⓑ Urea, water & salts**
Ⓒ Salts, water and carbon dioxide Ⓓ Urea & water

3. The plants which have broad leaves and a large number of Stomata's are called:

Ⓐ Halophytes **Ⓑ Hydrophytes** Ⓒ Bryophytes Ⓓ Xerophytes

4. Example of hydrophyte plants is:

Ⓐ water lily Ⓑ sea grass Ⓒ grass Ⓓ cactus

5. Which plants have succulent organs:

Ⓐ Halophytes **Ⓑ Xerophytes** Ⓒ Mesophytes Ⓓ Hydrophytes

6. The length of human kidney is:

Ⓐ 27 cm Ⓑ 4cm **Ⓒ 10cm** Ⓓ 15cm

7. Urine is temporarily stored in which of these until it is released from body:

Ⓐ Ureter Ⓑ Urethra Ⓒ Kidney **Ⓓ Urinary bladder**

8. Secretion of rubber plant is called:

Ⓐ resins Ⓑ mucilage **Ⓒ latex** Ⓓ gums

9. Which would NOT be present in the filtrate entering the Bowman's capsule of nephron?

Ⓐ Urea **Ⓑ Blood cells** Ⓒ Calcium ions Ⓓ Water

10. Excretion of water through special pores present at the margin of leaves is called:

Ⓐ Guttation Ⓑ Sublimation Ⓒ Transpiration Ⓓ Evaporation

11. Renal pelvis is a part of:

Ⓐ Lungs **Ⓑ Kidney** Ⓒ Testes Ⓓ Heart

12. Sea Grasses are:

Ⓐ Xerophytes Ⓑ Succulent **Ⓒ Halophytes** Ⓓ Hydrophytes

13. The core temperature of human body remains at about:

Ⓐ 40^0C Ⓑ 39^0C Ⓒ 38^0C **Ⓓ 37^0C**

14. Human Urinary system consists of:

Ⓐ Ureter Ⓑ Urinary bladder **Ⓒ All of these** Ⓓ Kidneys

15. The maintenance of water, salts, glucose and temperature in the body is called as:

Ⓐ Reabsorption **Ⓑ Homeostasis** Ⓒ Excretion Ⓓ Filtration

16. Functional unit of kidney is:

Ⓐ Nephron Ⓑ Bowman's Capsule Ⓒ Neuron Ⓓ nerve

17. In every kidney no of Nephrons is about:

Ⓐ More than5 Lac **Ⓑ More than 10** Ⓒ 10 Lac Ⓓ 5 Lac

18. Ribs which protect the kidneys are:

(A) last four (B) middle (C) last two (D) first two

19. What are not filtered through glomerular capillaries?

(A) Fate & Proteins (B) Fats & Salts (C) Salts Proteins (D) Blood Cells & Proteins

20. One of the main causes of kidney failure is?

(A) Urea (B) Creatinine (C) Hypertension (D) Hepatitis

21. Method for the removal of kidney stones:

(A) Dialysis (B) Lithotripsy (C) kidney transplant (D) Biopsy

22. Who is the writer of Encyclopedia "AI Tasrif":

(A) Abu-Al-Qasim (B) Jabir-bin-Hayan (C) Aristotle (D) Al-Farabi

23. During lithotripsy stone is removed by:

(A) electrical shock waves (B) non electrical shock waves
(C) medicines (D) surgery

24. Latex is released by which plant:

(A) Mustard (B) Rubber (C) Lady finger (D) Keekar

25. The maintenance of internal human body temperature is called:

(A) Guttation (B) Respiration (C) Thermoregulation (D) Osmoregulation

26. The example of halophytes plants is:

(A) cactus (B) rose (C) water lily (D) sea grass

27. Resins as waste material is excreted from:

(A) Rubber (B) Keekar (C) Conifers (D) Tomato

28. Plants store a large amount of water in their cells for:

(A) guttation (B) turgidity (C) photosynthesis (D) transpiration

29. The average life for donated kidney is:

(A) 10 to 15 years (B) 15 to 20 years (C) 5 to 10 years (D) 1 to 5 years

30. The process of guttation occurs in the plant:

(A) Keekar (B) grass (C) rubber plant (D) pine

31. Waste material that is removed by carnivorous plants and lady finger is:

(A) Latex (B) Gums (C) Mucilage (D) Resins

32. The example of xerophytes is:

(A) Sea grass (B) Water lilly (C) Funaria (D) Cactus

33. These plants have very deep roots:

(A) mesophytes (B) hydrophytes (C) xerophytes (D) halophytes

34. The elimination of metabolic waste from body is called:

(A) thermoregulation (B) excretion (C) respiration (D) osmoregulation

35. Which thing is reabsorbed by the descending limb of loop of Henle?

(A) water (B) urea (C) glucose (D) salts

36. Waste materials that are secreted by Keekar:

(A) Mucilage (B) Gums (C) Latex (D) Resins

37. U Shape Renal Tubules is called:

Ⓐ Cortex Ⓑ Neuron **Ⓒ Loop of Henle** Ⓓ Pyramids

38. The weight of human kidney is approximately:

Ⓐ 28 gm. Ⓑ 25gm. Ⓒ 26 gm. **Ⓓ 120gm.**

39. In an adult man the average urine formation in a day is:

Ⓐ 1.3 liter Ⓑ 3 liter **Ⓒ 1.4 liter** Ⓓ 4 liter

40. Plays role in maintaining body temperature:

Ⓐ Kidneys **Ⓑ Skin** Ⓒ Ear Ⓓ Lungs

41. The concave part of the kidney is towards:

Ⓐ toward vertebral column Ⓑ away from vertebral column
Ⓒ upper Ⓓ lower

42. The urine is carried out from Urinary Bladder to outside of body in human by:

Ⓐ Nephron **Ⓑ Urethra** Ⓒ Ureter Ⓓ Kidney

43. The plants which live completely or partially submerged in fresh water are called:

Ⓐ bryophytes Ⓑ xerophytes **Ⓒ hydrophytes** Ⓓ halophytes

44. …….. is the name of outer region of longitudinal section of human kidney.

Ⓐ renal pelvis Ⓑ renal pyramids Ⓒ renal medulla **Ⓓ renal cortex**

45. The appearance of drops of water on tips of leaves is called:

Ⓐ Osmoregulation Ⓑ Osmosis **Ⓒ Guttation** Ⓓ Diffusion

46. Mucilage is removed by plants:

Ⓐ Conifer **Ⓑ Lady finger** Ⓒ Keekar Ⓓ Rubber plant

47. What is the function of the ureter?

Ⓐ To remove waste from the blood Ⓑ To store urine
Ⓒ To carry urine from the kidney to the bladder Ⓓ To carry urine out of the body

48. In human, urine formation takes place in …….. steps.

Ⓐ 5 Ⓑ 4 **Ⓒ 3** Ⓓ 2

49. Which is a by-product of photosynthesis?

Ⓐ H_2 Ⓑ N_2 Ⓒ CO_2 **Ⓓ O_2**

50. Which organ temporarily stores urine in the body?

Ⓐ heart Ⓑ Kidneys **Ⓒ urinary bladder** Ⓓ liver

51. It is formed due to condensation of water vapours on the plant surface:

Ⓐ Sebum **Ⓑ Dew** Ⓒ Transpiration Ⓓ Guttation

52. Extra water is removed from plant body by:

Ⓐ Transpiration Ⓑ Condensation Ⓒ Kidney Ⓓ Evaporation

53. It is formed due to condensation of water vapours on the plant surface:

Ⓐ Sebum **Ⓑ Dew** Ⓒ Transpiration Ⓓ Guttation

54. Which organ is responsible for filtering the blood?

Ⓐ Stomachr Ⓑ Intestine **Ⓒ Kidney** Ⓓ Brain

55. Blood enters the kidney through:

(A) Bowman's Capsule (B) Renal vein (C) Glomerulus **(D) Renal Artery**

56. Cacti are example of:

(A) Mesophytes (B) Halophytes **(C) Xerophytes** (D) Hydrophytes

57. The tube between kidney and urinary bladder is the:

(A) Renal tubule **(B) Ureter** (C) Nephron (D) Urethra

58. Which organ is protected by last two ribs in man?

(A) Kidney (B) Liver (C) Heart (D) Stomach

59. The main function of kidney is the formation of:

(A) Fat **(B) Urine** (C) Blood (D) Food

60. Which one of the following is not an organ of homeostasis?

(A) Kidney (B) Lungs **(C) Heart** (D) Skin

61. The By- product of photosynthesis is:

(A) Oxygen Gas (B) Glucose (C) Carbon dioxide **(D) Water**

62. Which plants have deeper roots?

(A) Xerophytes (B) Mesophytes **(C) Halophytes** (D) Hydrophytes

63. The filtrate present in renal tubules is called:

(A) Urea **(B) Urine** (C) Filtrate (D) Blood

64. The human urinary system consists of:

(A) Kidneys, ureters,. urinary bladder, urethra (B) Skin, liver, lungs, kidneys
(C) Kidneys, ureters, urinary bladder (D) Rectum, lungs, kidneys, ureters

65. Percentage of water in human urine is:

(A) 90% **(B) 95%** (C) 70% (D) 75%

66. Which is the correct order for the path taken by urine after it leaves the kidneys?

(A) Bladder, urethra, ureters **(B) Ureters, bladder, urethra**
(C) Bladder, ureters, urethra (D) Urethra, bladder, ureters

67. The maintenance of the internal conditions of the body at equilibrium, despite changes in the external environment is called:

(A) Metabolism **(B) Homeostasis** (C) Osmoregulation (D) Thermoregulation

68. 'Body balance' of water, salts, temperature and glucose is termed as:

(A) Homeostasis (B) Re-absorption (C) Tubular secretion (D) Excretion

69. Normal urine contains amount of urea:

(A) 1.87 g / l (B) 1.17 g / l **(C) 9.3 g / l** (D) 95 / l

70. What is the function of the ureter?

(A) To carry urine out of the body (B) To store urine
(C) To carry urine from the kidney to the bladder (D) To remove waste from the blood

71. Colour of human kidney is:

(A) Dark Red (B) blue (C) Yellow (D) Pink

72. Halophytes live in:

(A) canal **(B) sea** (C) acrylic acid (D) pond

Chapter : 11	Homeostasis

Subjective

Q1: ***What is Difference between the terms of homeostasis and osmoregulation.***

Ans: Difference between homeostasis and osmoregulation is:

Homeostasis	Osmoregulation
It is defined as the maintenance of internal condition of body at equilibrium despite change in the external environment.	*It is the maintenance of the amount of water and salts in body fluid i.e. blood and tissue fluid.*

Q2: ***What is Difference between the terms of Thermoregulation and Excretion?***

Ans: Difference between Thermoregulation and Excretion is:

Thermoregulation	Excretion
The maintenance of internal body temperature is called Thermoregulation.	*In this process the metabolic wastes are eliminated form body to maintain the internal condition at equilibrium.*

Q3: ***How plants remove extra O_2 and CO_2?***

Ans: The extra O_2 is removed by the mesophyll cells of the plants through stomata and the extra CO_2 are removed by the tissue cell of the plants with the help of diffusion.

This diagram is just for information.

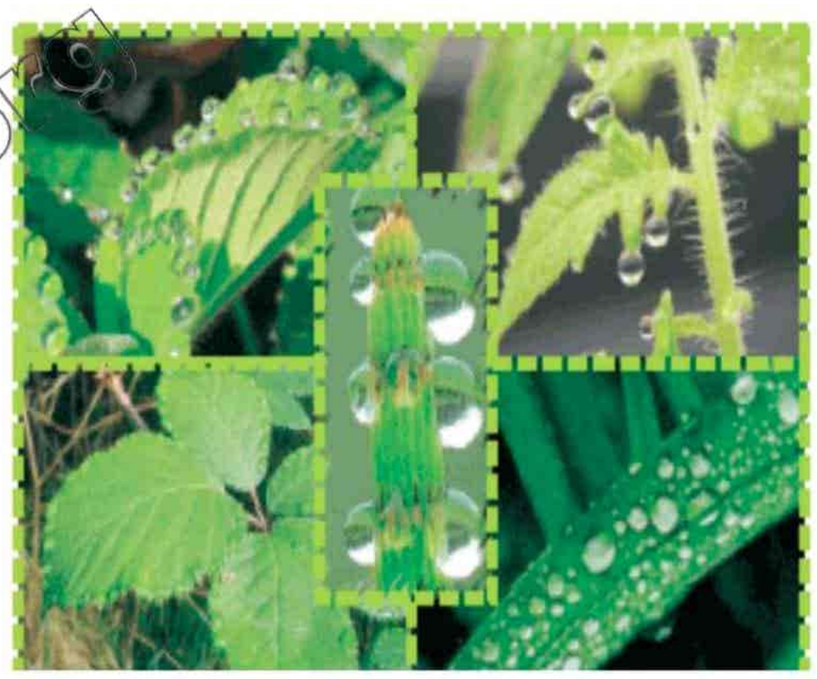

Figure : Guttation in different plants

Q4: ***Why does transpiration not occur at night?***

Ans: At night, transpiration usually does not occur because most plants have their stomata closed at night.

Q5: ***What is meant by metabolic waste?***

Ans: ***Aerobic Respiration:***

Metabolic waste means any material that is produced during body metabolism and that may harm the body.

Q6: ***Differentiate between turgidity and guttation.***

Ans: Difference between Thermoregulation and Excretion is:

Turgidity	Guttation
Plants store large amount of water in their cells which causes turgidity.	*The appearance of drop of, water on the tips or edges of leaves is called guttation.*

Q7: ***Differentiate between transpiration and dew.***

Ans: Difference between Thermoregulation and Excretion is:

Transpiration	Dew
Transpiration is the loss of water from plant surface in the form of water.	*Dew are the water droplets which condenses from the atmosphere on to the plant surface.*

Q8: ***Identify two processes for excretion of water plants?***

Ans: Two processes for excretion of water plants are:

- *Guttation*
- *Transpiration*

Q9: ***How plants excrete their metabolic wastes?***

Ans: Plants excrete their metabolic wastes from body during leaf fall.

Q10: ***How calcium oxalate is removed in tomato plant as metabolic waste?***

Ans: Plants deposit many metabolic wastes in their bodies as harmless insoluble materials.

For example:

Calcium oxalate is deposited in the form of crystals in the leaves and skins of many plants e.g in tomato.

This diagram is just for information.

Resin drops from a cut tree | *Latex being extracted from a tree* | *Mucilage drops on a carnivorous plant*

Figure Removal of some wastes in plants

Q11: ***Name the plants from which resins, Guns, latex, and mucilage are obtained.***

Ans: Name of the plants from which resins, Guns, latex, and mucilage are obtained:

- *Gums by keekar.*
- *Mucilage by carnivorous plants and a ladyfinger.*
- *Latex by rubber plant.*
- *Resins by coniferous tree.*

Q12: ***What are hydrophytes? Give an example.***

Ans: ***Hydrophytes:***

Hydrophytes are the plants which completely live submerged in water. These plants do not face the problem of water shortage. The plants have developed mechanism for the removal of extra amount of water in cell.

Example:

The most common example of plant is water lily.

Q13: ***Describe xerophyte with example.***

Ans: ***Xerophytes:***

Xerophytes live in dry environment. They possess thick, waxy cuticle over their epidermis to reduce water loss from internal tissues. They have less number of stomata to reduce the rate of transpiration.

Example:

Cactus.

This diagram is just for information.

Hydrophytes | *Halophytes* | *Xerophytes*

Figure : Three groups of plants

Q14: ***What is osmosis?***

Ans: ***Osmosis:***

Osmosis is the movement of water from hypotonic solution (less solute concentration) to hypertonic solution (higher solute concentration), through semipermeable membrane.

Q15: ***Define halophytes and give examples.***

Ans: ***Halophytes:***

Halophytes live in sea waters and are adapted to salty environments.
Many sea grasses are included in this group of plants.

Q16: ***What are succulent organs? Give example.***

Ans: ***Succulent organs:***

Some Xerophytes have special parenchyma cells in stems or roots in which they store large quantities of water. This makes their stem or roots wet or juicy called succulent organs.

For example:

Cactus.

Q17: ***What are the main organs for homeostasis in man? Explain.***

Ans: The main organs for homeostasis in man are:

- *Skin performs role in the maintenance of body temperature and also remove excess water and salts.*
- *The kidney filter excess water, salts, urea, uric acid etc. from the blood*
- *Lungs remove excess carbon dioxide and keep it in balance.*

Q18: ***What is meant by goose bumps on skin?***

Ans: Contractions of small muscles attached to hairs forms "Goosebumps". It creates an insulating blanket of warm air.

Q19: ***What is the function of ureter?***

Ans: There function is to carry the urine from the kidneys and put it into the urinary bladder.

Figure : Goose bumps

Q20: ***Write down the names of four organs of urinary system.***

Ans: The names of four organs of urinary system are:

- *1 pair of ureters*
- *1 pair of kidneys*
- *A urethra*
- *A urinary bladder*

This diagram is just for information.

Q21: ***What is the function of urinary bladder and urethra in urinary system of human?***

Ans: ***Alveolus:***

Each alveolar duct opens into a cluster of pouches called alveolus (Singular: Alveoli).
Each alveolus is a sac like structure lined by a single layer of epithelial cells.

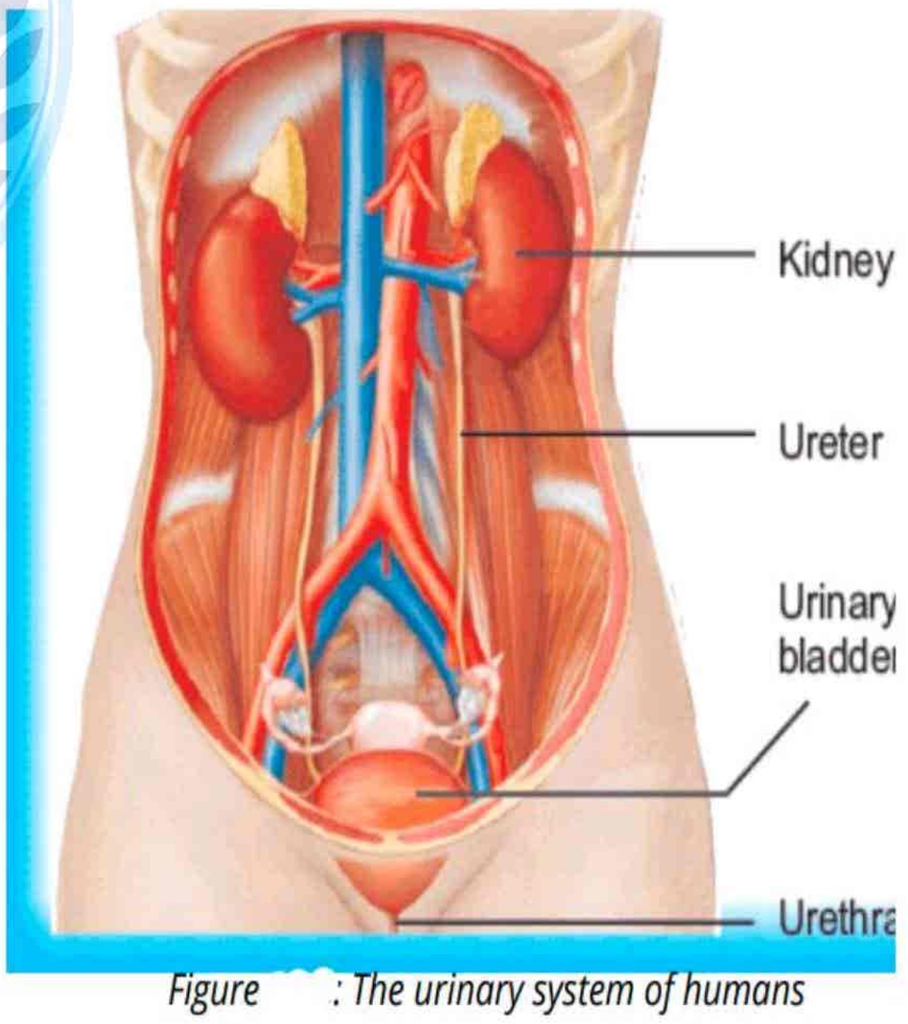

Figure : The urinary system of humans

Q22: ***Write the importance of trachea in the respiratory system.***

Ans: The Urinary bladder temporarily store until it is released from body.
Urethra is the tube that carries urine from urinary bladder to the outside of the body.

Q23: ***Differentiate between renal corpuscle and renal tubule.***

Ans: Difference between renal corpuscle and renal tubule is:

Renal Corpuscle	Dew
Renal Corpuscle is the collection for the glomerulus and Bowmen's capsule in the nephron.	*The part of nephron after the Bowman's capsule consists of proximal convoluted tubule, loop of Henle and distal convoluted*

	tubule.

Q24: ***Describe briefly structure of renal corpuscle present in the kidney.***

Ans: The renal corpuscle is not tubular and has two parts i.e.; glomerulus and Bowman's capsule. Glomerulus is a network of capillaries while Bowman's capsule is a cup shaped structure that encloses glomerulus.

This diagram is just for information.

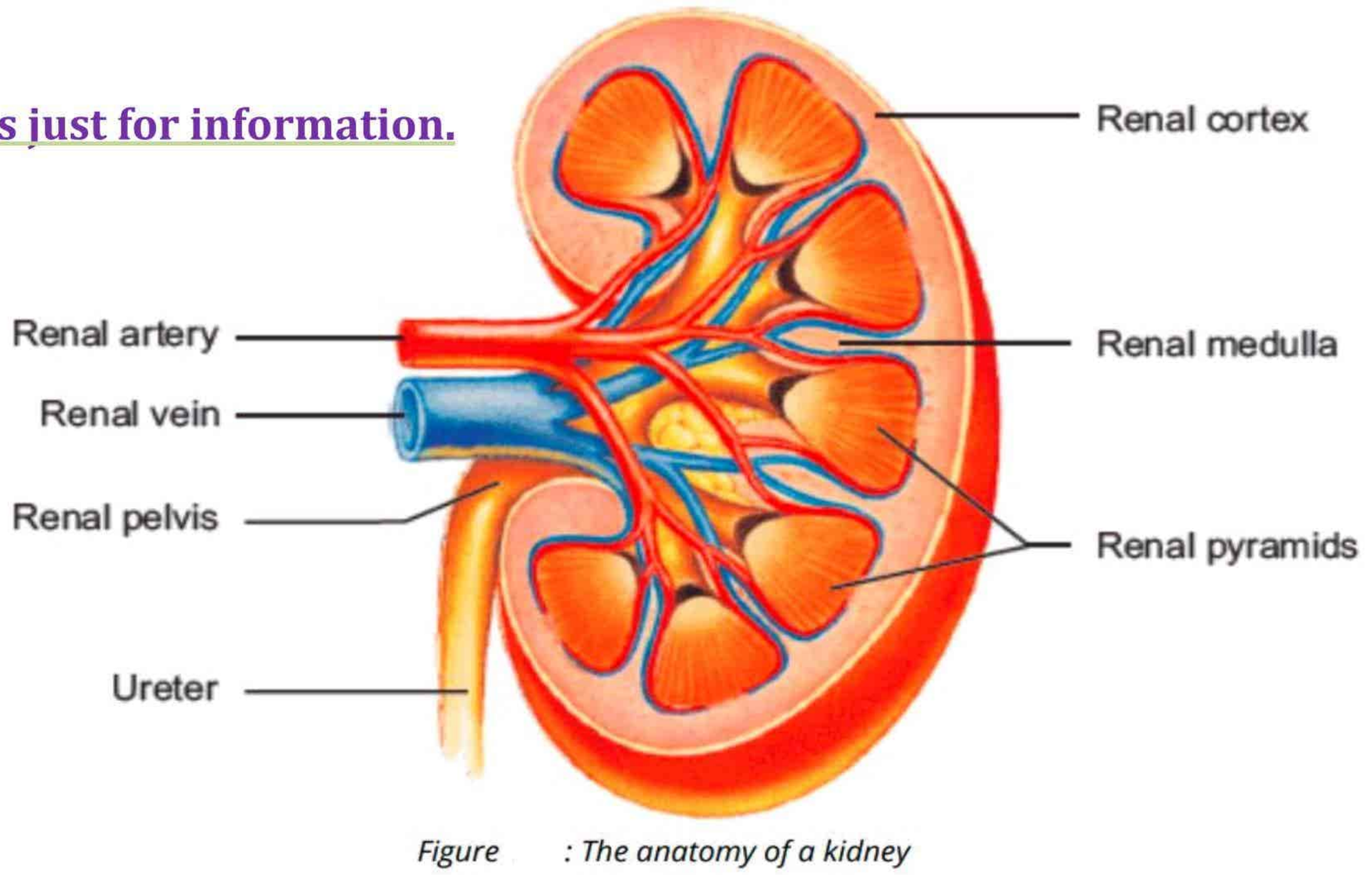

Figure : The anatomy of a kidney

Q25: ***Define nephron and write down the names of its parts.***

Ans: ***Nephron:***

The functional unit of kidney is called nephron.

There are two parts of nephron.

- *Renal corpuscle.*
- *Renal tubule.*

Q26: ***What is the size of human kidney?***

Ans: Each kidney is 10cm long, 5cm wide and 4cm thick and weighs about 120 gm.

Q27: ***Differentiate between renal cortex and renal medulla.***

Ans: Difference between renal corpuscle and renal tubule is:

Renal cortex	Renal medulla
Renal cortex is the outer part of kidney and it is dark red in colour.	Renal medulla is the inner part of kidney and is pale red in colour.

Q28: ***What is the functional unit of kidney?***

Ans: The functional unit of kidney is called nephron. There are over one million nephrons in each kidney. There are two types of nephron i.e. renal corpuscle and renal tubule.

This diagram is just for information.

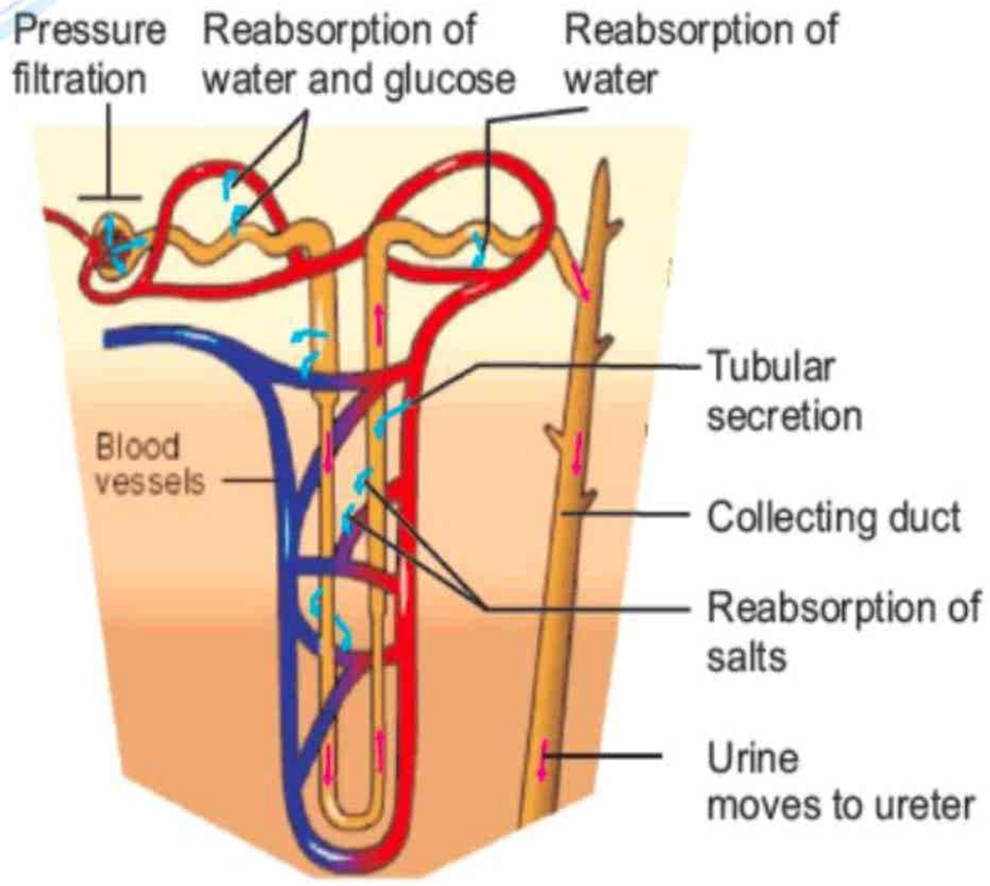

Figure : Functioning of kidney (nephron)

Q29: ***Describe renal tubule.***

Ans: The renal tubule is the part of nephron which starts after, Bowman's capsule. Its first portion is called proximal convoluted tubule. Next portion is u-shaped and is called the Loop of Henle. The last portion of renal tubule is the distal convoluted tubule.

Q30: ***What is the functional unit of kidney?***

Ans: The functional unit of kidney is called nephron. There are over one million nephrons in each kidney. There are two types of nephron i.e. renal corpuscle and renal tubule.

Q31: ***Write the name of two parts of renal corpuscle.***

Ans: The name of two parts of renal corpuscle is:

- *Bowman's capsule*
- *Glomerulus*

Q32: ***Differentiate between Glomerulus and Bowman's capsule.***

Ans: Difference between renal corpuscle and renal tubule is:

Glomerulus	Bowman's capsule
Glomerulus is a network of capillaries.	Bowman's capsule is a cup shaped structure that encloses glomerulus.

Q33: ***Differentiate between hillus and pelvis.***

Ans: Difference between hillus and pelvis is:

Hillus	Pelvis
The concave side a of kidney faces vertebral column. There is a depression, called hillus, near the centre of the concave area of kidney.	While renal pyramids project into a funnel shaped cavity called' renal pelvis, which is the base of ureter.

Q34: ***What is tubular secretion?***

Ans: Different ions, creatinine urea etc. are secreted from blood into the filtrate in renal tubule. This is done to maintaining the blood at the normal ph.

Q35: ***What is meant by pressure filtration?***

Ans: When blood enters the kidney via the renal artery it goes to many arterioles and then glomerulus. The pressure of blood is very high so the most of the water, salt, glucose and urea of blood is forced out of glomerular capillaries into Bowman's capsule.

Q36: ***Describe selective re-absorption in the nephron.***

Ans: In this step about 99% of the-glomerular filtrate is reabsorbed into the blood capillaries surrounding renal tubule. It occurs through osmosis, diffusion, and active transport.

Q37: ***When kidney form hypotonic and hypertonic urine?***

Ans: When there is excess water in body fluids, kidney form dilute (hypotonic) urine and when there is shortage of water in body fluids kidney filters less water from glomerular capillaries and rate of re-absorption is increased and concentrated (hypertonic) urine is formed.

Q38: ***What is lithotripsy?***

Ans: In this method, non-electrical shock waves from outside are bombarded on the stones and break them. Stones become sand-like and are passed through urine.

Q39: ***What are the causes of kidney stone? And write its symptoms.***

Ans: ***Causes of kidney stone:***

The major causes of kidney stones are. age, diet, recurring urinary tract infections, less intake of water and alcohol consumption.

Symptoms:

Symptoms of kidney stones include severe pain in kidney or in lower abdomen, vomiting, frequent urination and foul smelling with blood and pus.

Q40: ***What a do you meant by kidney transplant.***

Ans: It is the replacement of patients damaged kidney with the donor healthy kidney. Kidney may be donated by a deceased donor or living donor. The donor may or may not be relative of the patient. Before transplant; the tissue proteins of donor and patient are matched. The average life time for a donated kidney is ten to fifteen years.

Q41: ***Write two symptoms of kidney failure.***

Ans: Symptoms of kidney failure is:

High level of urea and other wastes in blood, which can result in vomiting, nausea, weight loss, frequent urination and blood in urine are the main symptoms of kidney failure.

Q42: ***Describe two major causes of kidney failure.***

Ans: Two major causes of kidney failure are:

- *Sudden interruption in the blood supply to kidney and drug over doze may also result in kidney failure.*
- *Diabetes Mellitus and hypertension are the leading causes of kidney failure.*

Q43: ***What does dialysis mean? Name its methods?***

Ans: Dialysis means the cleaning of blood by artificial way.

There are two method of dialysis.

- *Haemodialysis.*
- *Peritoneal dialysis.*

Q44: ***What is peritoneal dialysis?***

Ans: In this type of dialysis, the dialysis fluid is pumped for a time into the peritoneal cavity which is space around gut. This cavity is lined by peritoneum. Peritoneum contains blood vessels. When we place dialysis fluid in peritoneal cavity, waste materials form peritoneal blood vessels diffuse into the, dialysis fluid, which is then drained out: This type of dialysis can be performed at home, but must be done every day.

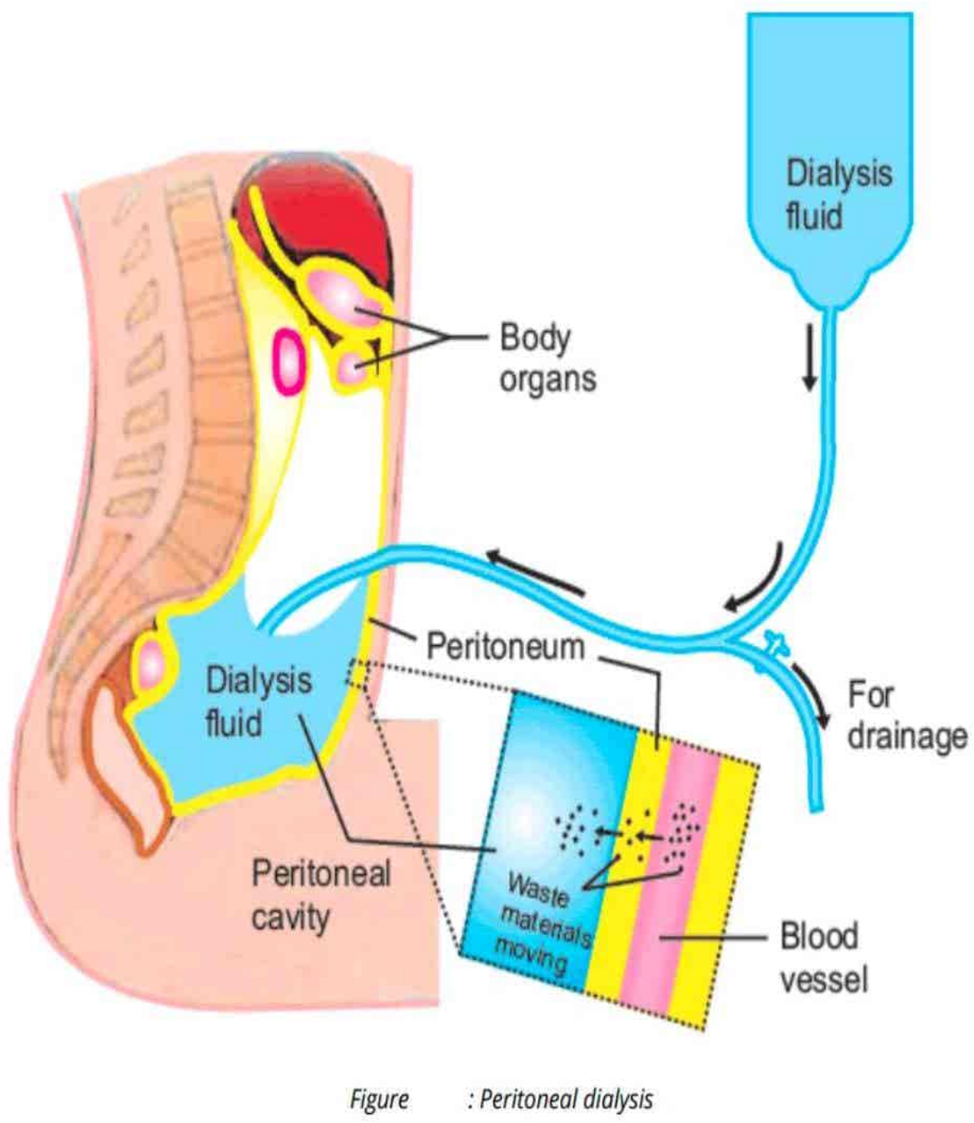

Figure : Peritoneal dialysis

Q45: ***What is dialyzer?***

Ans: ***Dialyzer:***

In hemodialysis, patient's blood is pumped through an apparatus called dialyzer.

This diagram is just for information.

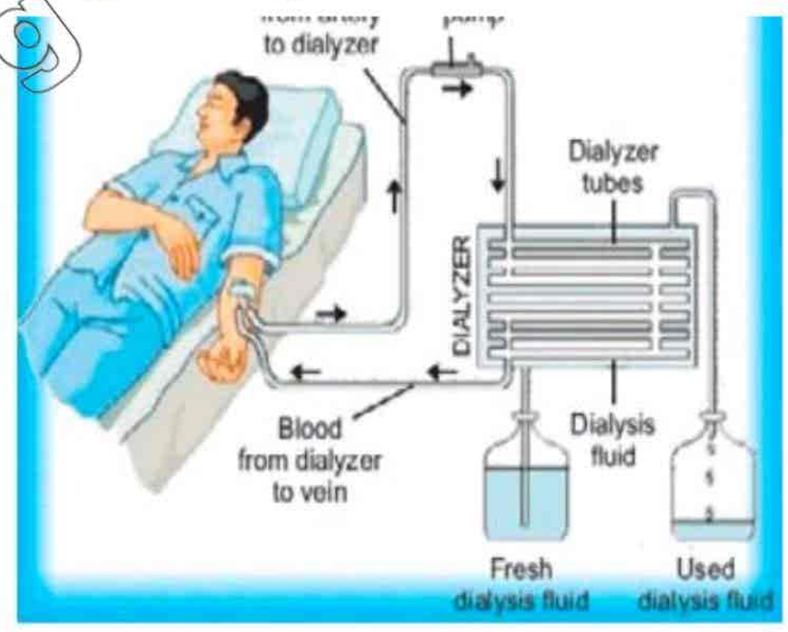

Figure : Haemodialysis

Q46: ***What is the average Age of denoted kidney?***

Ans: The Average lifetime for a denoted kidney is ten to fifteen years.

Q47: ***What is kidney failure? How it is treated?***

Ans: Kidney failure:

Kidney failure means a. complete or partial failure of kidneys to function.

The kidney failure is treated with dialysis and kidney transplant.

Q48: ***What role is played by lungs in homeostasis?***

Ans: Lungs maintain the concentration of carbon dioxide in the blood. Our cells produce carbon dioxide when they perform cellular respiration. Lungs remove this carbon dioxide from body.

Q49: ***How does human kidney produces hypotonic urine?***

Ans: When there is excess water in body fluid. For this purpose kidneys filter more water from glomerular capillaries into Bowman's capsule.

Similarly, Jess water is reabsorbed and abundant dilute urine is produced. It brings down volume of body fluid to normal.

Q50: ***Write two complexities which can arise in kidney transplant.***

Ans: Problems after a transplant may include transplant rejection, infections, unbalances in body salts which can lead to bone problem and ulcer.

Q51: ***How does skin control human body temperature?***

Ans: Skin performs important role in the regulation of body temperature. The thin layer of fat cells in the dermis insulates the body contraction of small muscles attached to hairs forms Goosebumps. It creates an insulating blanket of warm air.

Q52: ***How skin produces cooling effect of the body?***

Ans: Skin helps in providing cooling effect when sweat is produced by sweat gland and excess body heat escapes through evaporation. Metabolic wastes such as excess water, salts, urea and uric acid are also removed in sweat.

Q53: ***Why blood cells and proteins are not filtered through the glomerular capillaries?***

Ans: Blood cells and proteins are not filtered through the glomerular capillaries because they are relatively larger in size.

Q54: ***What steps are involved in the formation of urine in kidneys?***

Ans: There are three steps involved in the formation of urine.

- *Tubular secretion.*
- *Selective reabsorption.*
- *Pressure filtration.*

Chapter : 11 Homeostasis

Imp.Long Questions

Q.1: What is meant by kidney failure? Describe its causes.

Q.2: Explain the two methods of dialysis.

Q.3: Write a note on Kidney stones.

Q.4: How plants remove extra Carbon Dioxide, Oxygen and Water. V.imp

Q.5: How plants remove metabolic wastes.

Q.6: Describe the structure of nephron. V.imp

Q.7: Describe the internal structure of human kidney.

Q.8: Describe Osmoregulatory function of Kidney. V.imp

Q.9: Define Dialysis. Describe about Haemodialysis.

Q.10: Write a note on Kidney Transplant

Q.11: What is Difference between xerophytes and halophytes?

Q.12: What do you know about osmotic adjustments in Hydrophytes and Halophytes? Write three names and function of those organs which maintain Homeostasis.

Chapter: 12

Coordination and Control

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Objective

1. This Lobe contains Sensory Areas that receive impulses from Skin:
   (A) Parietal (B) Temporal (C) Frontal (D) Occipital
2. Body synthesis rhodopsin form vitamin:
   (A) A & B (B) B (C) D (D) K
3. Eyes of dogs and cats shine due to the layer:
   (A) Pleural (B) Tapecum (C) Tapetum (D) Tampenak
4. The example of Stimulus is:
   (A) Muscles (B) Ear (C) Brain (D) Cold
5. The length of Spinal Cord is about:
   (A) 40 cm (B) 40 inch (C) 40 nm (D) 40 mm
6. The largest endocrine gland in human body is:
   (A) Pancreas (B) Thyroid gland (C) Parathyroid gland (D) Adrenal gland
7. Auditory canal ends in:
   (A) Pupil (B) Pinna (C) Eardrum (D) Cochlea
8. On receiving the message from coordinators, the, effectors perform action is called:
   (A) Effectors (B) Receptors (C) Coordinators (D) Response
9. Two glands are situated above the kidneys:
   (A) Adrenal (B) Thyroid (C) Pancreas (D) Parathyroid
10. He wrote three books on diseases and surgery of eye:
    (A) Abdul Malik Asmai (B) Ali ibn Isa (C) Ibn al-Haytham (D) Bu Ali Sena
11. Which hormone develops the male secondary sex characters?
    (A) Insulin (B) Progesterone, (C) Testosterone (D) Estrogen
12. Temporal lobe is concerned with:
    (A) Visual information (B) Hearing and smell
    (C) Fear (D) Control of skeletal muscle
13. Owl is not able to see during day time due to deficiency of:
    (A) Retina (B) Rods Cells (C) Fovea (D) Cone cell
14. Rods contain a pigment:
    (A) Rhodopsin (B) Vitreous Humour (C) Aqueous Humour (D) iodopsin
15. Decreases the level of calcium ions in blood:
    (A) oxytocin (B) calcitonin (C) parathormone (D) vasopressin
16. In neuron, nucleus is found in:
    (A) axons (B) node of Ranvier (C) cell body (D) myelin sheath
17. A hormone testosterone is secreted by:
    (A) thyroid gland (B) pancreas (C) adrenal gland (D) gonads

18. Oval window is found in:

(A) middle ear (B) internal ear (C) eye (D) external ear

19. Myelin sheath is secreted by cells:

(A) red blood (B) Schwann (C) dendrites (D) Winds blood

20. Which one is not included in the symptoms of diabetes mellitus?

(A) loss of weight (B) weakening of muscles
(C) tiredness (D) difficulty in breathing

21. Which hormone increases the rate of reabsorption of water form nephron?

(A) insulin (B) thyroxin (C) vasopressin (D) oxytocin

22. If somatotrophin is excessively produced after growing age, it causes:

(A) dwarfism (B) tetany (C) gigantism (D) acromegaly

23. Which hormones are secreted by ovaries?

(A) estrogen (B) glucagon (C) testosterone (D) insulin

24. Types of neurons on the basis of their functions are:

(A) 6 (B) 3 (C) 4 (D) 5

25. In which part of neuron cell nucleus is present?

(A) Axons (B) Schwann cells (C) Cell body (D) Dendrites

26. How many layers are of meninges?

(A) 6 (B) 5 (C) 4 (D) 3

27. Which is not a layer of eye?

(A) Pupil (B) Retina (C) Sclera (D) Choroid

28. The organs, tissues or cells of body that detect the stimuli are called:

(A) Coordinators (B) Receptors (C) Effectors (D) Stimuli

29. Ovaries secrete hormone:

(A) Glu (B) Insulin (C) Estrogen (D) Thyroxin

30. A thick Muscular structure beneath the Lungs is called:

(A) glycerol (B) ethanol (C) acrylic acid (D) Formic acid

31. This product is used in the production of soaps:

(A) Diaphragm (B) Pericardium (C) Epicardium (D) Peritoneum

32. The number of pairs of spinal nerves in humans is:

(A) 33 (B) 31 (C) 24 (D) 12

33. All of these are hormones except:

(A) Thyroxin (B) Glucagon (C) Pepsinogen (D) insulin

34. Any changes in environment:

(A) Effect (B) Coordination (C) Response (D) Stimulus

35. The outer region of spinal cord is made up of:

(A) white matter (B) gray matter (C) neuroglia (D) dendrites

36. Incus bone belongs to:

(A) Nose (B) Ear (C) Mouth (D) Eye

37. The projection of neuron that carries nerve impulse away from cell body is:

(A) Axon (B) Node of Ranvier (C) Myelin Sheathe (D) Dendrites

38. It is the union of several axons:

(A) Nerve (B) Schwann cells (C) Dendrites (D) Node of Ranvier

39. Processes that carry nerve impulses away from the cell body are called:

(A) Axons (B) Myelin sheath (C) Dendrites (D) Synapses

40. The portion of the nervous system that is involuntary in action:

(A) Motor, nervous system (B) Sensory nervous system
(C) Somatic nervous system (D) Autonomic nervous system

41. Which neurons are present inside the central nervous system?

(A) Sensory and motor neurons both (B) Motor neurons only
(C) Interneurons only (D) Sensory neurons only

42. The part of the brain responsible muscle movement, interpretation of the senses and the memory is the:

(A) Cerebellum (B) Cerebrum (C) Medulla oblongata (D) Pons

43. Apart from hearing, what other major body function is performed by the ear?

(A) Reduction in nerve pressure (B) All of these
(C) Body balance (D) Hormone secretion

44. This is NOT a part of the hindbrain:

(A) Cerebellum (B) Medulla oblongata (C) Cerebrum (D) Pons

45. If you look at an intact human brain, what you see the most is a large, highly convoluted outer surface. This is the:

(A) Cerebellum (B) Pons (C) Medulla oblongata (D) Cerebrum

46. All of these are hormones except:

(A) Pepsinogen (B) Glucagon (C) Thyroxin (D) Insulin

47. Central nervous system. include brain and:

(A) heart (B) noto cord (C) vertebra (D) Spinal cord

48. Which one controls rage, pain, pleasure and sorrow?

(A) midbrain (B) medulla (C) hypothalamus (D) cerebellum

49. No. of pairs of cranial nerves in human are:

(A) 16 (B) 14 (C) 10 (D) 12

50. The round hole in the centre of Iris is:

(A) Pupil (B) Cornea (C) Retina (D) Sclera

51. The middle layer of human eye/ eyeball is:

(A) Pupil (B) Choroid (C) Cornea (D) Sclera

52. Rhodopsin is present in a part of eye:

(A) Fovea (B) Ligament (C) Rods (D) Sclera

53. Central nervous system consists of:

(A) hormones (B) Spinal cord (C) brain (D) Both A & B

54. The outer most layer of human eye consists of:

(A) Sclera & Cornea (B) Cornea (C) Retina (D) Sclera

55. Internal layer of eye is:

(A) Ligament (B) Retina. (C) Choroid (D) Blind spot

56. In a human eye there are rods about ..... lac.

(A) 200 (B) 225 (C) 125 (D) 100

57. Children of human eye contains blood vessels in:

(A) Iris (B) Pupil (C) Retina (D) Choroid

58. The name of pigment found in cones is:

(A) lodopsin (B) Rhodopsin (C) Tarentum (D) iodine

59. Hypermetropia is also called:

(A) night blindness (B) long sight (C) short sight (D) myopia

60. Who described 130 diseases of eye?

(A) Ali bin Mussa (B) Jabbir bin Hyyan (C) Ali ibn Isa (D) Newton

61. The part of skullbone in which eyes are found is called:

(A) Eye lids (B) Sockets (C) Orbits (D) Orbits & Sockets

62. Which part of middle ear separates It from inner ear:

(A) oval window (B) malleus (C) incus (D) Stapes

63. In auditory canal's wall glands produce:

(A) Blood (B) Wax (C) Nerve impulse (D) Auditory Fluid

64. The Cochlea is-present in:

(A) Middle Ear (B) External Ear (C) Internal Ear (D) None of these

65. Which organs help to maintain the balance of body?

(A) nose (B) nose (C) legs (D) ears

66. The smallest bone of human body is:

(A) Stapes (B) Malleus (C) Vertebra (D) Incus

67. If a new born baby feeds on mother's milk as a result of which production of mothers milk will:

(A) stop (B) Increase (C) Continue with intervals (D) Decrease

68. When the human body has low amount of water then Pituitary gland secrets:

(A) TSH (B) Oxytocin (C) Vasopressin (D) Insulin

69. Increases rate of reabsorption of water from nephrons:

(A) Glucagon (B) parathormone (C) Oxytocin (D) Vasopressin

70. Hormone increasing level of calcium ions in blood is:

(A) parathormone (B) Calcitonin (C) Adrenaline (D) Oxytocin

71. Disease caused by deficiency of iodine in food is called:

(A) dwarfism (B) goiter (C) hyperthyroidism (D) diabetes mellitus

72. The name of gland present beneath the larynx in human neck is:

(A) gonads (B) adrenal (C) thyroid (D) pituitary

73. parathyroid glands secretes hormone, is called:

(A) Thyroxin (B) Epinephrine (C) Calcitonin (D) parathormone

74. Which hormone is secreted in case of emergency situation:

(A) Adrenaline (B) Oxytocin (C) Calcitonin (D) Thyroxin

75. Blood glucose levels remains in humans per liter:

(A) 10g (B) 1g (C) 0.5g (D) 0.1g

76. This hormones is necessary for the ejection of milk from breast:

(A) Calcitonin (B) Thyroxin (C) Oxytocin (D) Parathormone

77. Which is responsible for puberty and voice pitch lowering in male:

(A) Glucagon (B) Estrogen (C) Progesterone (D) Testosterone

78. Male gonads are known as:

(A) Testes (B) Egg cells (C) Ovaries (D) Spores

79. Which hormone causes contraction of uterus at the time of birth:

(A) Calcitonin (B) Oxytocin (C) Thyroxin (D) Vasopressin

80. Pinna (external ear) is made up of:

(A) Fibers (B) Bone (C) Cartilage (D) Muscles

81. Which type of gland produces thyroxin Hormone:

(A) Pancreases (B) Parathyroid (C) Adrenal (D) Thyroid

82. Is responsible for chemical coordination:

(A) Reproductive System (B) Nervous System
(C) Circulatory System (D) Endocrine System

83. Receives and analyzes visual information:

(A) Occipital Lobe (B) Parietal Lobe (C) Temporal Lobe (D) Frontal Lobe

84. Decreases the concentration of Glucose in Blood:

(A) Calcitonin (B) Insulin (C) Glucagon (D) Testosterone

85. Iodopsin is present in:

(A) Cornea (B) Choroid (C) Cones (D) Rods

86. The nature of myelin sheath is:

(A) rigid (B) conductor (C) elastic (D) insulator

87. The deficiency of this vitamin causes poor night vision:

(A) vitamin A (B) vitamin K (C) vitamin C (D) vitamin B

88. The unit of nervous system is:

(A) bowman's capsule (B) neuron (C) nephron (D) alveolus

89. Due to deficiency of which vitamin causes poor night vision:

(A) Vitamin D (B) Vitamin C (C) Vitamin A (D) Vitamin B

90. It is the part of inner ear:

(A) pinna (B) osier (C) eardrum (D) cochlea

91. The lobe which receive impulses from skin is:

Ⓐ occipital Ⓑ temporal **Ⓒ parietal** Ⓓ frontal

92. Paralysis is disease due to disorder in:

Ⓐ Endocrine system Ⓑ liver Ⓒ heart **Ⓓ nervous system**

93. There are major region of Human Brain:

Ⓐ 3 Ⓑ 2 Ⓒ 4 Ⓓ 5

94. Part of neuron which takes impulses towards cell body are called:

Ⓐ Ganglia **Ⓑ Dendrites** Ⓒ Myelin sheath Ⓓ Axons

95. The tympanum belongs to which part of ear?

Ⓐ Vestibule Ⓑ Internal ear **Ⓒ External ear** Ⓓ Middle ear

96. Number of pair of cranial nerves in human are:

Ⓐ 32 Ⓑ 16 Ⓒ 10 **Ⓓ 12**

97. Pons is present on the top of:

Ⓐ medulla Ⓑ cerebellum Ⓒ thalamus Ⓓ cerebrum

98. The neurons having one dendrite and one axon are called:

Ⓐ mixed **Ⓑ sensory** Ⓒ inter Ⓓ motor

99. In which part of Human eye cones and rods are not found:

Ⓐ Optic Nerve Ⓑ Lens **Ⓒ Blind spot** Ⓓ Fovea

100. The hormone that increases the blood glucose concentration:

Ⓐ Calcitonin Ⓑ Parathormone Ⓒ Insulin **Ⓓ Glucagon**

101. Myelin sheath is formed by:

Ⓐ Schwann cells Ⓑ Dendrites Ⓒ Axons Ⓓ Cell bodies

102. Which hormone falls blood glucose concentration?

Ⓐ Thyroxin **Ⓑ Insulin** Ⓒ Oxytocin Ⓓ Glucagon

103. In nervous coordination of human nervous system response is an action of ..... after receiving message.

Ⓐ Receptors Ⓑ Coordinators **Ⓒ Effectors** Ⓓ Stimuli

104. Cell bodies of many neurons form a group called:

Ⓐ Seed Ⓑ Frontal Ⓒ Nerve **Ⓓ Ganglion**

105. The number of lobes in cerebral cortex are:

Ⓐ Four Ⓑ Five Ⓒ Three Ⓓ Two

106. At the point where a spinal nerve arises from the spinal cord, there are ..... roots of spinal nerves.

Ⓐ 6 **Ⓑ 2** Ⓒ 4 Ⓓ 5

107. Schwann cells secrete a fatty layer, called:

Ⓐ Impulses Ⓑ Nucleus **Ⓒ Myelin Sheath** Ⓓ Dendrites

108. Thyroid gland produces …..... hormone.

Ⓐ Glucagon Ⓑ Estrogen Ⓒ Insulin **Ⓓ Thyroxin**

109. The cells which conduct nerve impulse are called:

(A) Neurons (B) Muscle fiber (C) Platelets (D) R.B.C

110. Which one is present on the top of medulla?

(A) cerebrum (B) pons (C) Cerebellum (D) midbrain

111. Which type of coordination is found in plants?

(A) chemical coordination (B) nervous coordination
(C) electrical coordination (D) mechanical coordination

112. The function of effector is called:

(A) Axon (B) Stimulus (C) Response (D) Impulse

113. Effectors include:

(A) Brain (B) Muscles and glands (C) Only muscles (D) Only glands

114. No. of components of coordination process is:

(A) 5 (B) 7 (C) 4 (D) 3

115. Which one is coordinator in nervous co-ordination?

(A) brain (B) brain and spinal cord (C) glands (D) spinal cord

116. Which one does not act as effector?

(A) bones (B) liver (C) brain (D) nephrons

117. Which neurons are present inside the central nervous system?

(A) motor neurons only (B) sensory and motor neurons both
(C) Interneurons only (D) Sensory neurons only

118. How many types of nerves are classified on the basis of property of axons?

(A) 2 (B) 5 (C) 4 (D) 3

119. In some parts of the body many neurons cell bodies combine to make a group:

(A) Ganglion (B) Muscles (C) Tissues (D) Nerves

120. It coordinates muscle movements:

(A) Cerebrum (B) Cerebellum (C) Thalamus (D) Hypothalamus

121. The largest part of brain is:

(A) thalamus (B) cerebral hemisphere (C) cerebrum (D) hypothalamus

122. Which is related to hearing and smelling:

(A) Frontal (B) Parietal (C) Occipital (D) Temporal

123. What is the function medulla oblongata of brain:

(A) Heart beat (B) thinking (C) Pain (D) intelligence

124. The largest part of Human Brain is:

(A) Medulla (B) Forebrain (C) Midbrain (D) Hind Brain

125. The parts of forebrain are:

(A) Thalamus hypothalamus and, cerebellum (B) Thalamus hypothalamus and cerebrum
(C) Medulla, cerebellum and pons (D) Thalamus medulla and pons

Chapter : 12 Coordination and Control

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Subjective

Q1: ***How does coordination occur in unicellular organisms?***

Ans: *Coordination also takes place in unicellular organisms. The response to stimuli is brought about through chemicals.*

Q2: ***What is meant by coordination?***

Ans: ***Coordination:***

The tissues and organs in the bodies of multicellular organisms do not work independently of each other. They work together performing their many tasks as the needs of the whole body. This means that these activities are coordinated and this phenomenon is called coordination.

Q3: ***Differentiate between nervous coordination and chemical coordination.***

Ans: *Difference between nervous coordination and chemical coordination.*

Nervous Coordination	Chemical coordination
Nervous coordination brought about by nervous system.	Chemical coordination brought about by endocrine system.

Explanation:

Animals have both nervous and chemical coordination system in their bodies. While plants and other organisms have only chemical coordination.

Q4: ***What is difference between Effector and Receptors?***

Ans: *Difference between Effector and Receptors is:*

Effector	Receptors
❖ These are the parts of body which receive messages from coordinators and produce particular response. ❖ For example harmones, nephrons etc.	❖ The organ, tissues or cells which are specifically build to detect particular type of stimuli called receptors. ❖ For example sound waves. Are detected by ears.

This diagram is just for understanding.

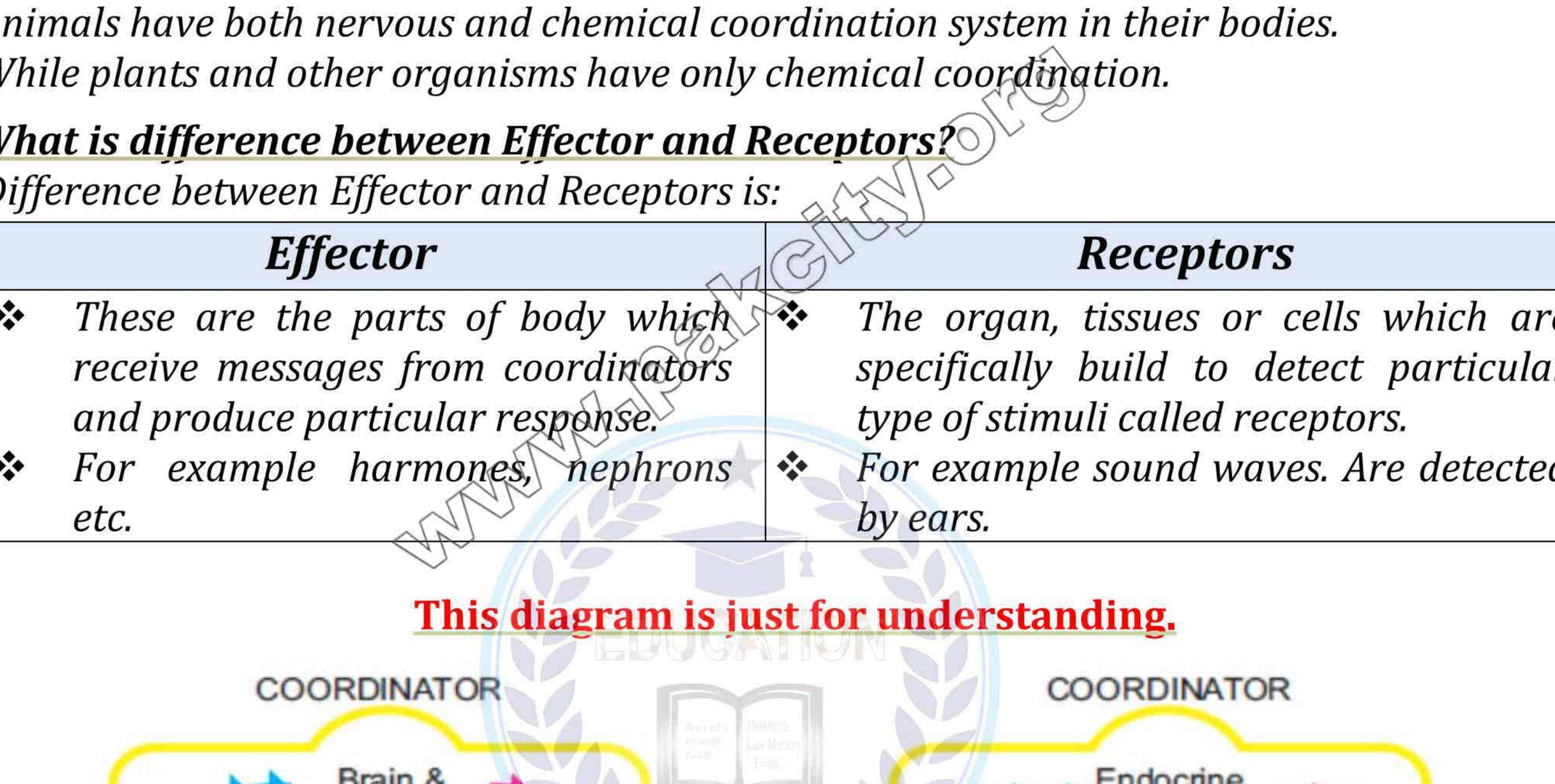

Figure : Nervous and chemical coordination

Q5: ***What is meant by Stimuli?***

Ans: ***Stimuli:***

Stimuli as any change in environment which can provide a response in an organism.

For example:

- *Cold.*
- *Heat*

Q6: ***What is meant by Response?***

Ans: *On receiving message from coordinators the effectors perform action. This is called response.*

Q7: ***Define coordinators. Give an example also.***

Ans: ***Coordinators:***

These are the organs that receive information from receptor and send messages to particular organ for proper action.

Example:

Brain and spinal cord are coordinators.

Q8: ***Write the names of parts of co-ordinated action.***

Ans: *A coordinated action has five components.*

- *Response*
- *Coordinator*
- *Stimulus*
- *Receptor*
- *Effector*

Q9: ***What is meant by Sensory Neurons?***

Ans: ***Sensory Neurons:***

Sensory neurons conduct sensory information from receptor towards the CNS. Sensory neuron has one dendrite and one axon.

Q10: ***What is the difference between Interneuron and motor neurons?***

Ans: *Difference between Interneuron and motor neurons is:*

Interneuron	Motor Neuron
They form brain and spinal cord. They receive information, interpret them and stimulate .motor neurons. They have many dendrites and axons.	*Motor neuron carries information from interneuron to muscle or glands. They have many dendrites and one axon.*

Q11: ***What is meant by saltatory impulse?***

Ans: ***Saltatory impulse:***

In a neuron, impulses jump over the areas of myelin going from node to node. Such impulses are called saltatory impulses.

This diagram is just for information.

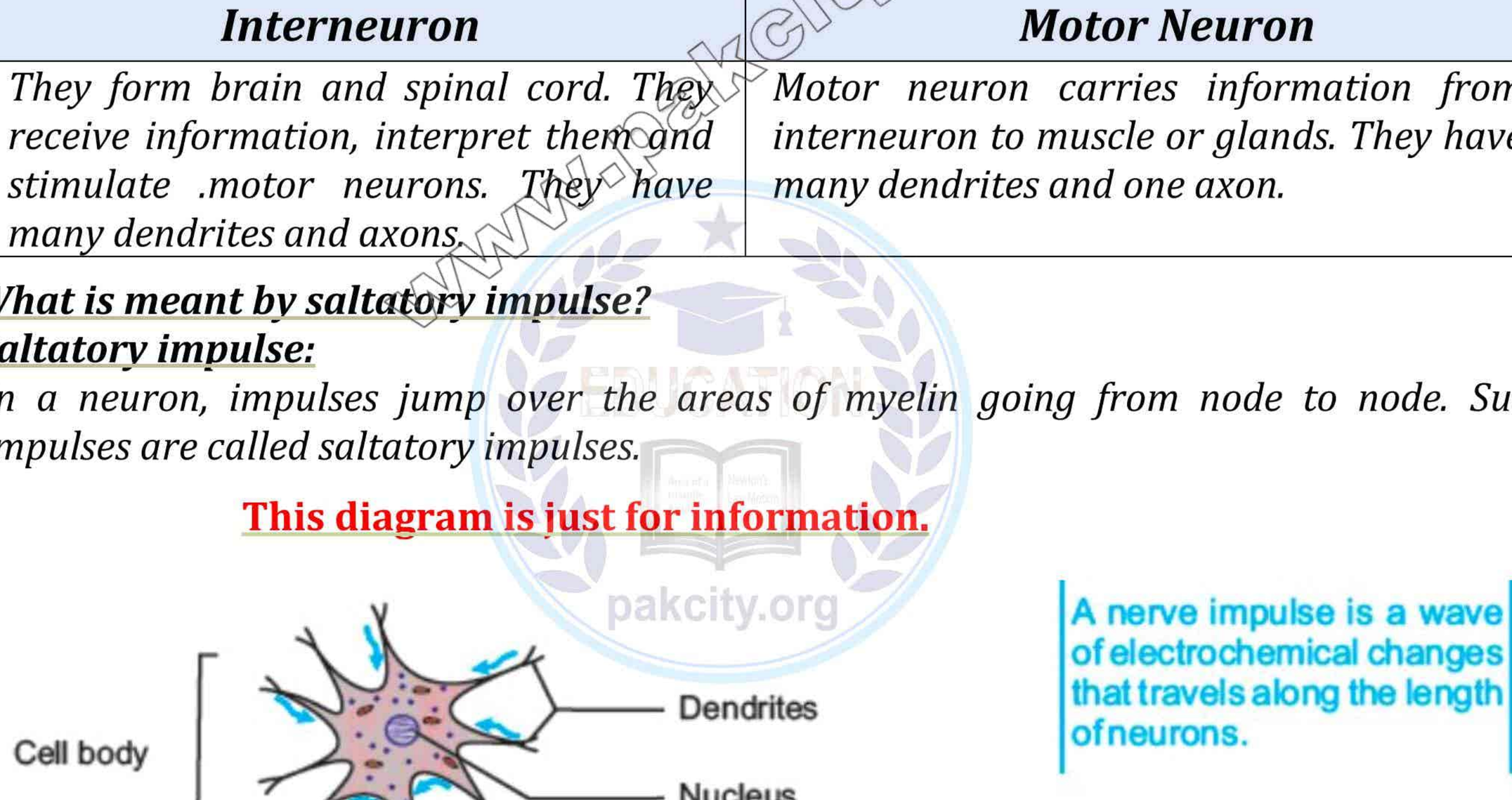

Figure : Neurons

Q12: ***Define Neuron. Write the types of neurons.***

Ans: Neuron is the unit of nervous system able to conduct nerve impulses.

Types of Neuron:

- *Motor Neuron*
- *Inter Neuron*
- *Sensory Neuron*

Q13: ***Differentiate sensory nerves from motor nerves.***

Ans: Difference between sensory nerves from motor nerves is:

Sensory Nerves	Motor Nerves
Sensory nerves Contain, the axons of sensory neurons only.	Motor nerves contain axons of motor neurons only.

Q14: ***Difference between motor nerves and mixed nerves.***

Ans: Difference between motor nerves and mixed nerves is:

Motor Nerves	Mixed nerves
Motor nerves contain the axons of motor neurons only.	Mixed nerves contain the axons of both i.e. Sensory and motor neurons.

Q15: ***What is nerve impulse?***

Ans: ***Nerve impulse:***

A nerve impulse is a wave of electrochemical changes that travels along the length of neurons.

Q16: ***Write the function of dendrites and axons.***

Ans: Dendrites carry nerve impulses toward the cell body and axons carry nerve impulses away from cell body.

Q17: ***State dendrites and their function.***

Ans: Dendrites are short, branched projections of neuron's cell body.

Function:

They transmit nerve impulses towards cell body.

Q18: ***What. is myelin sheath? And Write its function of Schwann cells?***

Ans: Schwann cells are special neuroglia cells located at regular intervals along axons. In some neurons, Schwann cells secrete a fatty layer called myelin sheath, over axons.

Function of Schwann cells:

Myelin sheath is an insulator so the membrane coated with this sheath does not conduct nerve impulse.

Q19: ***What are ganglions?***

Ans: ***Ganglions:***

In certain parts of body the cell bodies of many neurons form a group enveloped by a membrane. This is called ganglion.

Q20: ***What is nerve? Write names of its three types.***

Ans: ***Nerve:***

A nerve means the union of several axons that are enveloped by a covering made of lipid.

Type of Nerves:

- *Motor Nerves*
- *Sensory Nerve*
- *Mixed Nerves*

Q21: ***What is the function of medulla oblongata?***

Ans: It lies on the top of spinal cord. It controls breathing, heart rate and blood pressure. It also controls many reflexes such as vomiting, coughing, sneezing etc.

Q22: ***Write down the place and role of mid brain.***

Ans: Midbrain lies between hind brain and forebrain and connect the two brains.

Role of mid brain:

It receives sensory information and sends it to appropriate part of forebrain. Midbrain also controls auditory reflexes and posture.

This diagram is just for information.

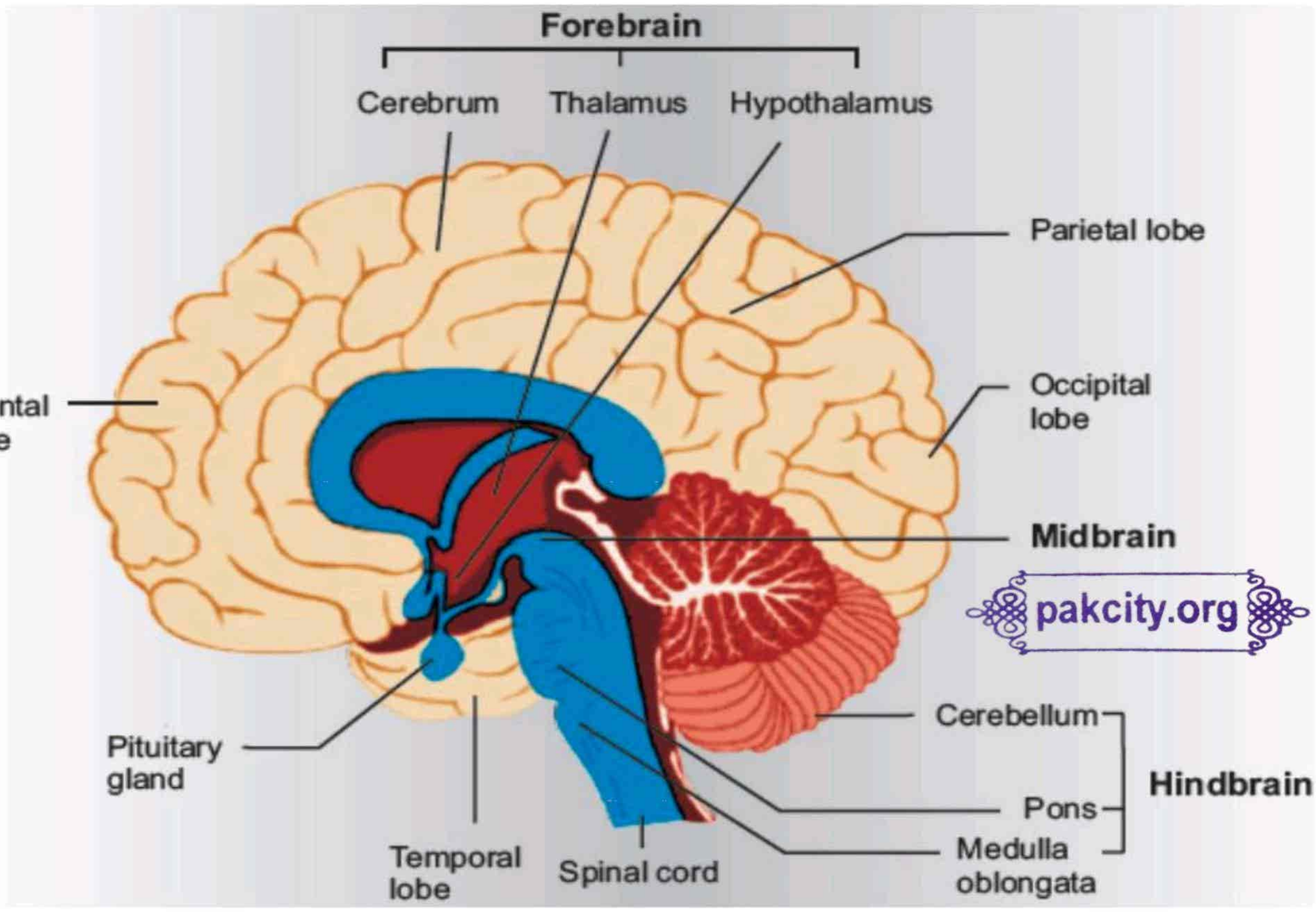

Figure Structure of human brain

Q23: ***Write a note on cerebellum.***

Ans: *Cerebellum:*

- *It is present behind medulla.*
- *It coordinates muscles movements.*

Q24: ***Write a note on pons.***

Ans: *Pons:*

- *Pons is present on top of medulla.*
- *It assists medulla in controlling breathing.*
- *It also serves as connection between cerebellum and spinal cord.*

Q25: ***What is hypothalamus? Write down its function.***

Ans: ***Hypothalamus:***

Hypothalamus lies above, midbrain and just below thalamus. In human, it is roughly the size of an almond. One of the most important functions of hypothalamus is to link nervous system and endocrine system. It controls the secretion of pituitary gland.

Function of hypothalamus:

It controls feelings such as rage, pain, pleasure and Sorrow.

Q26: ***What is hippocampus?***

Ans: ***Hippocampus:***

It is a structure that is deep in the cerebrum. Its functions for the formation of new memories.

Q27: ***Explain Brain stem.***

Ans: *The medulla oblongata, pons, and midbrain connect the rest of brain to spinal cord. They are collectively referred to as brain stem.*

Q28: ***Write the function of thalamus.***

Ans: *It receives and modifies sensory impulses. It is involved in pain perception and consciousness.*

Q29: ***Write two main function of spinal card.***

Ans: *It performs two main functions:*

- *It serves as a link between transmission nerve impulses from body parts to brain and from brain to all body parts.*
- *Spinal cord also acts as a coordinator responsible for some simple reflexes.*

This diagram is just for understanding.

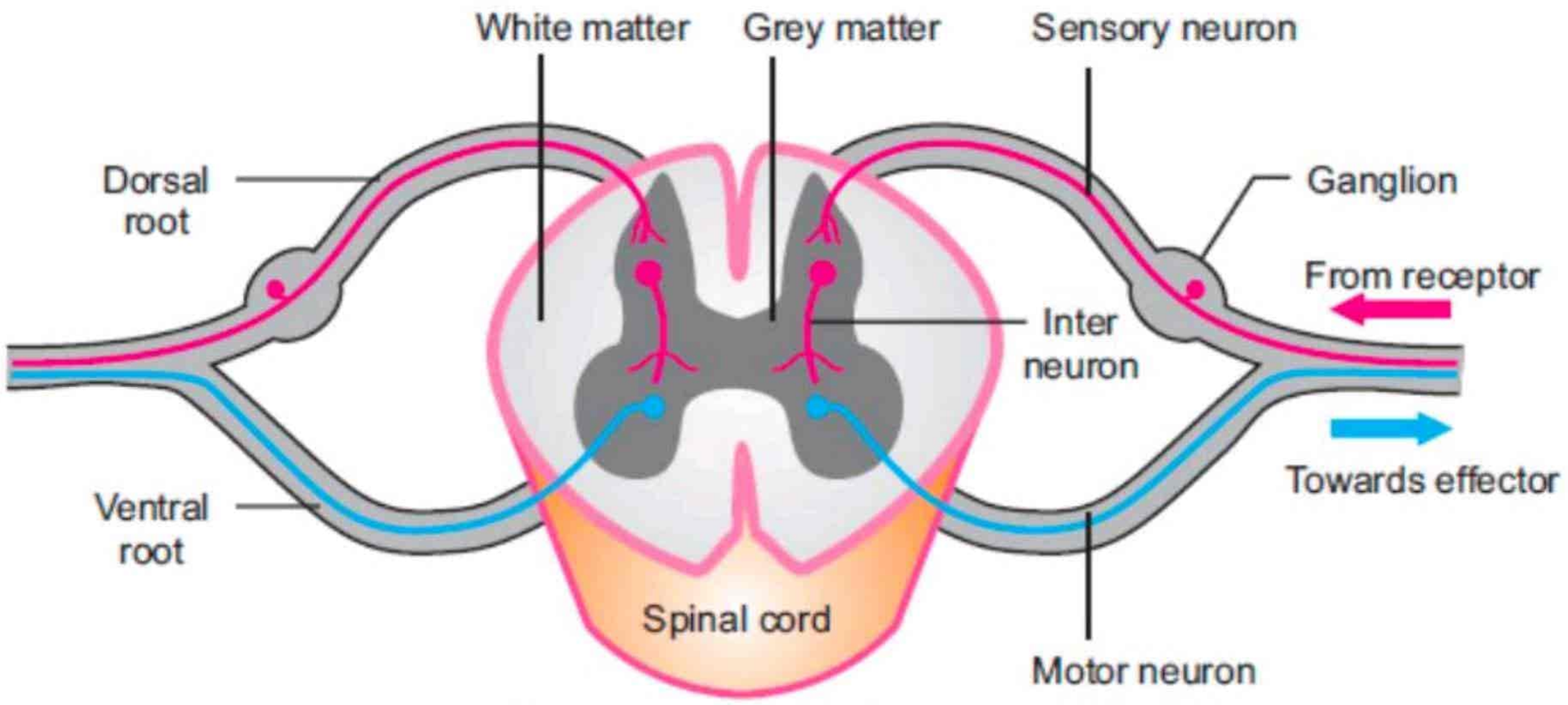

Figure Spinal Cord and Spinal Nerves

Q30: ***What is the difference between gray and while matter?***

Ans: Difference between gray and while matter is:

Gray matter	***While matter***
The gray matter of nervous, system consists of cell bodies and non-myelinated axons.	*White matter of nervous system consists of myelinated axons.*

Q31: ***Differentiate between frontal and temporal lobe.***

Ans: Difference between Frontal and temporal lobe is:

Frontal	***Temporal***
It controls motor, functions, permits conscious control of skeletal muscles and coordinates movement involved in speech.	*It is concerned with hearing and smell.*

Q32: ***Differentiate between Autonomic nervous system and CNS.***

Ans: Difference between Autonomic nervous system and CNS is:

Autonomic nervous system	***CNS***
Autonomic nervous system is responsible for the activities which are not under conscious control. It consists of motor neuron that sends impulses to cardiac muscles, smooth muscles and glands.	*CNS is responsible, for the conscious and voluntary actions. It includes all of motor neurons that conduct impulses form CNS to skeletal muscles.*

This diagram is just for understanding.

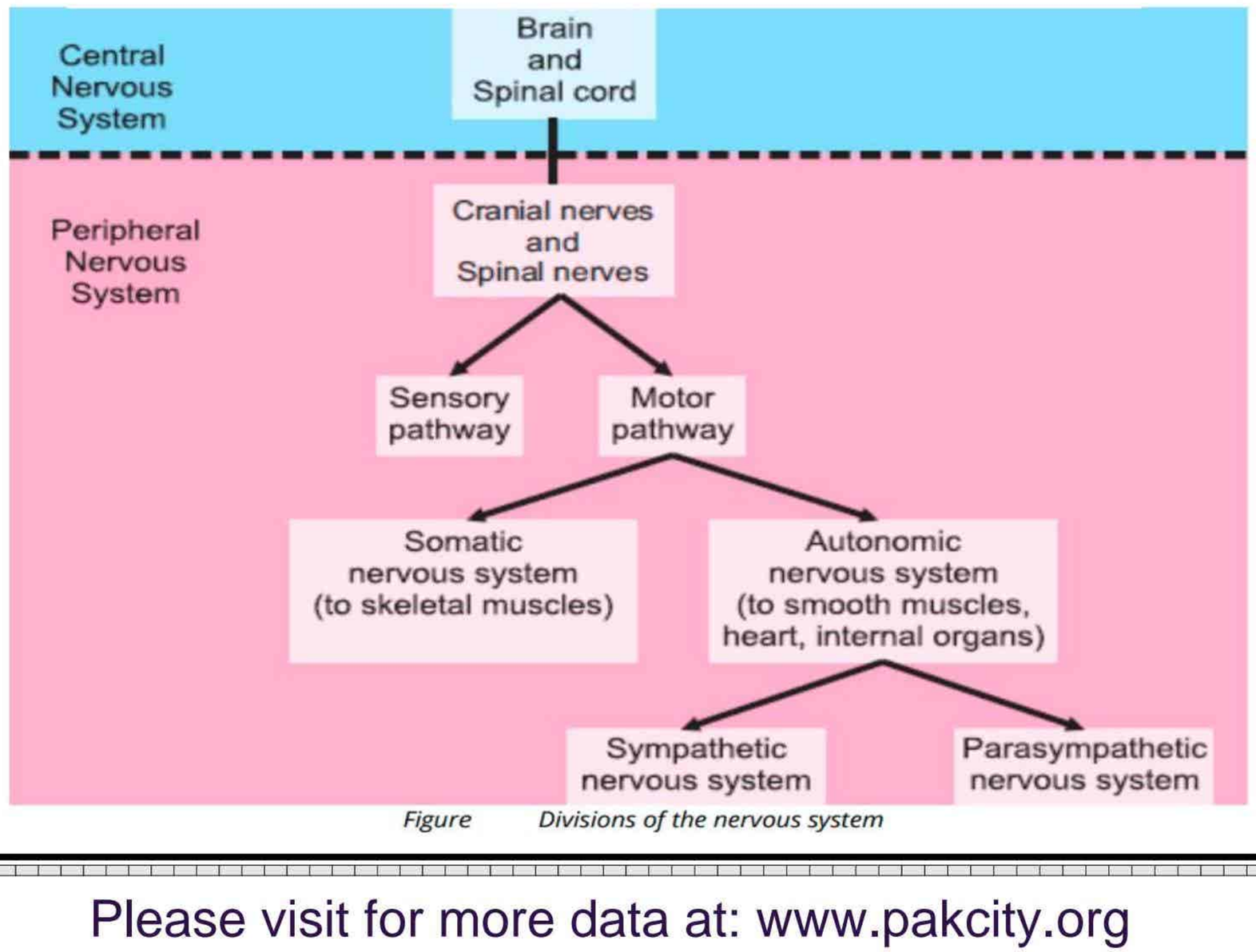

Figure Divisions of the nervous system

Q33: ***Difference between cranial and spinal nerves.***

Ans: *Difference between cranial and spinal nerves is:*

Cranial nerves	Spinal nerves
❖ Nerves arise from brain called cranial nerves. ❖ Human have 12 pairs of cranial nerves.	❖ Nerves arise from spinal cord called spinal nerves. ❖ Human have 31 pairs of spinal nerves.

Q34: ***Differentiate between central and peripheral nervous system.***

Ans: *Difference between central and peripheral nervous system is:*

Central nervous system	Peripheral nervous system
The central nervous system consists of brain and spinal cord.	Peripheral nervous system is composed of nerves and ganglia.

Q35: ***Define reflex action.***

Ans: ***Reflex action:***

The involuntary response produce by, CNS are sometimes very quick. These responses are called reflex action.

Example:

The most common example of reflex action is the withdrawal of hand after touching hot object.

Q36: ***Define Reflex arc.***

Ans: ***Reflex arc:***

The pathway followed by nerve impulse for producing a reflex action is called reflex arc.

Q37: ***Differentiate between voluntary and involuntary actions.***

Ans: *Difference between voluntary and involuntary actions is:*

Voluntary action	Involuntary action
❖ An action which is under conscious control. ❖ For example writing, dancing, walking etc.	❖ An action which is not under conscious control. ❖ For example Heart beating, Digestion respiration etc.

Q38: ***Define blind spot.***

Ans: ***Blind spot:***

Optic disc is the point on retina where the optic nerves enters retina. There are no rods and cones at this point. That is why it is also referred to as the blind spot.

This diagram is just for understanding.

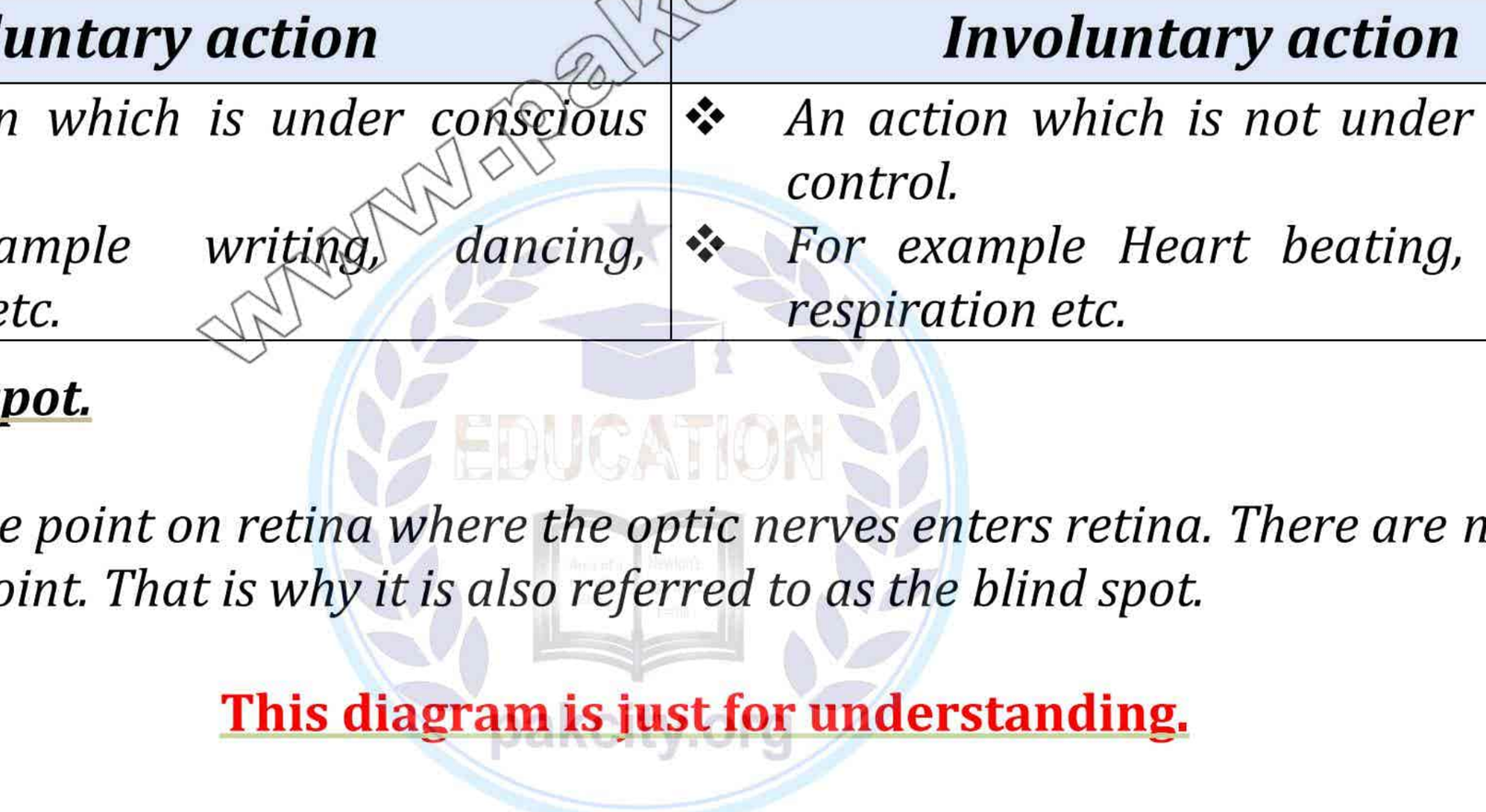

Figure *Structure of human eye*

Q39: ***What is meant by night blindness?***

Ans: ***Night blindness:***

Rods contain a pigment called rhodopsin, when light falls on rhodopsin, it breaks for generating a nerve impulse. In the absence of light, the breakdown products are again converted into rhodopsin. Body Synthesize rhodopsin from vitamin A and that is why the deficiency of vitamin A causes poor night vision. This problem is called night blindness.

Q40: ***What are the function of retina and optic nervous?***

Ans: *Lens focuses light on retina. As a result the image falls on retina. Rods and cones generate nerve impulses in the optic nerve. These impulses are carried to the brain, which makes the sensation of vision.*

Q41: ***Where pons are present in the brain and what is their function?***

Ans: *Pons in present on the top of medulla. It assists medulla in controlling breathing. It also serves as a connection between cerebellum and spinal cord.*

Q42: ***Describe the function of rods and cones present in the retina of eye.***

Ans: *Rods are sensitive to dim light while cones are sensitive to bright light and so distinguish different colours.*

Q43: ***Write pupil reflex in dim and bright light.***

Ans: *Pupil constricts in bright light when the circular muscles of iris contract. Similarly, pupil dilates in dim light when the radial muscles of iris contract.*

Q44: ***Differentiate between aqueous and vitreous humour.***

Ans: *Difference between aqueous and vitreous humour is:*

Aqueous Humor	Vitreous Humour
The fluid present in the anterior chamber of the eye i.e. between the cornea and the iris, called aqueous humour.	*Vitreous humor is the fluid present in the posterior chamber of eye i.e. between the iris and retina.*

Q45: ***Why the eyes of dog and cat shine in the night?***

Ans: *The eyes of dog and cat shine in the night. The reason for this is the presence of tapetum behind the eye which is a layer capable of reflecting light.*

Q46: ***Write the structure of internal ear.***

Ans: *Inner ear consists of three parts i.e. vestibule, semicircular canals and cochlea. Vestibule is present in the centre of ear. Three canals called semicircular canals are posterior to vestibule. The cochlea is made of three, ducts and wraps itself into a coiled tube. Sound receptor cells are present within the middle duct of cochlea.*

This diagram is just for understanding.

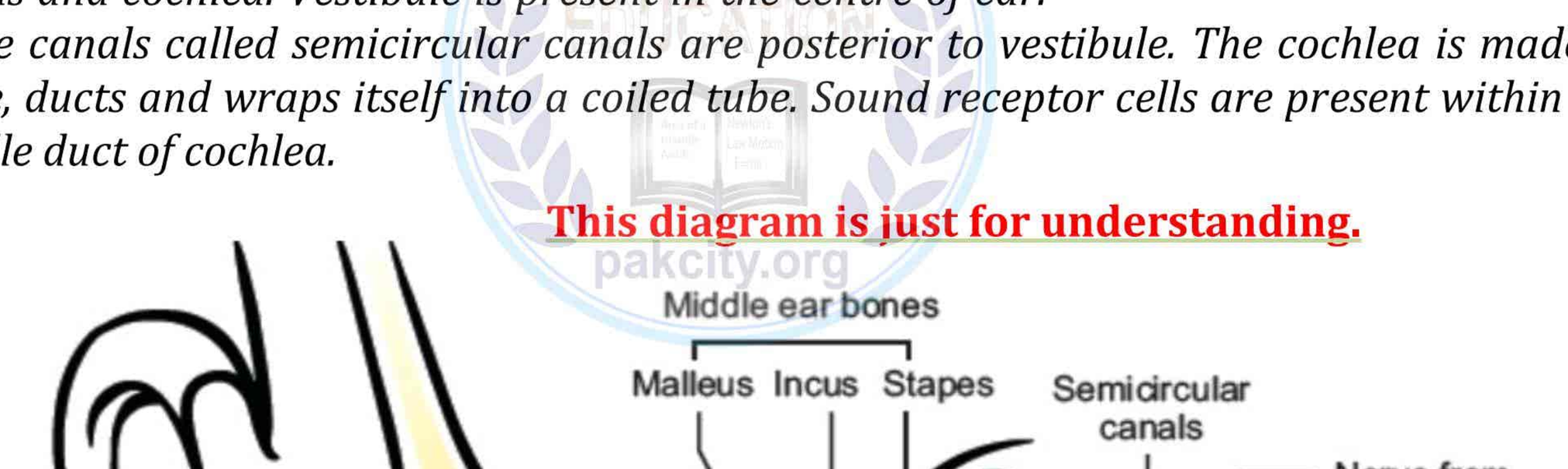

Figure : Structure of human ear

Q47: ***Describe the two parts of middle Ear.***

Ans: ***Oval window:***

Malleus is attached with ear drum, than come incus and finally stapes that is connected with membrane called oval window. It separates middle ear from inner ear.

Eustachian tube:

This tube regulates air pressure on both sides of ear drum.

Q48: ***How deafness emerges?***

Ans: The defect of ear drum cochlea, middle ear icicles, or auditory nerve may cause deafness.

Q49: ***How ears maintain body balance?***

Ans: Semicircular canals and vestibule help to maintain the balance of body.

Semicircular canals contain sensory nerves which can detect any movement of head. Vestibule can detect any changes in the posture of body.

Q50: ***Why Ali lbn-e-Isa is famous for?***

Ans: Ali lbn-e-lsa was a famous Arab Scientist, he wrote three books on ophthalmology (study of diseases and surgery of eyes). He described 130 eye diseases and prescribed 143 drugs to treat these diseases.

Q51: ***What is hormone?***

Ans: ***Hormone?***

A hormone is a specific messenger molecule synthesized and secreted by an endocrine gland. These glands are ductless and release their secretions directly into bloodstream. Blood carries the hormones to target organs or tissues upon which they act.

Q52: ***What is endocrine system and write four names of glands.***

Ans: The activities such as growth, reproduction, maintenance of glucose concentration in blood, reabsorption of water in kidney etc. needs to be regulated. Endocrine system perform this job. This system use chemicals to communicate with its effectors. These chemical are known as hormones.

Endocrine glands:

- *Thyroid gland*
- *Pituitary gland*
- *Adrenal glands*
- *Pancreas*
- *Gonads*
- *Parathyroid gland*

This diagram is just for understanding.

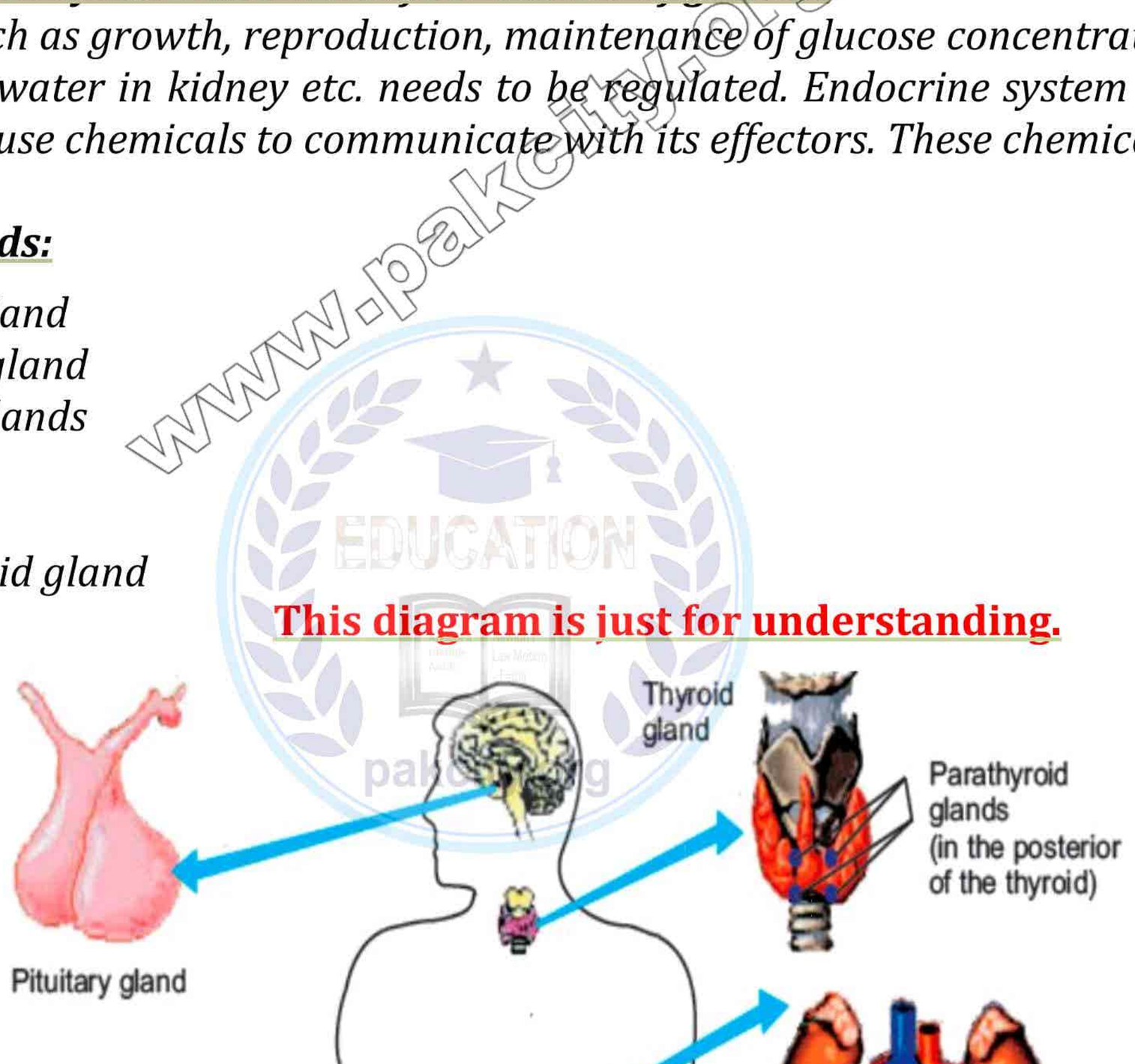

Figure : Endocrine glands in human body

Q53: ***What is difference between endocrine and exocrine glands?***

Ans: Difference between endocrine and exocrine glands is:

Endocrine glands	Exocrine glands
The glands which are ductless and secrete hormones directly into blood stream are called endocrine glands.	*The glands which have ducts for releasing their secretions are called exocrine glands.*

*Q54: **What is the cause of Dwarfism?***

Ans: If the production of smatotrophin hormone is diminished during growing age, the rate of growth decreases, which causes dwarfism.

*Q55: **Write two functions of oxytocin hormone?***

Ans: Functions of oxytocin hormone are:

- *It is necessary for the ejection of milk from breast.*
- *It stimulates the contraction of uterus walls in mothers for child birth.*

*Q56: **Write the names of two hormones produced by ovaries.***

Ans: The names of two hormones produced by ovaries are:

- *Estrogen*
- *Progesterone*

*Q57: **What is the function of parathormone?***

Ans: Parathyroid gland secretes hormone parathormone which increases the level of calcium ions in blood.

*Q58: **How level of calcium ions is regulated in our blood?***

Ans: Calcitonin and Parathormone complement each other and regulate the level of calcium ions in the blood.

*Q59: **Differentiate between Hypothyroidism and Hyperthyroidism.***

Ans: Difference between Hypothyroidism and Hyperthyroidism is:

Hypothyroidism	Hyperthyroidism
Hypothyroidism is caused by the under production of thyroxin. It is characterized by low energy production in body and slowing down of heartbeat.	*Hyperthyroidism is caused by the over production of Thyroxin. Its symptoms are increase in energy production, increased heartbeat, frequent sweating and shivering of hands.*

*Q60: **What is meant by goiter?***

Ans: ***Goiter:***

Iodine is required for the production of thyroxin hormone. If a person lacks iodine in diet, thyroid gland cannot make its hormone. In this condition, thyroid gland enlarges. This disorder is called goiter.

*Q61: **Differentiate between the functions of hormones 'Glucagon' and 'Insulin'***

Ans: Difference between the functions of hormones 'Glucagon' and 'Insulin' is:

Glucagon	Insulin
Glucagon influences the liver to release glucose in blood and so the blood glucose concentration rises	*While insulin influences the liver to take excess glucose from blood and so the blood glucose concentration falls.*

*Q62: **Write the names and effects of hormones secreted by testes and ovaries.***

Ans: Single cell protein is gaining popularity day by day, because it requires limited land area for production.

*Q63: **What is novel protein or manifold?***

Ans: Testes secrete hormones. e.g. testosterone which is responsible for development of male secondary sex characters such as growth of hair on face.

Ovaries secrete estrogen and progesterone which are responsible for the development of female secondary characters such as the development of breast etc.

Q64: ***What is feedback mechanism?***

Ans: It means the regulation of a process by the output of the same process.

Q65: ***Differentiate between negative feedback and positive feedback.***

Ans: Difference between negative feedback and positive feedback is:

Negative feedback	Positive feedback
❖ In negative feedback the output of a process decreases or inhibits the process. This mechanism works to return a Condition towards its normal value. ❖ For example when the blood glucose concentration raises, pancreas Secretes insulin. ❖ It decreases the blood glucose concentration. ❖ Decline in the blood glucose concentration to a normal set point inhibits the secretion of insulin.	❖ In positive feedback the changes resulting from a process increases the rate of process. ❖ For example suckling action of an infant stimulates the production of a hormone in mother. ❖ This hormone works for the production of milk. More suckling leads to more hormone, which in turn leads to more milk production

Q66: ***What is paralysis?***

Ans: It is the complete loss of function by one or more muscle groups.

Q67: ***What are the causes and symptoms of Paralysis?***

Ans: ***Causes:***

Paralysis is most often caused by the damage to the central nervous system (brain and spinal cord). The damaged may be due to smoke, blood clotting in vessels or poison produced by polio.

Symptoms:

- *These may also be paralysis in the lower extremities in all forelimbs.*
- *Patient may have weak paralysis her body or have paralysis one side of body.*

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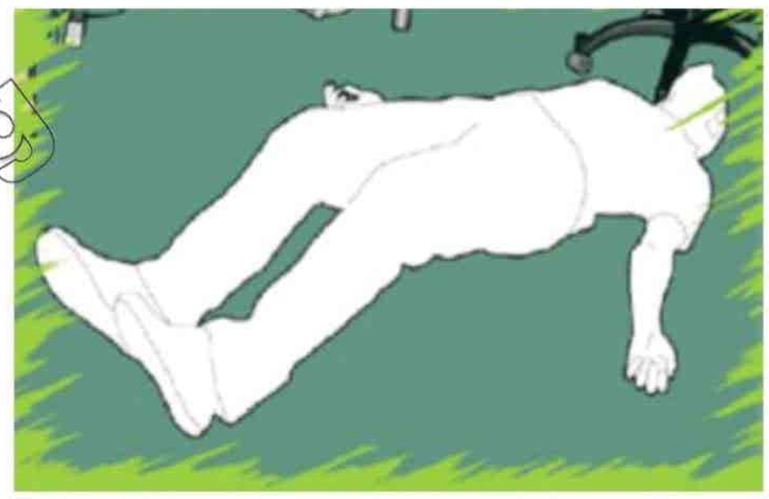

During a seizure attack, objects should never be placed in a patient's mouth as it can result in serious injury. It is possible that the patient will bite his/her own tongue.

Q68: ***What is epilepsy?***

Ans: Epilepsy is a nervous disorder in which there is an abnormal and excessive discharge of nerve impulses in brain.

Q69: ***Describe the two causes of Epilepsy.***

Ans: In younger people, epilepsy may be due to genetic or developmental causes. In people over age 40 years, brain tumors are more likely to cause epilepsy. Head trauma and Central nervous system infections may cause epilepsy at any age.

Q70: ***How epilepsy can be treated?***

Ans: Patients of epilepsy have to take medicines daily for the treatment as well as prevention of seizures. These are termed anticonvulsant or antiepileptic drugs.

Q71: ***What is meant by nodes of Ranvier?***

Ans: Between the areas of myelin on an axon, there are non-myelinated points, called the nodes of Ranvier.

Q72: ***What is Cerebrospinal fluid?***

Ans: ***Cerebrospinal fluid:***

Fluid within ventricles and central canal is called cerebrospinal fluid (CSF).

Q73: ***Write down a note on fore brain.***

Ans: Forebrain is the largest area of brain. It is most highly developed in humans. Following are the important parts of this region.

- *Thalamus*

- *Hypothalamus*
- *Cerebrum*

Q74: ***What is the length of spinal Cord? Write its function.***

Ans: *Spinal cord is roughly 40cm long.*

Spinal cords perform two main functions:

- *It serves as a link between body and brain.*
- *Spinal cord acts as a coordinator, responsible for some simple reflexes.*

Q75: ***What is the role of effectors in the nervous coordination?***

Ans: *In nervous coordination neurons carry messages from coordinators to muscles and glands which act as effectors.*

Q76: ***What is meant by meninges of the brain?***

Ans: *Brain is situated inside a bony cranium (a part of skull). Inside cranium brain is covered by three layers called meninges.*

Functions of meninges:

Meninges protect brain.

It provides Oxygen and nutrient to brain tissue through blood capillaries.

Q77: ***Differentiate between myopia and hypermetropia.***

Ans: *Difference between myopia and hypermetropia is:*

Myopia	Hypermetropia
❖ *The elongation of eyeball results in myopia.* ❖ *Such persons are not able to see distant objects clearly.* ❖ *The image of a distant object is formed in front of retina.* ❖ *This problem can be rectified by using concave lens.*	❖ *It happens when eyeball shortens.* ❖ *Such persons are not able to see near objects clearly.* ❖ *The image is formed behind retina.* ❖ *Convex lens is used to rectify this problem.*

Q78: ***How does coordination in unicellular take place?***

Ans: *Coordination also takes place in unicellular organisms. The response to stimuli is brought about through chemicals.*

Q79: ***How urine output is low during summer?***

Ans: *Due to increased sweating, the water level of blood is lowered. As a result, pituitary gland releases more ADH into blood.*

Chapter : 12	Coordination and Control

Long Questions

Q.1: Discuss various components of coordinated action.
Q.2: Define neuron and explain its structure? V.imp
Q.3: Explain various types of Nerves.
Q.4: Write the lobes of cerebral cortex and their functions. V.imp
Q.5: Write a note on Forebrain. V.imp
Q.6: Write note on midbrain and hindbrain.
Q.7: Write a note on Spinal Cord. V.imp
Q.8: Describe peripheral nervous system and its type with their functions.
Q.9: What is reflex action? Explain. V.imp
Q.10: Give two disorders of human eye with reasons and remedy.
Q.11: Describe the contributions of Ibn al-Haytham in Optics.
Q.12: Describe the structure of the Middle Ear.
Q.13: Write functions of hormones secreted by adrenal glands and pancreas.
Q.14: Write a note on Pituitary Gland. OR Describe Thyroid gland. V.imp
Q.15: What is meant by feedback mechanism? Explain its types.
Q.16: Write down about Paralysis and Epilepsy.

Chapter: 13

Support and Movement

Objective

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1. What do some bones produce?

(A) Blood cells (B) Oxygen (C) Mucous (D) Hormones

2. Number of bones in upper jaw is:

(A) Fourteen (B) Two (C) Three (D) Ten

3. The cartilage found in intervertebral discs is:

(A) Elastic (B) Matrix (C) Fibrous (D) Hyaline

4. Which one of the following have exoskeleton:

(A) Reptiles (B) Mammals (C) birds (D) Arthropods

5. Gout is due to accumulation of:

(A) Lactic acid (B) Formic acid (C) Uric Acid (D) Nitric

6. Outer hard layer of bone is called:

(A) Osteocyte (B) Compact Bone (C) Cartilage (D) Spongy Bone

7. Which bone is part of Appendicular Skelton?

(A) Pectoral shoulder girdle (B) sternum
(C) vertebral column (D) Skull

8. The cells of cartilage are called:

(A) Collagen (B) Chondrocytes (C) Osteoblast (D) Osteocytes

9. The biggest bone of our body is found in:

(A) hand (B) waist (C) leg (D) thigh

10. Babies are born with soft bones:

(A) 256 (B) 206 (C) 200 (D) 300

11. Number of bones in both hand is:

(A) 90 (B) 126 (C) 54 (D) 33

12. Which bones enclose the brain?

(A) Ribs (B) Cranial bones (C) Pectoral girdle (D) Pelvic girdle

13. The purpose of rib cage is to:

(A) Protect the heart and lungs (B) Provide an object to which the lungs can attach
(C) Protect the spinal cord (D) Protect the stomach

14. Number of cranial bones in human skeleton is:

(A) 16 (B) 8 (C) 33 (D) 22

15. The interior of bone is soft and porous which is called:

(A) cartilage (B) bone morrow (C) spongy bone (D) Compact bone

16. An adult person skeleton has hard bones:

(A) 106 (B) 306 (C) 406 (D) 206

17. Generally gout attacks the joints?

(A) Hinge joints (B) Ankle joints (C) Toe joints (D) Hip joints

18. ..... animals have exoskeleton.

Ⓐ reptiles **Ⓑ arthropods** Ⓒ birds Ⓓ mammals

19. Elastic cartilage is found in:

Ⓐ In Epiglottis Ⓑ In Bronchial tubes Ⓒ in Trachea Ⓓ In Larynx

20. The bones in pelvic or hip girdle are:

Ⓐ 6 **Ⓑ 2** Ⓒ 4 Ⓓ 5

21. The cartilage found in intervertebral discs is:

Ⓐ Elastic Ⓑ Matrix **Ⓒ Fibrous** Ⓓ Hyaline

22. Number of bones in both feet is:

Ⓐ 22 Ⓑ 108 Ⓒ 126 **Ⓓ 54**

23. Cartilage and bone are types of ..... tissues of animals.

Ⓐ Cardiac Ⓑ Smooth **Ⓒ Connective** Ⓓ Muscle

24. Which cartilage is found in epiglottis and pinna:

Ⓐ Fibrous **Ⓑ Elastic** Ⓒ Collagen Ⓓ Hyaline

25. Number of facial bones is:

Ⓐ 14 Ⓑ 26 Ⓒ 24 Ⓓ 22

26. In Mammals the no. of bones in lower Jaw are:

Ⓐ Only Two **Ⓑ Only One** Ⓒ 3 Ⓓ 4

27. Number of bones in Appendicular skeleton is:

Ⓐ 108 Ⓑ 56 **Ⓒ 126** Ⓓ 120

28. Vertebral column protects:

Ⓐ Brain Ⓑ Lungs Ⓒ Heart **Ⓓ Spinal cord**

29. Osteoporosis is a disease of:

Ⓐ heart Ⓑ brain **Ⓒ bones** Ⓓ stomach

30. The part of bone in which blood vessels are found:

Ⓐ Bone marrow **Ⓑ Spongy bone** Ⓒ Compact bone Ⓓ None of these

31. An example of immoveable joints:

Ⓐ Joint of skull Ⓑ Shoulder Ⓒ Elbow joint Ⓓ Hip joint

32. Which one of the following attaches muscles to bones?

Ⓐ Ligaments **Ⓑ Tendons** Ⓒ Hormones Ⓓ Nerves

33. Which of the following is the hardest connective tissue?

Ⓐ Tendon Ⓑ Ligament **Ⓒ Bone** Ⓓ Cartilage

34. Tendons and ligaments are bands of:

Ⓐ muscular tissue Ⓑ nerve tissue Ⓒ epidermal tissue **Ⓓ connective tissue**

35. Mature bone cells are called:

Ⓐ fibrous cartilage Ⓑ cartilage **Ⓒ Osteocytes** Ⓓ compact bone

36. Tendons and ligaments are bands of:

Ⓐ Epidermal tissue **Ⓑ Connective tissue** Ⓒ Nervous tissue Ⓓ Muscular tissue

37. The names of disease which is caused due to the deficiency of a hormone is:

(A) Osteoporosis (B) Osteoarthritis (C) AIDS (D) Gout

38. Nose and larynx are made up of:

(A) Fibrous cartilage (B) Hyaline cartilage (C) Bone (D) Elastic cartilage

39. Human arm have bones:

(A) 22 (B) 3 (C) 6 (D) 14

40. The movement of. an animal as a whole from one place to another is called:

(A) Vibration (B) tropism (C) None (D) Locomotion

41. The joints between skull bones are called:

(A) Slightly moveable (B) Hinge joints (C) Immoveable (D) Moveable

42. End of muscles attached with moveable bone is called:

(A) Extensor (B) Insertion (C) Flexor (D) Origin

43. Hyoid bone is found in:

(A) Ear (B) Chest (C) Neck (D) Skull

44. The disorders in which there is an accumulation of uric acid in joints:

(A) Osteoporosis (B) Gout (C) Osteo-arthritis (D) Rheumatoid arthritis

45. All of these are the parts of axial skeleton of human except:

(A) Ribs (B) Vertebral column (C) Shoulder girdle (D) Sternum

46. The end of skeletal muscle attached with immoveable bone is:

(A) Belly (B) Static end (C) Insertion (D) Origin

47. The matrix of cartilage also contains fibers:

(A) Lacuna (B) Glucagon (C) Insulin (D) Collagen

48. Bone Marrow is found in:

(A) Osteocytes (B) Spongy bone (C) Chondrocytes (D) Compact bone

49. Cartilage is a type of tissue:

(A) connective (B) smooth (C) cardiac (D) muscle

50. How many bones are organized into a longitudinal axis of human skeleton?

(A) 306 (B) 302 (C) 202 (D) 206

51. How many layers bone has?

(A) 2 (B) 3 (C) 4 (D) 1

52. The number of pair of ribs in human are:

(A) 11 (B) 12 (C) 9 (D) 12

53. Hip joint is an example of .....joint.

(A) Slightly moveable (B) hinge (C) immoveable (D) moveable

54. Sternum is a bone:

(A) Chest Bone (B) Cranium (C) Hand (D) Leg

55. Each chondrocyte lies in a fluid spate called ..... present in the matrix of cartilage.

(A) lacuna (B) muscle (C) joint (D) Collagen

56. Which is not the part of appendicular skeleton?

(A) Pelvic girdle (B) Arm (C) Pectoral girdle **(D) Skull**

57. It is found as covering the ends of long bones:

(A) Inelastic cartilage **(B) hyaline cartilage** (C) fibrous cartilage (D) elastic cartilage

58. How many bones make our vertebral column:

(A) 24 (B) 20 (C) 22 **(D) 26**

59. Find the ball-and-socket joint:

(A) Joint at pelvic girdle and leg bones (B) Joint at elbow
(C) Joint in the finger bones (D) Joint of neck and skull bones

60. What are the main components of a bone?

(A) Compact bone and marrow (B) Marrow, spongy bone; wax
(C) Compact bone, spongy bone, marrow (D) Marrow, compact bone, wax

61. Ball-and-socket joints allow movement in:

(A) Two direction **(B) All directions** (C) One direction (D) No direction

62. Which point of attachment on bone is pulled when a muscle contracts?

(A) insertion (B) origin (C) extension (D) flexion

63. They prevent dislocation of bones at joints:

(A) Ligaments (B) Cartilage (C) Collagen (D) Tendons

Chapter : 13 — Support and Movement

Subjective

Q1: ***Define locomotion and movement.***

Ans: ***Locomotion:***

Locomotion is the movement of an animal as a whole from one place to another.

Movement:

Movement is a general term meaning the act of changing place or position by entire body or by its parts.

Q2: ***What is meant by Exoskeleton?***

Ans: ***Exoskeleton:***

Skeleton present outside of body is called exoskeleton.

Q3: ***What is meant by Endoskeleton?***

Ans: ***Endoskeleton:***

Skeleton present inside of body is called endoskeleton.

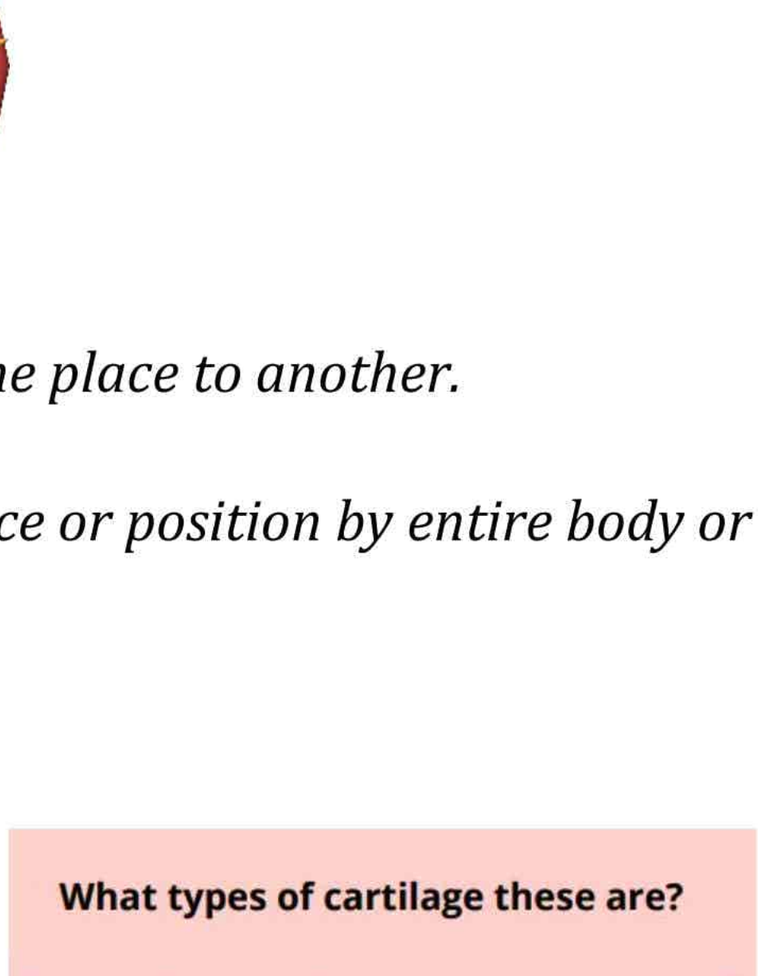
Q4: ***Define skeletal system.***

Ans: *Skeleton is defined as the framework of hard, articulated structures that provide, physical support, attachment for skeletal muscles and protection for the bodies of animals.*

Q5: ***What is the role of skeletal system in body?***

Ans: *The role of skeletal system in body is:*

The big functions of skeletal system are protection, support and movement. In our body, skeleton works very closely



with the muscular system to help us move. Skeleton provides protection to many organs. Vertebral column also provides support to our body mass.

Q6: ***What are the types of connective tissues?***

Ans: The types of connective tissues are:

- *Adipose tissue*
- *Blood*
- *Cartilage*
- *Bone*

Q7: ***What is difference between Bone and Cartilage?***

Ans: The difference between Bone and Cartilage is:

Bone	Cartilage
Bone is the hardest connective tissue in body. Bones not only move, Support and protect the various parts of the body but also produce red and white blood cells and store minerals.	*While cartilage is a dense, clear blue white firm connective tissue. Cartilage contains a single type of cell while bones contain different types of cell.*

Q8: ***What happens in bone density during Osteoporosis?***

Ans: In osteoporosis, there is a decreased in density of bone due to loss of calcium and phosphorous.

Causes:

It may due to malnutrition, lack of physical activities, or deficiency of estrogen hormone.

Q9: ***Write down evolutionary changes that are adapted by the mammals in lower jaw bones.***

Ans: During evolution, mammals modified the lower jaw bones and incorporated four of them into the middle ear. This adaption proved beneficial for mammals.

Q10: ***What is meant by Elastic cartilage?***

Ans: ***Elastic cartilage:***

It is similar in structure to hyaline cartilage. It is also quite strong but has elasticity due to a network of elastic, fibers in addition to collagen fibers. It is found in epiglottis, pinna etc.

Q11: ***What is meant by Fibrous cartilage?***

Ans: ***Fibrous cartilage:***

It is very tough and less flexible due to large number of thick collagen fibers present in knitted form. It is found in intervertebral discs.

Q12: ***Define Cartilage. Write the names of its two types.***

Ans: ***Cartilage****:*

Cartilage is dense clear blue white firm connective tissues.

These are the following types of cartilage:

- *Fibrous cartilage*
- *Elastic cartilage*
- *Hyaline cartilage*

This diagram is just for information.

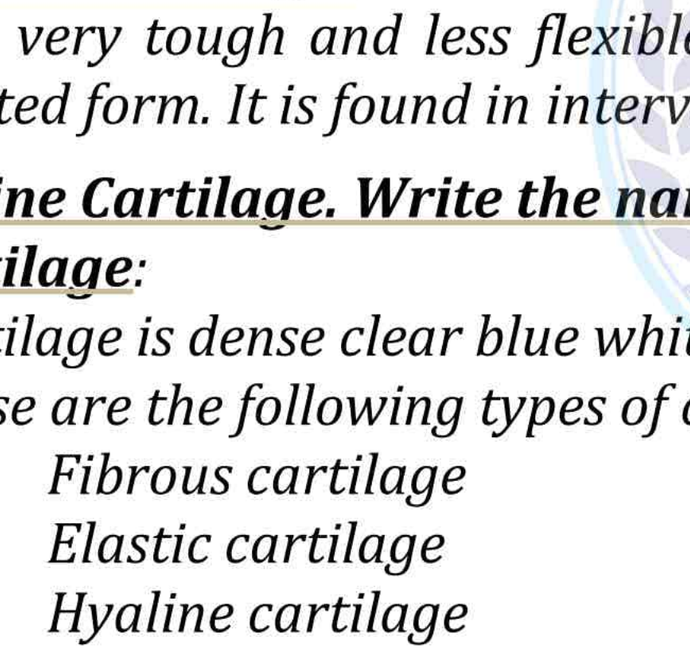


Figure Hyaline cartilage

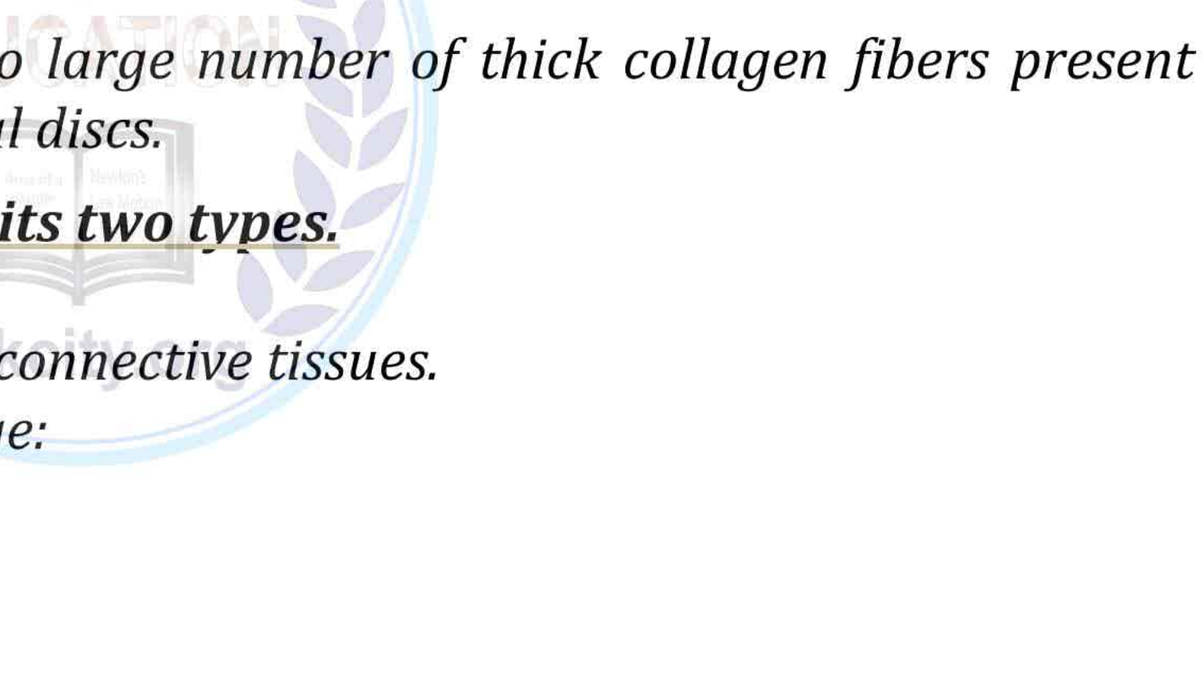


Figure : Fibrous cartilage

Q13: ***What is difference between hyaline cartilage and elastic cartilage?***

Ans: The difference between hyaline cartilage and elastic cartilage is:

Hyaline Cartilage	Elastic cartilage
❖ Hyaline Cartilage is strong yet flexible. ❖ It is found covering the ends of long bones, in the nose, larynx, trachea, and bronchial tubes.	❖ Elastic cartilage is similar in structure to hyaline cartilage. ❖ It is quite strong but has elastically due to a network of elastic fibers in addition to collagen fibers found in epiglottis, pinna etc.

Q14: ***Differentiate between compact bone to that of spongy bone.***

Ans: The difference between compact bone and spongy bone is:

Compact bone	Spongy bone
The hard outer layer of a bone is called compact bone.	Spongy bone is the interior of bone is soft and porous. It contains blood vessels and bone narrow.

Q15: ***Write the names of the cells of cartilage and bone.***

Ans: The cells of cartilage are called chondrocytes while the mature bone cells are called osteocytes.

Q16: ***Give structure of cartilage. And Write two minerals are found in bones.***

Ans: The cartilage is made up of cells called chondrocytes. Each cell lies in a fluid space called lacuna present in matrix of cartilage. Blood vessels do not enter cartilage.

The minerals are found in bones are:

- *Calcium*
- *Phosphate*

This diagram is just for information.

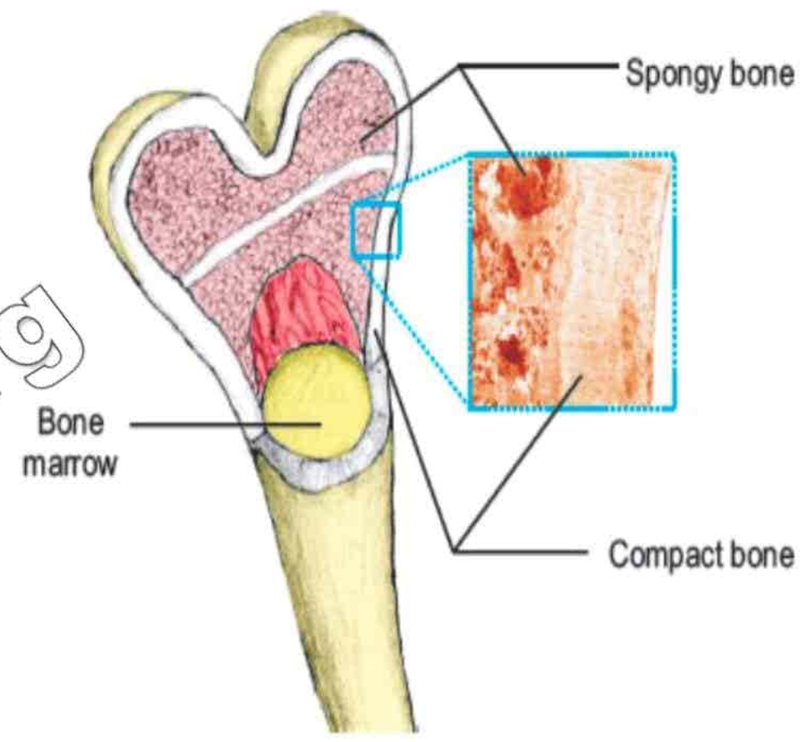


Figure : Compact and spongy bone

Q17: ***What do you know about Andreas vesailus?***

Ans: Andreas Vesalius (1514-1564) is honoured for developing modern anatomical studies. Vesalius was born in Brussels, Belgium. He made many discoveries in anatomy, based on studies made by dissection of human dead bodies. His book contained the most accurate depictions of the whole skeleton and muscles of the human body.

This diagram is just for information.

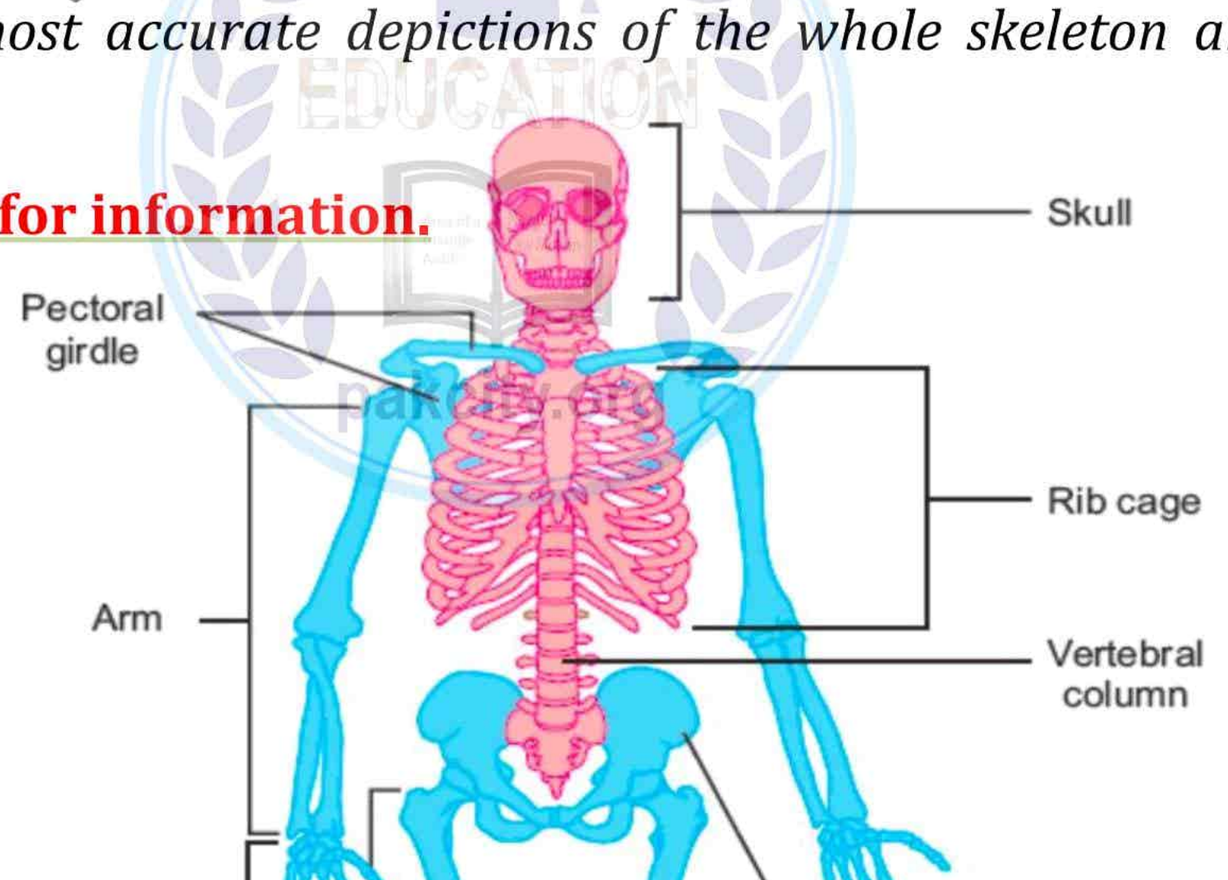


Figure Human skeleton

Q18: ***What is Appendicular Skeleton?***

Ans: ***Appendicular Skeleton:***

The skeleton covering jointer is called appendicular.
It is composed of 126 bones.

Q19: ***Write names of main bones of human axial skeleton.***

Ans: The main bones of human axial skeleton are:

- *Hyoid bone.*
- *Skull bones.*
- *Middle ear ossicles.*
- *Vertebral column.*
- *Chest bones.*

Q20: ***Write down the number of bones in pectoral girdle and pelvic girdle.***

Ans: Pectoral (Shoulder) girdle is made of 4 bones while pelvic girdle (hips) has two bones.

Q21: ***How many bones are in vertebral column? Write name of biggest bone in human body.***

Ans: Vertebral column contains 26 bones (vertebrae), Thigh bone is biggest bone in human body.

Q22: ***Which is longest bone in our body?***

Ans: Thigh bone is the longest bone in our body.

Q23: ***Write the names of chest bones.***

Ans: The chest is made of a chest bone called sternum and 24 (12 pairs) ribs.

Q24: ***How moment produced in bones?***

Ans: The movements in bones are brought about by the contractions of skeletal muscles, which are attached with them by tendons.

Q25: ***Define joint. Write the names of its types.***

Ans: ***Joints:***

A joint is the location at which two or more bones make contact. They allow movement and provide mechanical support.

Types of Joints:

- *Immoveable joints.*
- *Slightly moveable joints.*
- *Moveable joints.*

Q26: ***Differentiate between hinge joints and ball and socket joints.***

Ans: The difference between hinge joints and ball and socket joints is:

Hinge joints	Ball and Socket joints
❖ Hinge joints move back and forth like the hinge on a door and allow movements in one plane only. ❖ The knee and elbow are hinge joints.	❖ Ball and socket joints allow movement in all directions. ❖ The hip and shoulder joints are ball and socket joints.

This diagram is just for information.

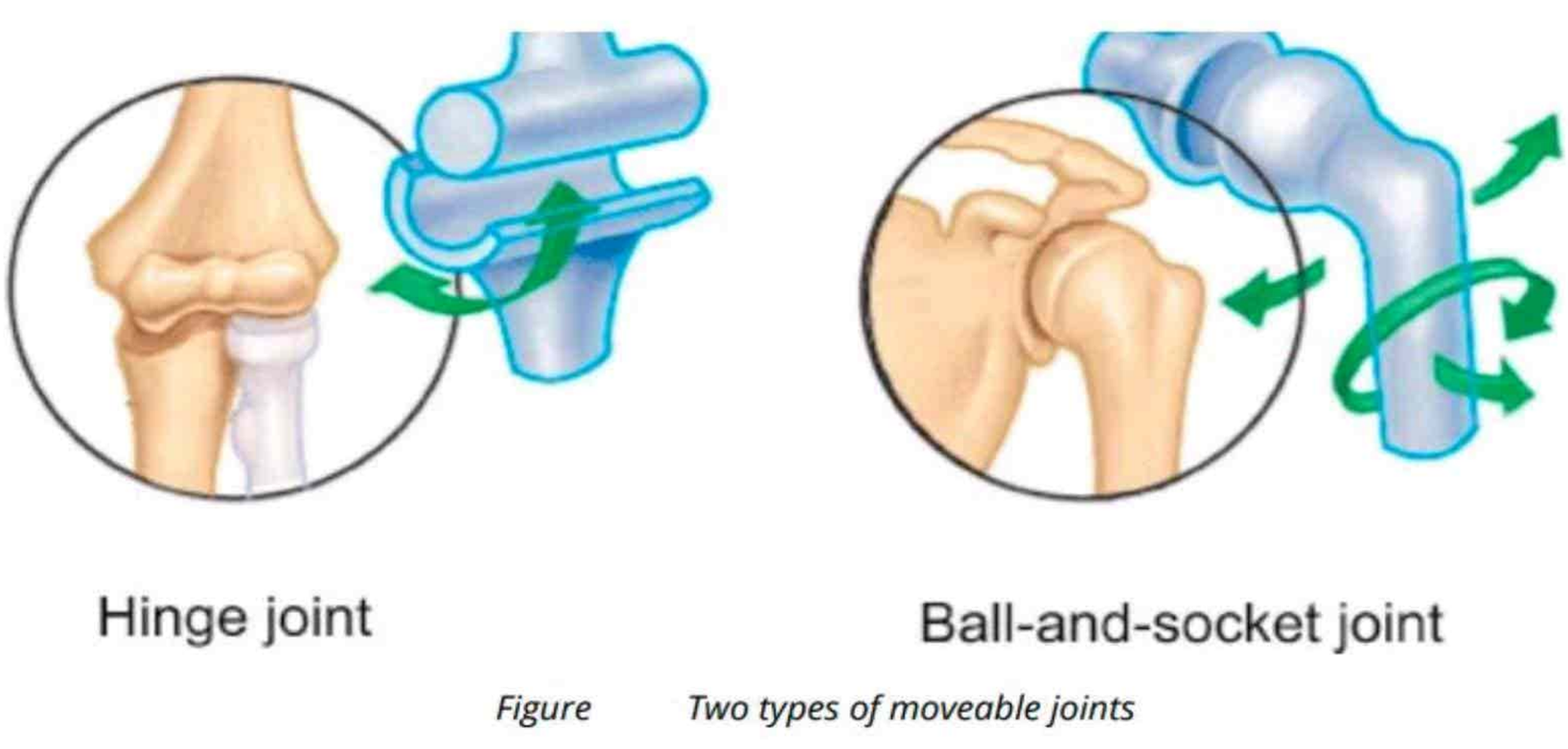


Figure Two types of moveable joints

Q27: ***What is the difference between immoveable (fixed) and slightly moveable joints?***

Ans: The difference between immoveable (fixed) and slightly moveable joints is:

Immoveable joints	***Slightly moveable joints***
Such joints allow no movement. The joint between the skull bones.	*Such joints allow slight movement. The joint between the vertebrae.*

This diagram is just for information.

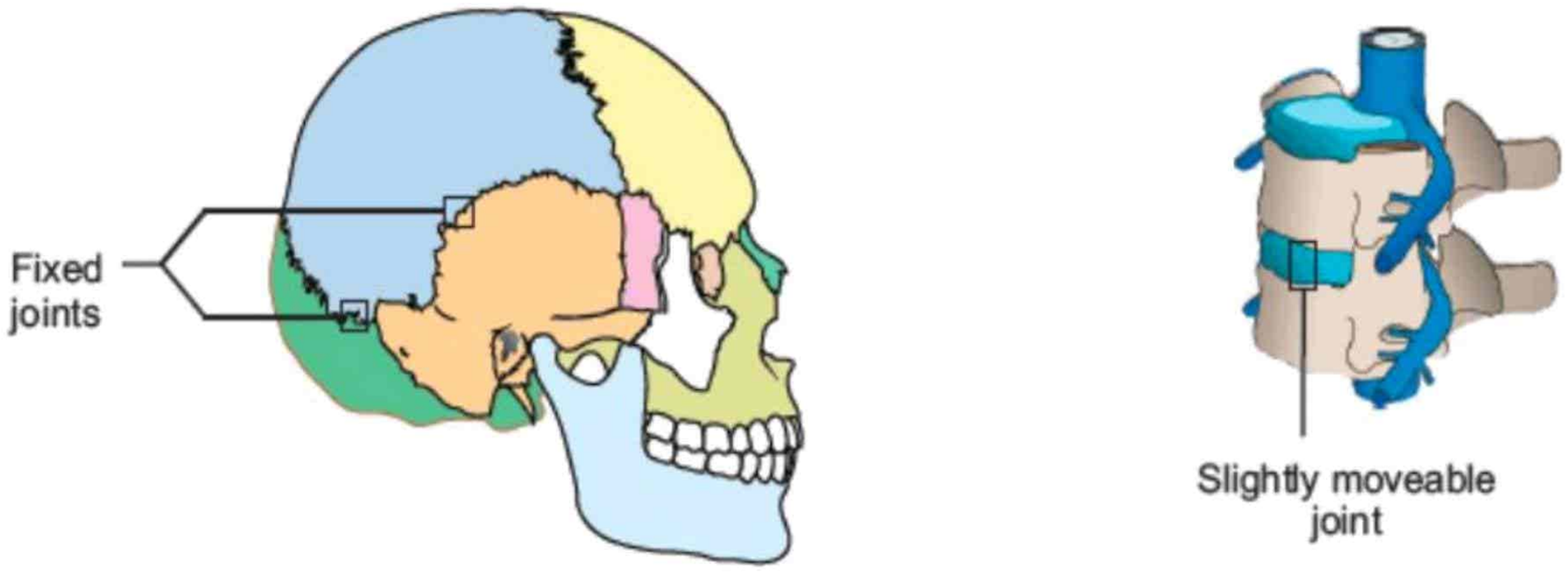


Figure Fixed and slightly moveable joints

Q28: ***Define Joint. And what is the difference between fixed and moveable joints.***

Ans: ***Joint:***

A joint is the location at which two or more bones make contact.

The difference between immoveable (fixed) and slightly moveable joints is:

Immovable (fixed) joint	***Moveable joints***
These allow no movement e.g., joints between skull.	*They allow variety of movement e.g. shoulder joint and hip joints.*

Q29: ***Differentiate between antagonists and antagonism.***

Ans: The difference between antagonists and antagonism is:

Antagonists	***Antagonism***
Skeletal muscles are usually in pairs of antagonists. In an antagonist's pair, both muscles do opposite jobs.	*When one muscle contracts the other relaxes and this phenomenon are known as antagonism.*

Q30: ***Define flexion and extension.***

Ans: The difference between flexion and extension is:

Flexion	***Extension***
When a muscle contracts and bends the joint, it is known as flexor muscle and the movement is called flexion.	*When a muscle contracts and straightens the joint, it is known as extensor muscle and the movement is called extension.*

This diagram is just for information.

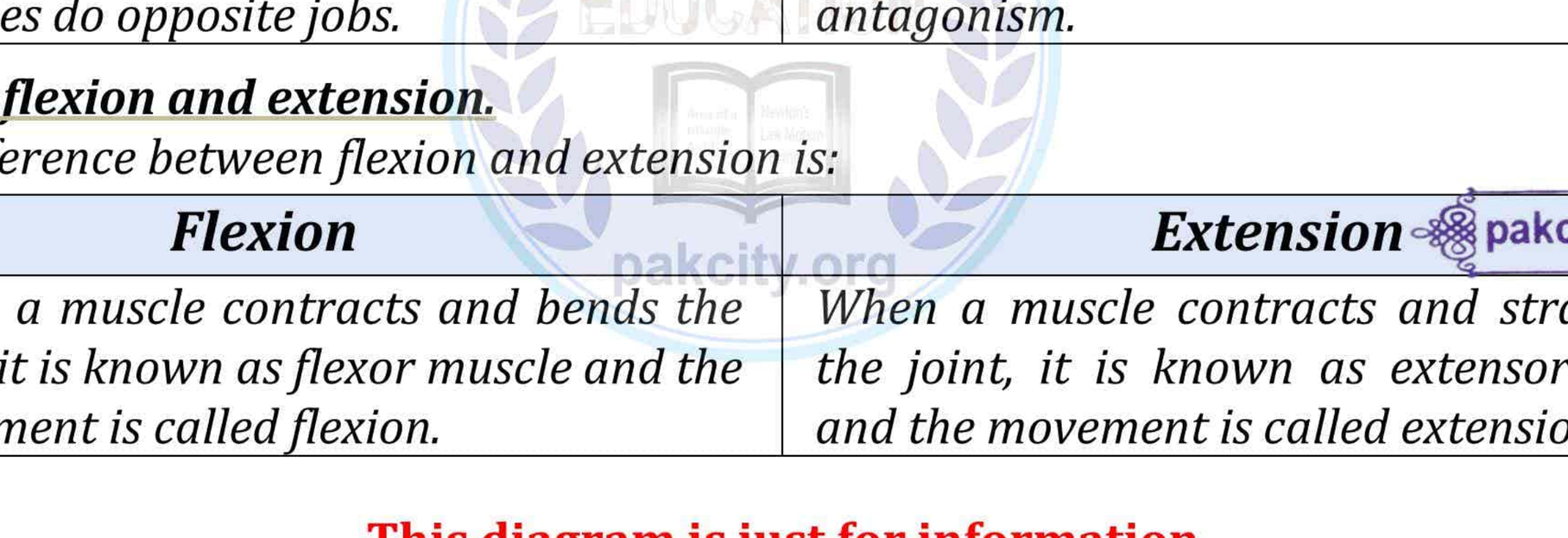


Figure : Action of antagonistic muscles (biceps and triceps) at elbow

Figure Action of antagonistic muscles (biceps and triceps) at elbow

Q31: ***Differentiate between origin and insertion of muscle.***

Ans: The difference between origin and insertion of muscle is:

Origin muscle	Insertion muscle
One end of skeletal muscle is always attach with some immoveable bone this end bone is called origin.	*One end of muscle is attached with some moveable bones. This end is this end bone is called insertion.*

Q32: ***What are biceps and triceps?***

Ans: Bicep is a flexor muscle on the front of the upper arm bone while triceps is an extensor muscle on the back of arm.

Q33: ***What is Arthritis? Write names of its types.***

Ans: ***Arthritis:***

Arthritis means inflammation in joints.

Types of Arthritis:

- *Gout*
- *Osteoarthritis*
- *Rheumatoid arthritis*

Q34: ***What is the difference between osteoarthritis and rheumatoid arthritis?***

Ans: The difference between osteoarthritis and rheumatoid arthritis is:

Osteoarthritis	Rheumatoid Arthritis
It is due to degeneration in the cartilage present at joints or due to decrease in lubricant production at joints.	*It involves the inflammation of membrane at joints.*

Q35: ***Write down cause of Rheumatoid Arthritis, also give its two symptoms.***

Ans: It involves the inflammation of membranes at joints.

Symptoms:

Its symptoms include fatigue, low grade fever, pain and stiffness in joints.

Q36: ***Write note on Gout.***

Ans: ***Gout:***

Gout is characterized by accumulation of uric acid crystals in moveable joints. It is a type of arthritis. And it generally attacks the toe joints.

Q37: ***Write down two disorders along with one reason of each of human Skeletal.***

Ans: Two disorders along with one reason of each of human Skeletal are:

- *It is a bone disease in adults, especially in old people. In this, there is a decrease in density, of bones due to loss of calcium and phosphorous. It may be caused due to malnutrition (lack of protein and vitamin C)*
- *Arthritis means "inflammation in joints" It is common in old age and in women. It is characterized by pain and stiffness at joints.*

Q38: ***What happened when the reproductive cycle stops in females?***

Ans: When the reproductive cycle stops in females, not enough estrogen is secreted.

Q39: ***How skeleton provides protection to many internal organs?***

Ans: Skeleton provides protection to many internal organs e.g. skull protects brain, vertebral column protects spinal cord and ribs protect most of our other internal organs. Vertebral column also provides the main support to our body mass.

Q40: ***What is Lacuna?***

Ans: Each chondrocyte lies in a fluid space called lacuna present in the matrix of cartilage.

Q41: ***What are the ligaments and tendons?***

Ans: Tendons are tough bands and attach muscles to bones. When a muscle contracts tendon exerts a pulling force on the attached bone, which moves as a result. Ligaments are strong but flexible bands and join one bone to another at joints. They prevent dislocation of bones at joints.

This diagram is just for information.

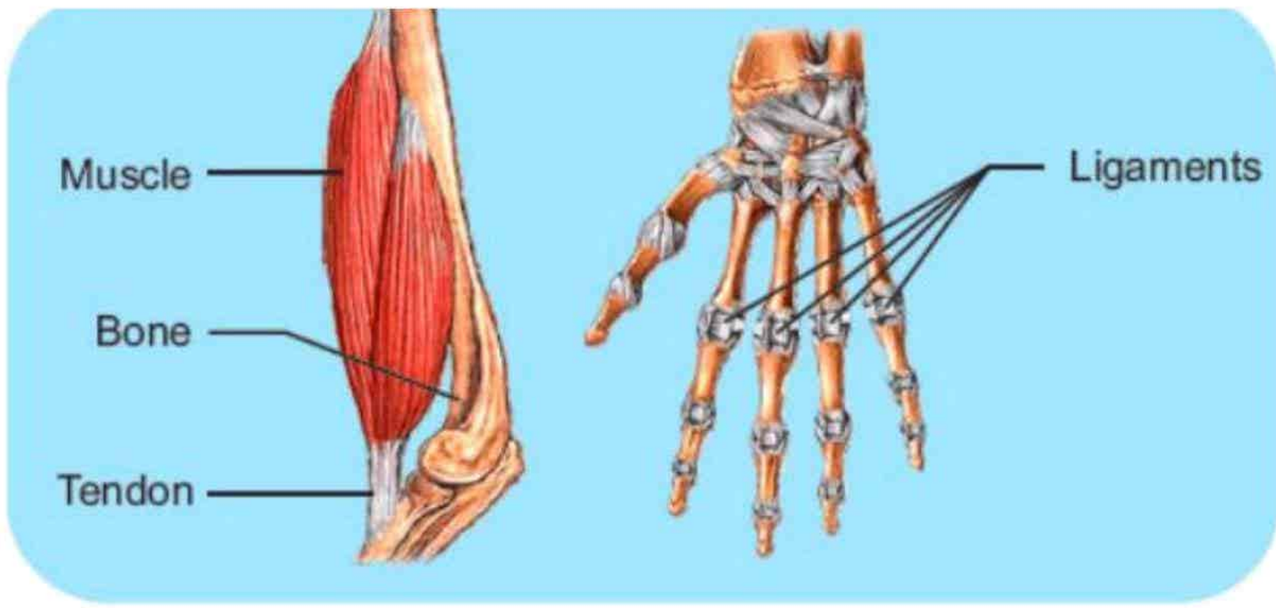


Figure : Tendons and ligaments

Chapter : 13	Support and Movement

Imp.Long Questions

Q.1: What is Bone? Explain its composition with diagram. OR What is bone. Explain its two-kinds.

Q.2: What is cartilage? Discuss its types. V.imp

Q.3: Describe Components of Human Skeleton.

Q.4: What are ligaments and tendons? What functions do they perform?

Q.5: Describe the types of Joints with examples. V.imp

Q.6: How many types of antagonistic muscles are there and how they work?

Q.7: Write a note on the role of biceps and triceps muscle.

Q.8: What is Antagonism? Describe it with the example of Flexor Muscle, and Extensor Muscle. V.imp

Q.9: Discuss arthritis and its types? V.imp

Q.10: Describe the main components of the axial and appendicular skeleton of human.

Chapter: 14

Reproduction

Objective

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1. Growing an entire new plant from part of the original plant is called:
   (A) Regeneration (B) Fragmentation (C) Budding **(D) Vegetative propagation**

2. Rhizopus reproduces asexually by:
   (A) Binary fission (B) Endospore formation
   (C) Budding **(D) Spore formation**

3. A corm develops into new garlic plant. This is the process of:
   (A) Regeneration (B) Meiosis
   (C) Gametogenesis **(D) Vegetative propagation**

4. Pollination is the transfer of pollens from:
   (A) Petal to sepal (B) Sepal to petal **(C) Anther to stigma** (D) Stigma to anther

5. After fertilization in plants, the fruit develops from:
   (A) Petals **(B) Ovary wall** (C) Ovule wall (D) Anther

6. Which part of the female reproductive system receives egg cells from the ovary?
   (A) Fallopian tube (B) Cervix (C) Uterus (D) Vagina

7. Inside testes, the sperms are produced in:
   (A) Collecting data (B) Vas deferens
   (C) Sperm duct **(D) Seminiferous tubules**

8. Which of these cells has haploid number of chromosomes?
   (A) Spermatogonium (B) All of these
   (C) Primary spermatocyte **(D) Secondary spermatocyte**

9. A process in which genetic material of one generation is transmitted next is knows:
   (A) Reduction **(B) Reproduction** (C) Circulation (D) Respiration

10. Connection between embryo and uterus wall is called:
    (A) follicle (B) vagina **(C) placenta** (D) cervix

11. Which one is the middle part of carpel:
    (A) ovary (B) stigma (C) filament **(D) style**

12. To attract flies and birds is the function of:
    (A) petal (B) anther (C) stamen (D) sepal

13. In flower the carpels is called:
    (A) androecium **(B) gynoecium** (C) corolla (D) calyx

14. An example of diploid cell is:
    (A) Endosperm nucleus (B) Sperm Cell **(C) Zygote** (D) Egg Cell

15. Bryophyllum (Pather Chut) is a example of:
    (A) Bulb (B) Suckers (C) Stem Tubers **(D) Leaves**

16. Asexual reproduction by suckers takes place in:
    (A) Mint (B) Ginger (C) Potato (D) Lilly

17. Tests and ovaries are called:

(A) Embryo **(B) Gonads** (C) Gametes (D) Glands

18. Some cells of ovary prepare structures called:

(A) Seminiferous tubules (B) Vas deferens
(C) Seminal vesicles **(D) Follicles**

19. A cluster of specialized cells which surrounds and nourishes, each egg is called:

(A) Cervix (B) Uterus **(C) Follicle** (D) Fallopian tubes

20. After fertilization in plants are seed develops from:

(A) ovule (B) sepals (C) petals (D) ovary

21. In flower stigma, style and ovary is collectively called:

(A) stamen **(B) carpel** (C) petal (D) sepal

22. The units of Gynoecium are called:

(A) Petals (B) Stamens **(C) Carpels** (D) Sepals

23. These reproduce by Budding:

(A) Rhizopus (B) Tulips (C) Planaria **(D) Corals**

24. Queen honey bee is:

(A) Diploid (B) Triploid (C) Polyploidy (D) Haploid

25. Which method of natural vegetative reproduction is found in chrysanthemum?

(A) stem tubers **(B) suckers** (C) bulbs (D) c corms

26. When pollen grains mature, they are transferred to:

(A) Carpel (B) Root **(C) Stigma** (D) Sepal

27. The secretion of prostate gland of rabbit:

(A) Facilitate Urine Excretion **(B) Neutralize the acidity of Semen's Fluid**
(C) Lubricate the Urinogenital Ducts (D) Provide Nutrients of Sperms

28. Fusion of egg and sperm is called:

(A) Plumule (B) Pollination (C) Radicle **(D) Fertilization**

29. …….. part of the female reproductive system receives egg cells from the ovary.

(A) Cervix (B) Vagina **(C) Fallopian tube** (D) Uterus

30. After fertilization Zygote is carried to:

(A) Fallopian tube (B) Cervix (C) Vagina **(D) Uterus**

31. Sperm and Fluid containing material is called:

(A) Spermatogonia **(B) Semen**
(C) Secondary Spermatocytes (D) Primary Spermatocytes

32. In rabbit, sperms are formed in:

(A) Seminiferous tubules (B) Urethra (C) Scrotum (D) Seminal vesicles

33. Which animal is not able to reproduce during the months of summer?

(A) dog **(B) rabbit** (C) cat (D) monkey

34. According to UNAID 0.1% of adult population of Pakistan has disease:

(A) T:B (B) polio **(C) aids** (D) hepatitis

35. Pakistan's Federal Ministry of Health established NACP in:

Ⓐ 1990 Ⓑ 1989 Ⓒ 1988 **Ⓓ 1987**

36. It is simple and most common method of asexual reproduction:

Ⓐ Layering **Ⓑ Binary fission** Ⓒ Grafting Ⓓ Budding

37. Binary fission is seen in:

Ⓐ Planarian Ⓑ Hydra Ⓒ Corals Ⓓ yeast

38. Amoeba reproduced asexual by:

Ⓐ Fragmentation **Ⓑ Binary fission** Ⓒ acrylic acid Ⓓ Budding

39. In which type of the followings reproduction ways buds are formed:

Ⓐ Fragmentation Ⓑ Binary Fission **Ⓒ Budding** Ⓓ Regeneration

40. The main method of reproduction. in sponges hydra and corals is:

Ⓐ Spores Ⓑ Regeneration Ⓒ Fragmentation **Ⓓ Budding**

41. A sexual reproduction is yeast takes place by:

Ⓐ Budding Ⓑ spore formation Ⓒ fragmentation Ⓓ binary fission

42. Asexual reproduction in Rhizopus takes place by:

Ⓐ Endospore **Ⓑ Spores** Ⓒ Budding Ⓓ Binary fission

43. Each spore is covered with a thick wall called:

Ⓐ semi permeable Ⓑ membrane **Ⓒ cyst** Ⓓ fragment

44. Parthenogenesis is a type of reproduction:

Ⓐ fragmentation Ⓑ Grafting Ⓒ Sexual **Ⓓ A-Sexual**

45. The latest method of vegetative propagation is:

Ⓐ cloning Ⓑ layering Ⓒ cutting Ⓓ grafting

46. Onion and tulips plants are reproduce by:

Ⓐ rhizomes **Ⓑ bulbs** Ⓒ stemtubers Ⓓ corms

47. Example of stem tuber is:

Ⓐ Garlic Ⓑ Ginger **Ⓒ Potato** Ⓓ Tulip

48. Ginger reproduce by:

Ⓐ Corns Ⓑ Stem Tubers Ⓒ Bulbs **Ⓓ Rhizomes**

49. Garlic reproduce by:

Ⓐ Corms Ⓑ Stem tubers Ⓒ Rhizome Ⓓ Bulbs

50. Vegetative propagation in mint takes place by:

Ⓐ Corms **Ⓑ Suckers** Ⓒ Rhizome Ⓓ Leaves

51. The plant in which vegetative propagation occurs by leave is called:

Ⓐ Ferns Ⓑ Water lilly **Ⓒ Bryophylum** Ⓓ Ginger

52. Normally external fertilization occurs in:

Ⓐ Fishes Ⓑ Mammals Ⓒ Birds Ⓓ Reptiles

53. Sperms and fluid collectively called:

Ⓐ Scrotum **Ⓑ Semen** Ⓒ Hormones Ⓓ Follicle

54. These are horizontal underground stems:

(A) Rhizomes (B) Suckers (C) Tubers (D) None of these

55. From this part of the embryo, shoot is formed:

(A) Hypocotyl (B) Plumule (C) Radicle (D) Cotyledons

56. It is not a part of Carpel:

(A) Stigma (B) Ovary (C) Anther (D) Style

57. Every Ripen Ovule is called:

(A) Fruit (B) Leave (C) Flower (D) Seed

58. The Male Reproductive Part of Flower is called:

(A) Stamen (B) Filament (C) Carpel (D) Style

59. Semen of Rabbit consists of sperms:

(A) 1% (B) 10% (C) 80% (D) 90%

60. Corel reproduce by means of:

(A) Binary Fission (B) Fragmentation (C) Budding (D) Sexual Reproduction

61. Part of Embryo in the Seed gives rise to plant shoot:

(A) Testa (B) Radicle (C) Cotyledon (D) Plumule

62. Double Fertilization result into:

(A) Diploid Endosperm Nucleus (B) Ovule
(C) Egg (D) Triploid Endosperm Nucleus

63. Root develops from:

(A) Radicle (B) Micropyle (C) Plumule (D) Testa

64. In how many days embryo develops to offspring in rabbit?

(A) 25-30 days (B) 30-32 days (C) 20-30 days (D) 30-40 days

65. Seed absorbs water through:

(A) Hilum (B) Integument (C) Micropyle (D) Testa

66. The outer most whorl of flower is called:

(A) Calyx (B) Androecium (C) Gynoecium (D) Corolla

67. The unit of androecium is:

(A) Pollen grains (B) Stamens (C) gametes (D) Anther

68. Pollen grains are produced in anther of flower by:

(A) Multiple (B) Binary fission (C) Meiosis (D) Mitosis

69. Individual units of corolla are:

(A) Stamens (B) Sepias (C) Carpels (D) Petals

70. Microspores are produced by:

(A) Meiosis (B) Fission (C) Budding (D) Mitosis

71. Fusion of one Sperm with egg to form zygote and other sperm Nucleus with fusion nucleus to form 3N Endosperm Nucleus is called:

(A) Double Fertilization (B) Collecting Duct
(C) Fertilization (D) Triple Fertilization

72. The male reproductive part of flower is:

Ⓐ ovary **Ⓑ stamen** Ⓒ carpel Ⓓ stigma

73. Essential process for continuation of species is:

Ⓐ Locomotion Ⓑ respiration Ⓒ Cloning **Ⓓ Reproduction**

74. The embryonic stem above the point of attachment is called:

Ⓐ Epicotyl Ⓑ Hypocotyl Ⓒ Radicle Ⓓ Plumule

75. Ovule develop into:

Ⓐ Endosperm **Ⓑ Seed** Ⓒ Pollen Sacs Ⓓ Fruit

76. The male and female gametes are produced in specialized organs are called:

Ⓐ Zygote Ⓑ Placenta **Ⓒ Gonads** Ⓓ Gametogenesis

77. Is Diploid (2N):

Ⓐ Sperm cell Ⓑ Eridosperm Ⓒ Egg cell **Ⓓ Zygote**

78. Pollen tube carries:

Ⓐ megaspores Ⓑ microspores **Ⓒ sperms** Ⓓ eggs

79. The female reproductive part 'of flower is:

Ⓐ stamens Ⓑ petals Ⓒ sepals **Ⓓ carpels**

80. Fourth whorl of flower is:

Ⓐ gynoecium Ⓑ androecium Ⓒ corolla Ⓓ calyx

81. Ovary change into ripen:

Ⓐ Into flower **Ⓑ Into fruit** Ⓒ Into nectar Ⓓ Into seed

82. Fruit is formed from:

Ⓐ Stigma Ⓑ Endosperm **Ⓒ ovary** Ⓓ Ovule

83. The transfer of pollen grain from anther to stigma is called:

Ⓐ fission Ⓑ budding Ⓒ fertilization **Ⓓ pollination**

84. A wind pollinated flower:

Ⓐ willow Ⓑ Orchid Ⓒ Buttercups Ⓓ Sunflower

85. The scar present on seed coat is called:

Ⓐ Integument **Ⓑ Hilum** Ⓒ Ovule Ⓓ Micropile

86. Optimum temperature for seed growth is:

Ⓐ 15-25°C Ⓑ 30-35°C **Ⓒ 25-30°C** Ⓓ 35-38°C

87. From which part of embryo of root is formed:

Ⓐ Epicotyls Ⓑ plumule Ⓒ Cotyledons **Ⓓ Radical**

88. Formation of gametes is called:

Ⓐ Gametogenesis Ⓑ sporogenesis Ⓒ Spermatogenesis Ⓓ Oogenesis

89. Which of the cells of ovary have diploid number of chromosomes?

Ⓐ First polar body **Ⓑ Oogonia** Ⓒ Egg cell Ⓓ Secondary oocytes

90. In which of the following animals groups. external fertilization takes place:

Ⓐ Mammals Ⓑ Birds **Ⓒ Amphibians** Ⓓ Reptiles

91. Internal Fertilization takes place in:

(A) Fungi (B) Fishes (C) Frog **(D) Reptile**

92. From epididymis, sperms move to a sperm duct is called:

(A) Seminal vesicles (B) Seminiferous tubules (C) Semen **(D) Vas deferens**

93. Some invertebrates also reproduce through binary fission:

(A) Pollination (B) Budding
(C) Asexual reproduction (D) Sexual reproduction

94. It is the process used to propagate sugar cane plantation:

(A) cutting (B) fragmentation (C) layering (D) grafting

95. An examples of corm is:

(A) Potato **(B) Garlic** (C) Onion (D) Ginger

96. The amount of sperms in semen is:

(A) 90% (B) 80% **(C) 10%** (D) 50%

97. The example of Rhizome is:

(A) Potato (B) Garlic (C) Onion **(D) Ginger**

98. Reproductive part of plant is:

(A) Flower (B) Root (C) Leaf (D) Stem

99. An example of insect pollinated flower is:

(A) Willow **(B) Rose** (C) Hazel (D) Grass

100. Which one of the following is a Unicellular fungus:

(A) Yeast (B) Hydra (C) Coral (D) Sponge

101. Part of testes provides nutrients to sperms:

(A) Prostate glands **(B) Cowper's glands** (C) Seminal vesicles (D) Collecting ducts

102. About ..... % of the total adult Pakistanis are infected by HIV.

(A) 0.1 (B) 10 (C) 1.0 (D) 2.0

103. ..... seed have epigeal germination:

(A) Pea (B) Maize (C) Coconut **(D) Cotton**

104. There are ..... types of pollination.

(A) 2 (B) 3 (C) 4 (D) 5

105. Unfertilized bees eggs develop into haploid males called:

(A) queens **(B) drones** (C) kings (D) workers

106. Cyst is formed in?

(A) Planaria (B) Hydra **(C) Amoeba** (D) Yeast

107. In sweet potato, method of artificial vegetative propagation is:

(A) Tissue culture (B) Suckers (C) Grafting **(D) Cutting**

108. Whose part is style?

(A) Petal **(B) Carpel** (C) Sepal (D) Stamen

109. Development of new offspring from unfertilized egg is called:

(A) Fragmentation (B) Binary fission (C) Budding **(D) Parthenogenesis**

110. The latest method of using vegetative tissue or cell of single parent to produce identical offspring is:

(A) Cloning (B) Pollination (C) Grafting (D) Cuttings

111. An example of sexually transmitting disease is:

(A) Hepatitis (B) Whooping cough (C) Small pox (D) AIDS

112. In rabbit, the glands which produce secretions to lubricate the ducts are:

(A) Prostate (B) Adrenal (C) Seminal vesicles (D) Cowper's

113. Multiple fission occurs in:

(A) Amoeba (B) Yeast (C) Hydra (D) Rhizopus

114. After fertilization in plants, the fruits develops from:

(A) Petal (B) Anther (C) Ovule wall (D) Ovary wall

115. Actually, an immature plant is:

(A) Radical (B) Ovule (C) Embryo (D) Endosperm

116. Number of chromosomes in endosperm nucleus is:

(A) 4N (B) 1N (C) 3N (D) 2N

117. Double fertilization is the feature of:

(A) Gymno Sperms (B) Ferns (C) Seedless plants (D) Flowering. Plants

118. Fragmentation occurs in:

(A) Planaria (B) Bacteria (C) Rhizopus (D) Yeast

Chapter : 14 Reproduction

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Subjective

Q1: ***Define reproduction. Give its types.***

Ans: ***Reproduction:***

Reproduction is defined as the production of individuals of the same species i.e. the next generation of species.

Types of Reproduction:

Reproduction has two types.

- *Asexual Reproduction.*
- *Sexual Reproduction.*

Q2: ***What is difference between Sexual and Asexual Reproduction?***

Ans: *The difference between Sexual and Asexual Reproduction is:*

Sexual Reproduction	Asexual Reproduction
Sexual reproduction involves the joining of male and female sex cells i.e. gametes.	*Asexual reproduction means simple cell division that produces and exact duplicate of an organisms.*

Q3: ***Write down two advantages of the process of reproduction.***

Ans: *The advantages of the process of reproduction are:*

- *It ensures that the genetic material of one generation is transmitted to the next.*
- *It is essential for continuation of species.*

Q4: ***How binary fission take place in bacteria?***

Ans: *In bacteria the DNA is duplicated and so two copies of DNA are formed. The two copies move towards the opposite poles of cell. The cell membrane invaginates in center and divides the cytoplasm into two. New cell wall is deposited between two cross membranes.*

This diagram is just for understanding.

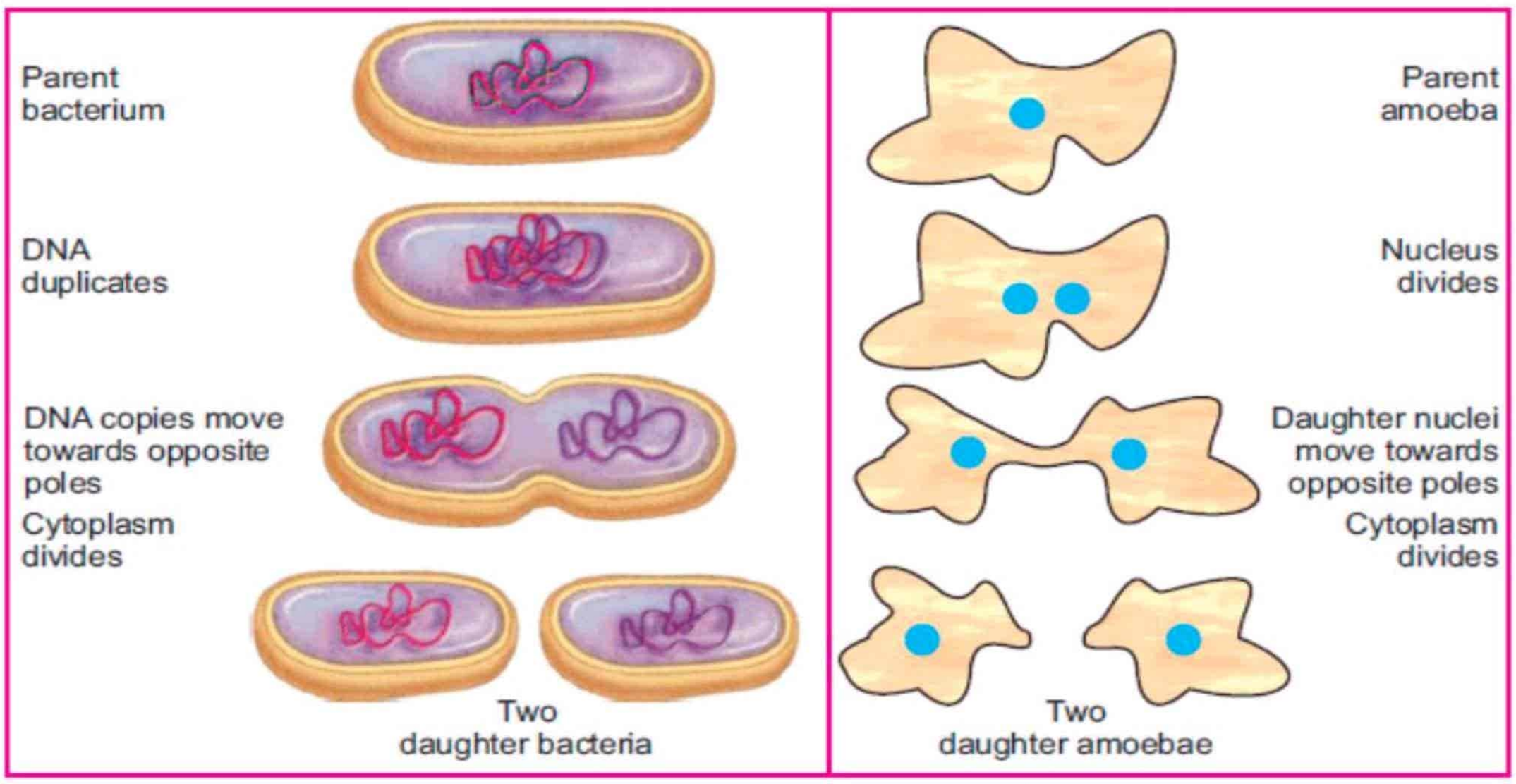

Figure : Binary fission in a bacterium (left) and in an Amoeba (right)

Q5: ***What is the difference between regeneration and binary fission?***

Ans: *The difference between regeneration and binary fission is:*

Regeneration	***Binary fission***
➢ *Regeneration is the process in which an organism can regenerate its body parts* ➢ *For example, sea star can regenerate its lost arm.*	➢ *Binary fission means "division into two". It is the simplest and most common method of asexual reproduction. It occurs in prokaryotes (bacteria). Many unicellular eukaryotes.* ➢ *For example, protozoa and some invertebrates.*

Q6: ***How does binary fission take place in unicellular eukaryotes?***

Ans: *During binary fission in, unicellular eukaryotes, the nucleus of parent organism divided into two (by mitosis). It is followed by the division of cytoplasm. So, two daughter cells of almost equal size are formed. Daughter cells grow in size and then divide again.*

Q7: ***Define multiple fission and give an example.***

This diagram is just for understanding.

Ans: ***Multiple fission:***

The kind of fission in which a number of daughter cells are formed a single parent at the same time, called multiple fission.

Example:

- *Some unicellular organism*
- *"Amoeba" is produced by multiple fission.*

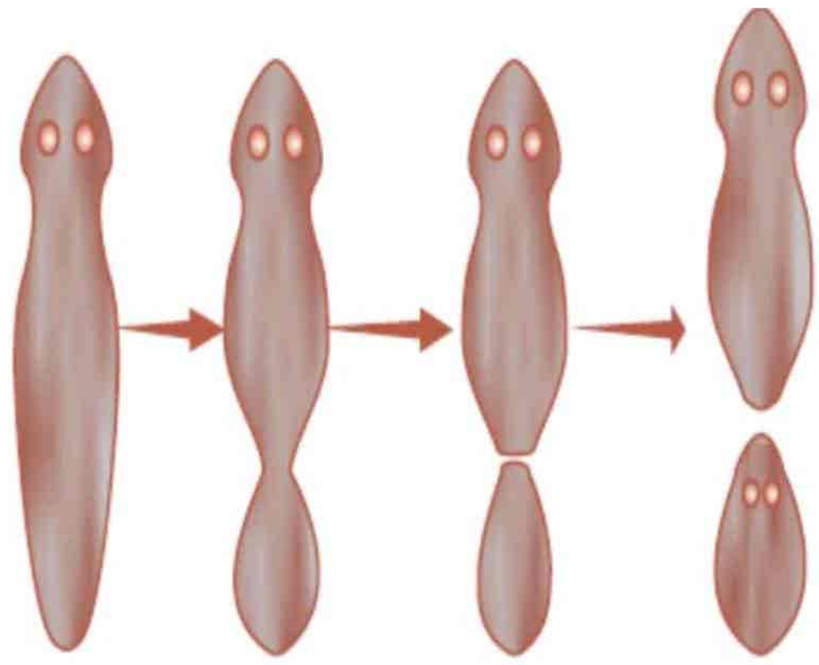

Figure Binary fission in a planarian

Q8: ***How binary fission take place in invertebrates? Give example.***

Ans: *Some invertebrates also reproduce sexually through binary fission. During this reproduction, body is cut into two halves (Fission and the missing body parts are regenerated in both, halves. This type of asexual production is common in planarian and many echinoderms.*

Q9: ***Define fragmentation. Give an example.***

Ans: ***Fragmentation:***

As certain worms grow to full size, they spontaneously break up into 8 or 9 pieces and the process repeated. If a planarian breaks into many pieces instead of two, it will also be called as fragmentation.

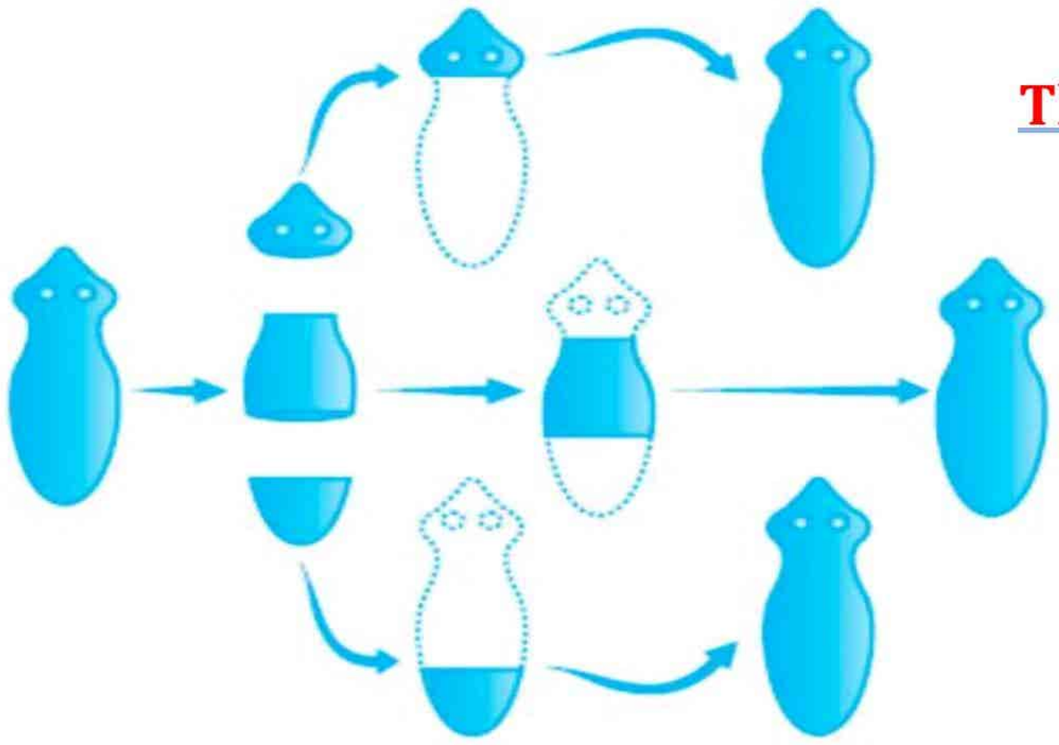

Figure Fragmentation in a planarian

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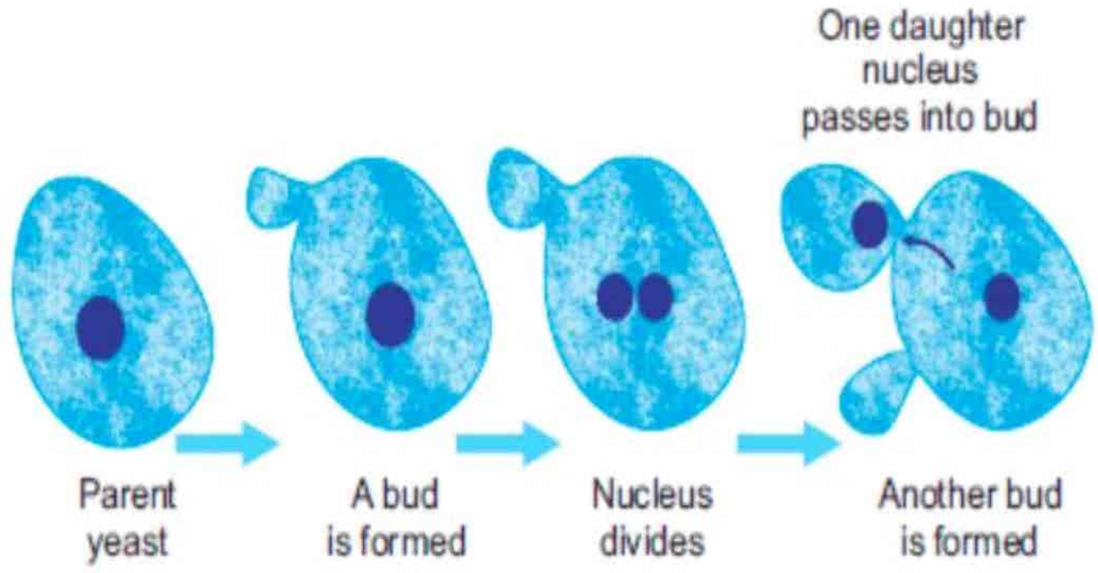


Figure : Budding in yeast

Q10: ***What is budding? Give example.***

Ans: ***Budding:***

It is a type of asexual wall reproduction a bud develops as a small outgrowth on parent body.

Example:

- *Budding in hydra.*
- *Budding in corals.*

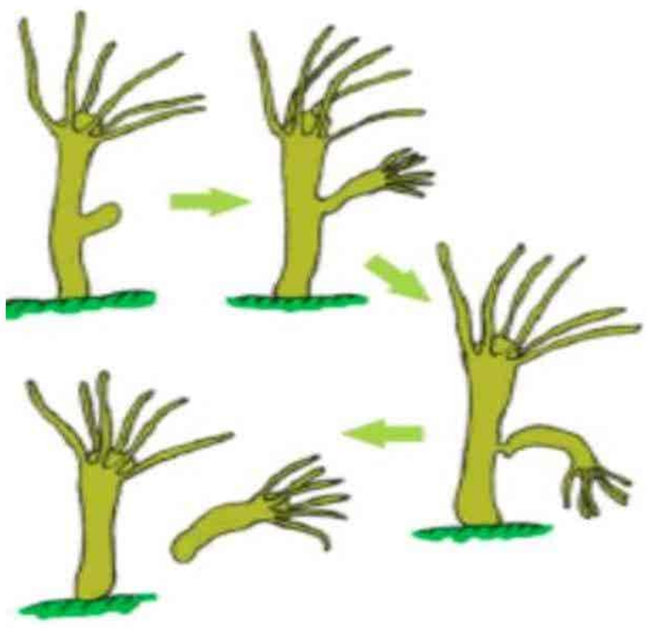


Figure Budding in Hydra

Q11: ***How Budding occurs in corals?***

Ans: Animals such as sponge's hydra and corals also reproduce by means of budding. In then a small bud is formed on the side of the body by mitosis. This bud enlarges by the formation of more cells. It then detaches from the parent body and grows into new organism.

Q12: ***What are endospores?***

Ans: ***Endospores:***

The spores formed inside the bacterial cells are called endospores.

Q13: ***Describe the process of spore formation in 'Rhizopus'.***

Ans: When Rhizopus reaches reproductive age, its body cell form thick walled spore sacs called sporangia where spores are produced.

Q14: ***Write the process of spore formation in sporangium.***

Ans: It is generally seen in most fungi (e.g Rhizopus). When Rhizopus reaches reproductive age, its body cells form thick walled spore sacs called sporangia. Inside each sporangium; a cell divides many times and forms many daughter cells called spores.

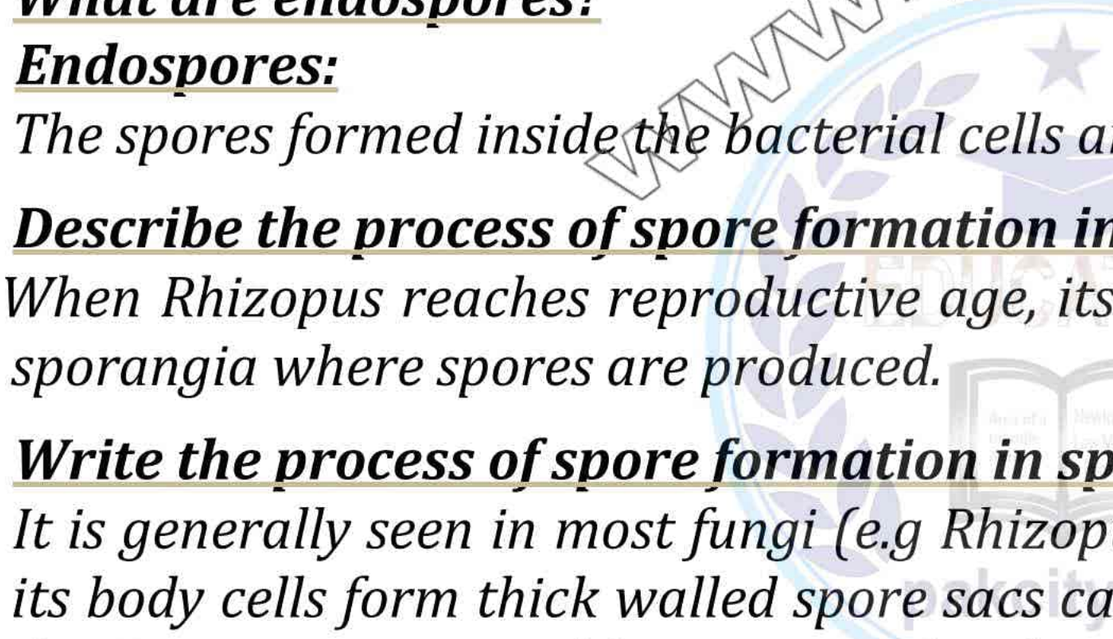


Figure : Spore formation in Rhizopus; Mature sporangium (left), sporangium bursts (right)

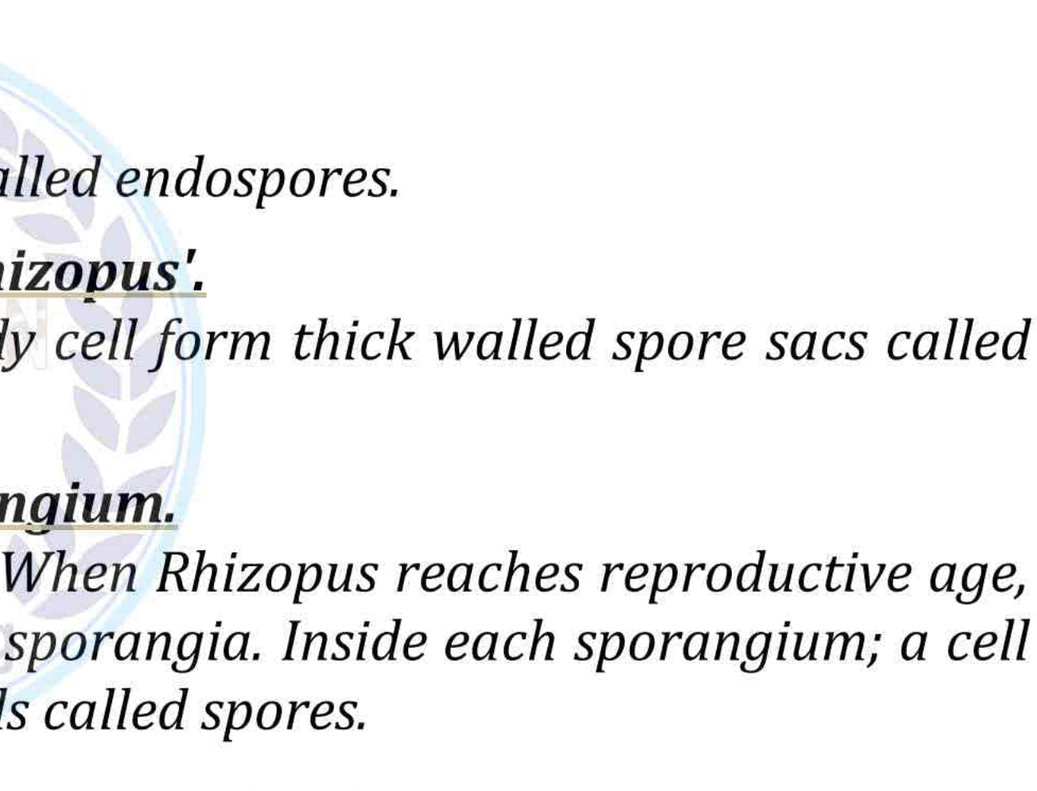


Figure Spore formation in a bacterium

Q15: ***Why the spores of bacteria are called Endospores?***

Ans: Under unfavorable conditions, some species of bacteria reproduce by forming spores, e.g. Clostridium and Bacillus species. The bacterial spores are also thick walled. They are formed inside bacterial cells, so are called endospores.

Q16: ***Define parthenogenesis. Explain in honey bees.***

Ans: It is a process in which an unfertilized egg develops into new offspring. In honey bees. Many eggs remain unfertilized and develop into haploid males (drones) by parthenogenesis. At the same time some eggs are fertilized by the male bees and these develop into diploid females (new queen and worker bees).

Q17: ***What is the difference between Cloning and Tissue Culture?***

Ans: The difference between Cloning and Tissue Culture is:

Cloning	***Tissue culture***
It is latest method of vegetative propagation in this method identical offspring's are produced from a single parent using its vegetative tissue or cell.	*It is the technique applied on cloning. Tissues are taken from any part and put into a suitable nutrient medium. The tissues start mitosis and produces masses of cell called calluses. Which is grown under hormonal control.*

Q18: ***Define crossing over.***

Ans: The non-sister chromatids of homologous chromosomes exchange their segments and the phenomenon is known as crossing over.

Q19: ***Define calluses.***

Ans: ***Calluses:***

During tissue culture the tissue starts mitosis and produce masses of cells called calluses.

Q20: ***What is meant by vegetative propagation of plants?***

Ans: When vegetative parts of plants i.e. roots, stems or leaves give rise to new plant the process is called vegetative propagation. It occurs naturally, and can also be brought about artificially.

Q21: ***Write two advantages of vegetative propagation.***

Ans: The advantages of vegetative propagation are:

- *There is no need of any mechanism of pollination.*
- *It helps to increase number of plants at a rapid rate.*

Q22: ***Write disadvantages of vegetative propagation.***

Ans: The plants do not have genetic variations specific diseases can attack and this can result in the destruction of an entire crop.

Q23: ***Write down three methods for vegetative reproduction.***

Ans: Methods for vegetating reproduction are:

- *Cutting*
- *Budding*
- *Grafting*

This diagram is just for understanding.

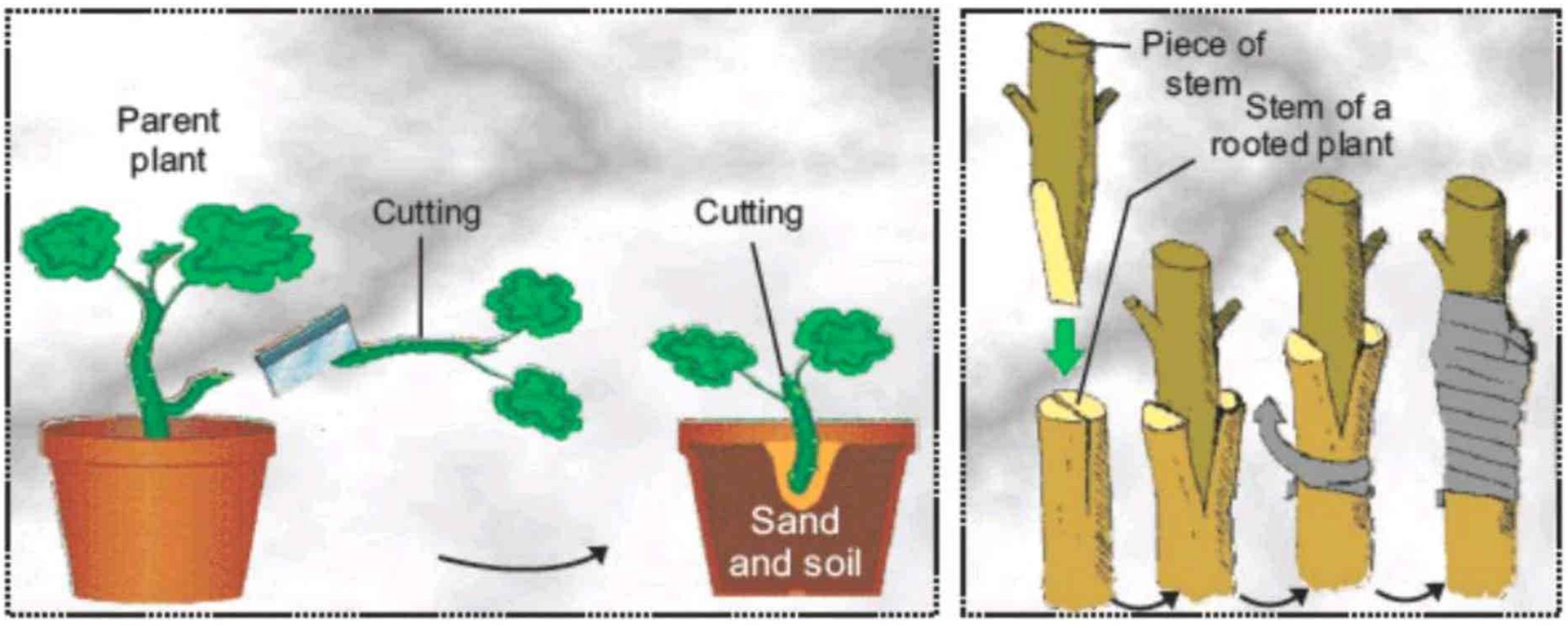


Figure Artificial vegetative propagation: Cutting (left) and Grafting (right)

Q24: ***What is the difference between cutting and grafting?***

Ans: The difference between cutting and grafting is:

Cutting	Grafting
➢ *In this method cutting may be taken mainly from stem and root of parent plant.* ➢ *These cuttings must have meristematic region from which growth can occur e.g. roses, ivy etc.*	➢ *In this method a piece of stem is cut from plant and is attached to another plant.* ➢ *After a while, the vascular bundle of stem piece and host plant connected and grow together e.g. peach trees, in roses etc.*

Q25: ***How vegetative propagation take place by leaf?***

Ans: Vegetative propagation by leaves is not common and is seen in plants such as Bryophyllum (pather chut). This plant has fleshly leaves and adventitious buds are present at margins of leaves. When leaf falls on ground, the buds grow into new plants.

Q26: ***What is the importance of seed dormancy?***

Ans: Most seeds go through a period, during which there is no growth. This period is Called dormancy of seed.

Dormant seeds are ripe seeds but do not germinate. Under favourable conditions, the seed break dormancy and begin to germinate.

Q27: ***Write the names of four methods of natural vegetative propagation.***

Ans: The names of methods of natural vegetative propagation are:

- *Suckers*
- *Rhizomes*
- *Stem tubers*
- *Corms*
- *Vegetative propagation by leaves.*
- *Bulbs*

Q28: ***What are corms?***

Ans: Corms are short and swollen underground stems containing stored food. Buds are present at the top of corms. From a bud shoot grows and form a new plant. Dasheen and Garlic reproduced by corms.

This diagram is just for understanding.

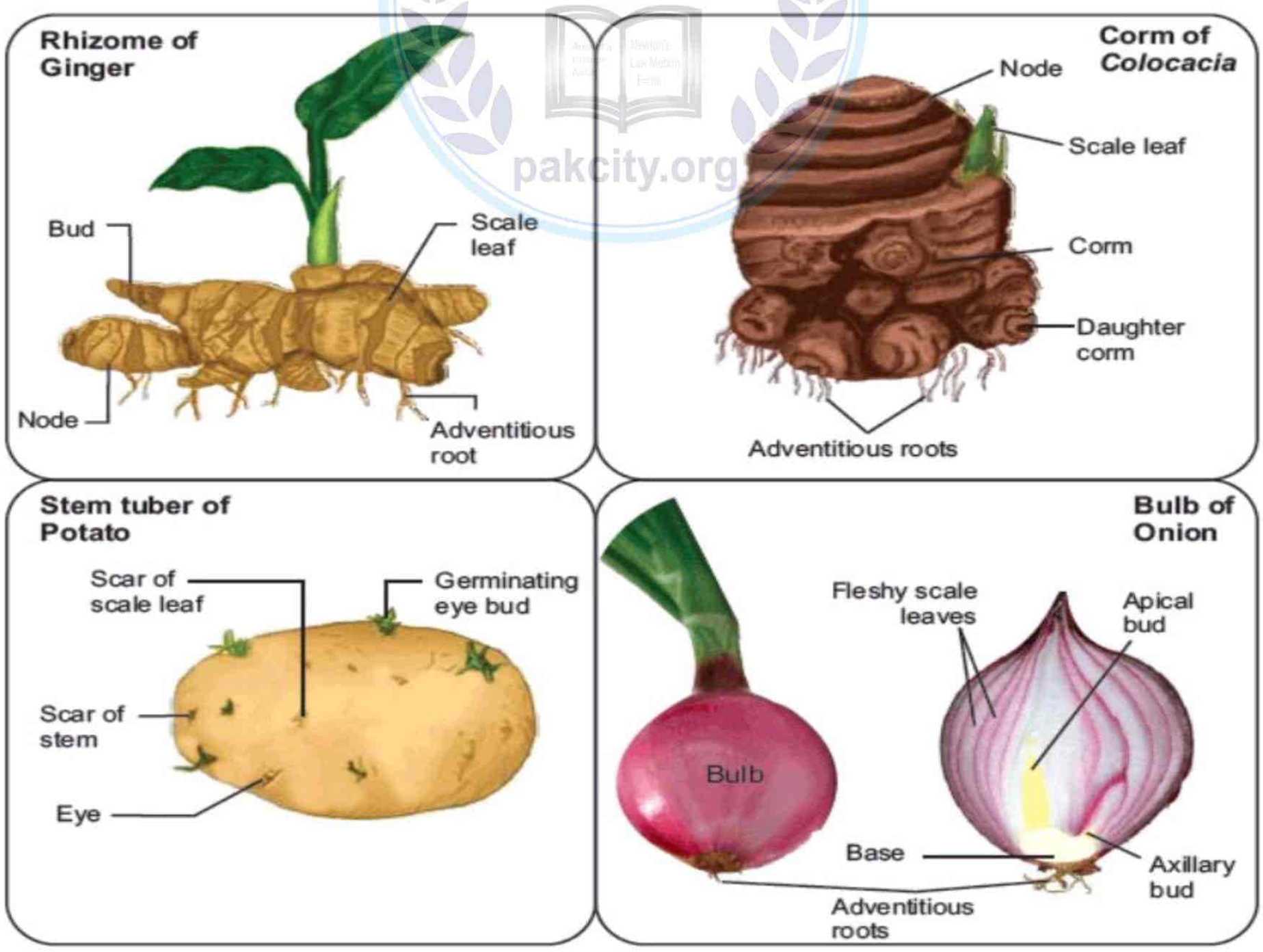


Figure Some types of natural vegetative propagation

Q29: ***What is difference between bulbs and corms.***

Ans: The difference between bulbs and corms is:

Bulbs	Corms
Bulbs are the underground vertical shoots having new plants by vegetative propagation.	*Corms are short underground stems having buds at the top and give to modified leaves.*

Q30: ***How reproduction of plants takes place by Bulbs? Give any two examples.***

Ans: Bulbs are short underground stem surrounded by thick, fleshy leaves that. Contain stored food. Adventitious roots emerge under the base of bulbs while shoot emerges on the top of base. Tulip, onions and lilies are reproduced by bulbs.

Q31: ***Write names of plants which are reproduced by bulbs and corms.***

Ans: The names of plants which are reproduced by Bulbs are:

- *Tulips*
- *Onions*
- *Lilies*

The names of plants which are reproduced by Corms are:

- *Dasheen*
- *Garlic*

Q32: ***How plants reproduce by suckers? Give example.***

Ans: Suckers are lateral stems close to ground level. A sucker grows underground from some distance and then turns up producing the new plant.

Example:

- *Mint*
- *chrysanthemum*

Q33: ***Define stem tuber.***

Ans: ***Stem tuber:***

Stem tuber are the enlarged portions of an, underground stem. There are aggregations of tiny buds in the form of "eyes". Each bud develops into shoot that grow upward and also produce roots.

Example:

- *Potatoes*
- *Yams*

Q34: ***What is meant by alternation?***

Ans: The phenomenon in which two different generation alternates during life cycle is known as alternation of generation.

Q35: ***What is meant by double fertilization?***

Ans: In flowering plants one sperm fuses with egg to form zygote and the second sperm fuses with fusion nuclei to form endosperm tissue. This process of fertilization involves two fusions it is called double fertilization.

Q36: ***What is Calyx?***

Ans: Calyx is the outermost whorl. It is usually green in colour. Its individual units are called sepals. Sepals protect the inner whorls at bud stage.

Q37: ***Write the name of Reproductive whorls of the flower.***

Ans: The name of Reproductive whorls of the flower is:

- *Androecium*
- *Gynoecium*

Q38: ***Define Pollen Tube.***

Ans: ***Pollen Tube:***

When pollen grains mature, they are transferred to stigma. It is called pollination. On reaching the stigma, the tube nucleus of pollen grain constructs a pollen tube. The Pollen tube contains a tube nucleus and two sperms.

Q39: ***Difference between sporophyte and gametophyte generations.***

Ans: *In the life cycle of plants two different generations alternate with each other. One generation is diploid and produces spores. It is called sporophyte generation. The other generation is haploid and produces gametes. It is called gametophyte generation.*

Q40: ***What is flower in botany?***

Ans: *The flower is actually a condensed shoot with the nodes present very close to each other. The different parts of the flower are attached to the nodes. All the structures present at one node are collectively called the whorl.*

Q41: ***Differentiate between endosperm and zygote.***

Ans: *The difference between endosperm and zygote is:*

Endosperm	Zygote
When sperm fuses with diploid fusion nucleus and forms a triploid is called endosperm	When one sperm fuses with one egg it forms a zygote.

Q42: ***What is gynoecium?***

Ans: *Fourth whorl, gynoecium is the female reproductive part of flower. Its units are called carpels. Each carpel is made up of the basal ovary, middle style and upper stigma. Inside ovary there is one to many ovals.*

Q43: ***What is meant by gametogenesis?***

Ans: *The formation of gametes is called gametogenesis. In this process diploid (2N) gamete mother cells undergo meiosis and form haploid (1N) gametes.*

Q44: ***What is androecium and give its units?***

Ans: ***Androecium:***

Third whorl i.e. androecium is the male reproductive part of the flower. Its units are called stamens.

Q45: ***Write the names of different parts of mustard flower.***

Ans: *The names of different parts of mustard flower are:*

1. *Sepal*
2. *Petal*
3. *Anther*
4. *Filament*
5. *Stigma*
6. *Style*
7. *Ovary*
8. *Ovule*

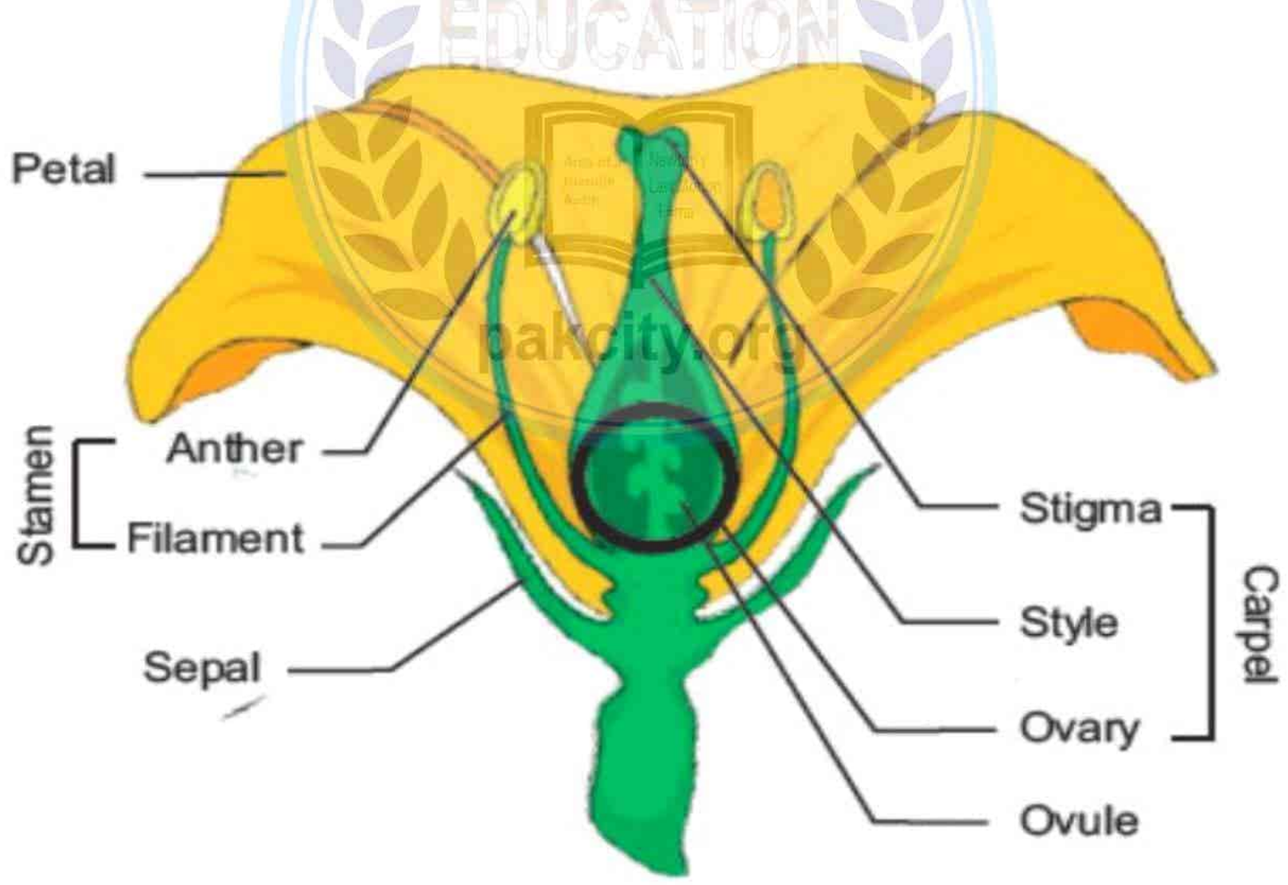


Figure : Structure of a flower

Q46: ***Define pollination. Dive two examples of air pollinated flowers.***

Ans: ***Pollination:***

Pollination is defined as the transfer of pollen grains from flower's anther to stigma.

Example:

Of wind pollinated flowers are grasses, hazel, willow, corn etc.

Q47: ***Define two types of pollination.***

Ans: ***Pollination:***

Pollination is defined as the transfer of pollen grain from flower's anther to stigma. Two types of pollination are recognized.

Self-Pollination:

It is defined as the transfer of pollen grains from anther to stigma of same flower or other flower of same plant.

Cross pollination:

It is transfer of pollen grains from the flower on one plant to the flower on other plant of same species. It is brought about by various agencies like wind, water, bees, birds, bats and other animals including man.

This diagram is just for understanding.

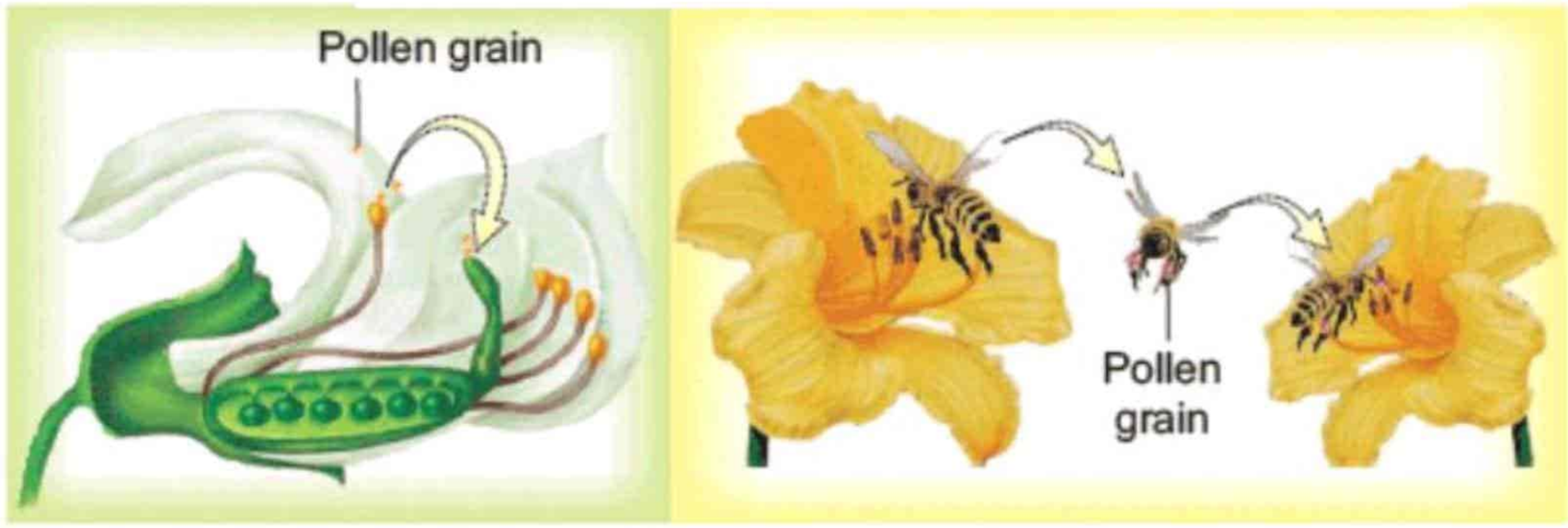


Figure Self pollination (left) and cross pollination (right)

Q48: ***What is Seed Coat? Write its function.***

Ans: Outer covering of a seed is called seed coat.

Functioning:

It protects the embryo from mechanical injury and from drying out.

Q49: ***Write the name of two important parts of angiosperm seed.***

Ans: Angiosperm seeds consist of three parts:

- *The embryo formed from zygote.*
- *The endosperm tissue formed from endosperm nucleus.*
- *The seed coat which develops from the wall of ovule.*

Q50: ***What is embryo?***

Ans: Embryo is the developing human offspring inside the womb.

Q51: ***What is Endosperm tissue?***

Ans: Endosperm tissue formed from endosperm nucleus. In angiosperms, the stored food is derived from the endosperm tissue. This tissue is rich in oil or starch and protein. In many seeds, the food of the endosperm is absorbed and stored by cotyledons.

Q52: ***Differentiate between epieal and hypogeal germination.***

Ans: The difference between epigeal and hypogeal germination is:

Epigeal germination	***Hypogeal germination***
➢ *In the hypocotyls elongates and forms a hook, pulling the cotyledons above ground.* ➢ *Example: Beans, cotton, and papaya germination.*	➢ *In the epicotyls elongates and forms the hook. In this type of germination, the cotyledons stay under ground.* ➢ *Example: Pea, maize and coconut germination*

This diagram is just for understanding.

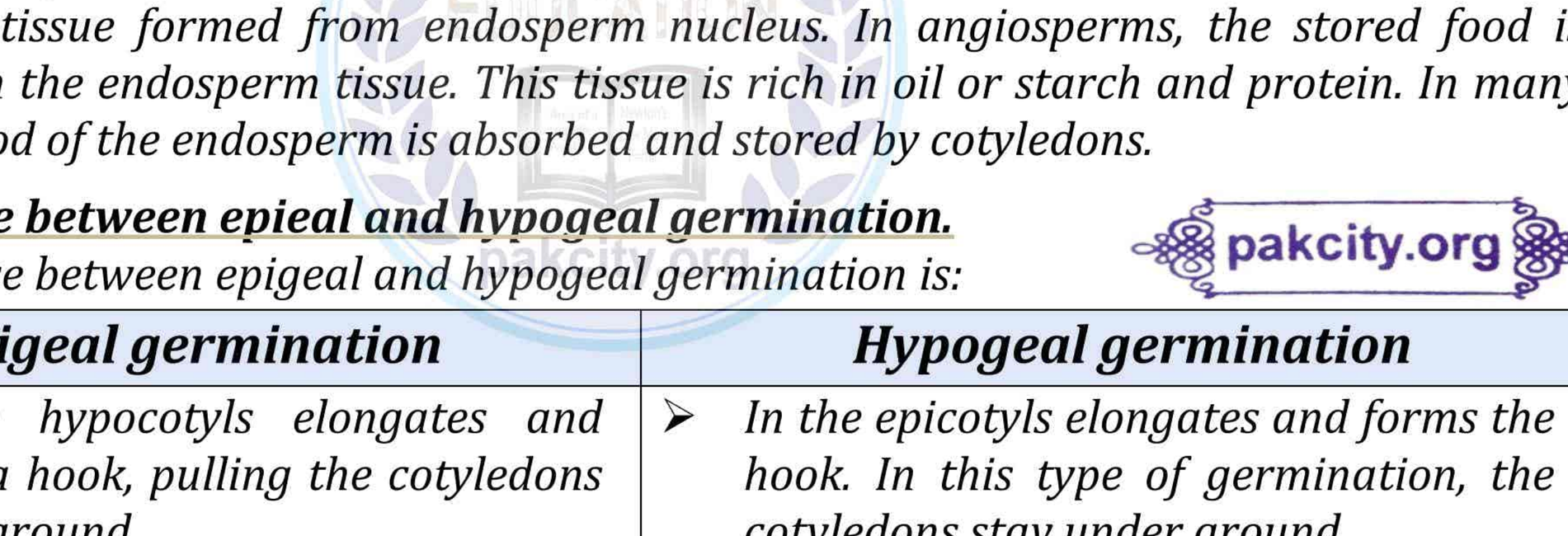


Figure Types of seed germination; epigeal (left) and hypogeal (right)

Q53: ***What is germination?***

Ans: The process by which seed embryo develop into a seedling.

Q54: ***Write two conditions necessary for seed germination.***

Ans: Following Conditions necessary for seed germination:

Oxygen:

Oxygen is very necessary for the respiration in the cells of embryo.

Temperature:

Seeds differ greatly in their temperature requirements for germination. The optimum temperature for the germination of seed of most plants ranged from 25-30°C.

Q55: ***What is meant by spermatogenesis and oogenesis?***

Ans: The production of sperms in testes is called spermatogenesis. While the formation of egg cell is called oogenesis.

Q56: ***How spermatids change into sperms?***

Ans: The spermatids are non-motile and many changes occur in them to convert them into motile cells. Their nucleus shrinks and some structure are formed e.g. a corner called acrosome, a tail and a mitochondrial ring. After these changes the spermatids are called sperms.

Q57: ***What do you know about micropyle?***

Ans: At one end of hilum, there is micropyle. This is the same opening through which the pollen tube entered ovule. Seed uses it for the absorption of water.

Q58: ***Define follicles. What is present it's inside?***

Ans: Like most animals, female rabbits have pair of ovaries the outer region of ovary produced egg cells. A cluster of specialized cells called follicle surrounds and nourishes each e.g. cell. From ovaries, egg cells are released in fallopian tubes.

Q59: ***Define fertilization.***

Ans: Fertilization is the fusion of male and female gametes to form a zygote.

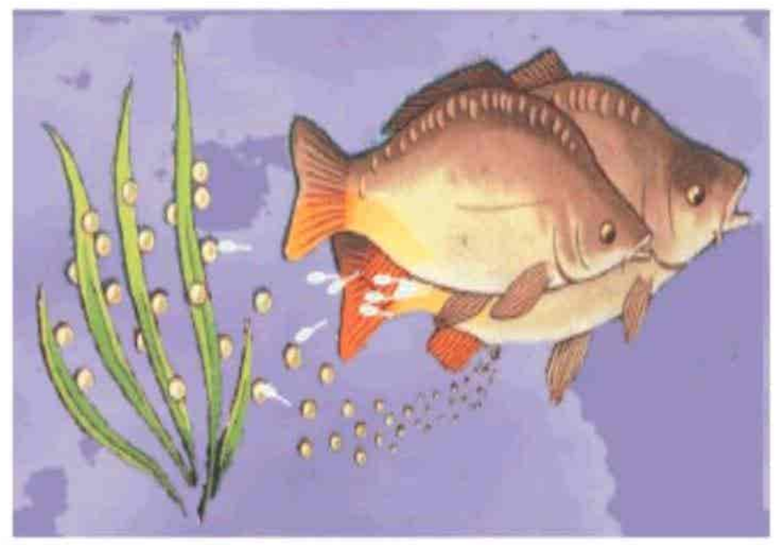


Figure : External fertilization in fish

Q60: ***What is meant by Internal fertilization?***

Ans: ***Internal fertilization:***

In this, egg cells are fertilized within the reproductive track. It occurs in reptiles, birds and mammals.

Q61: ***What is meant by External fertilization?***

Ans: ***External fertilization:***

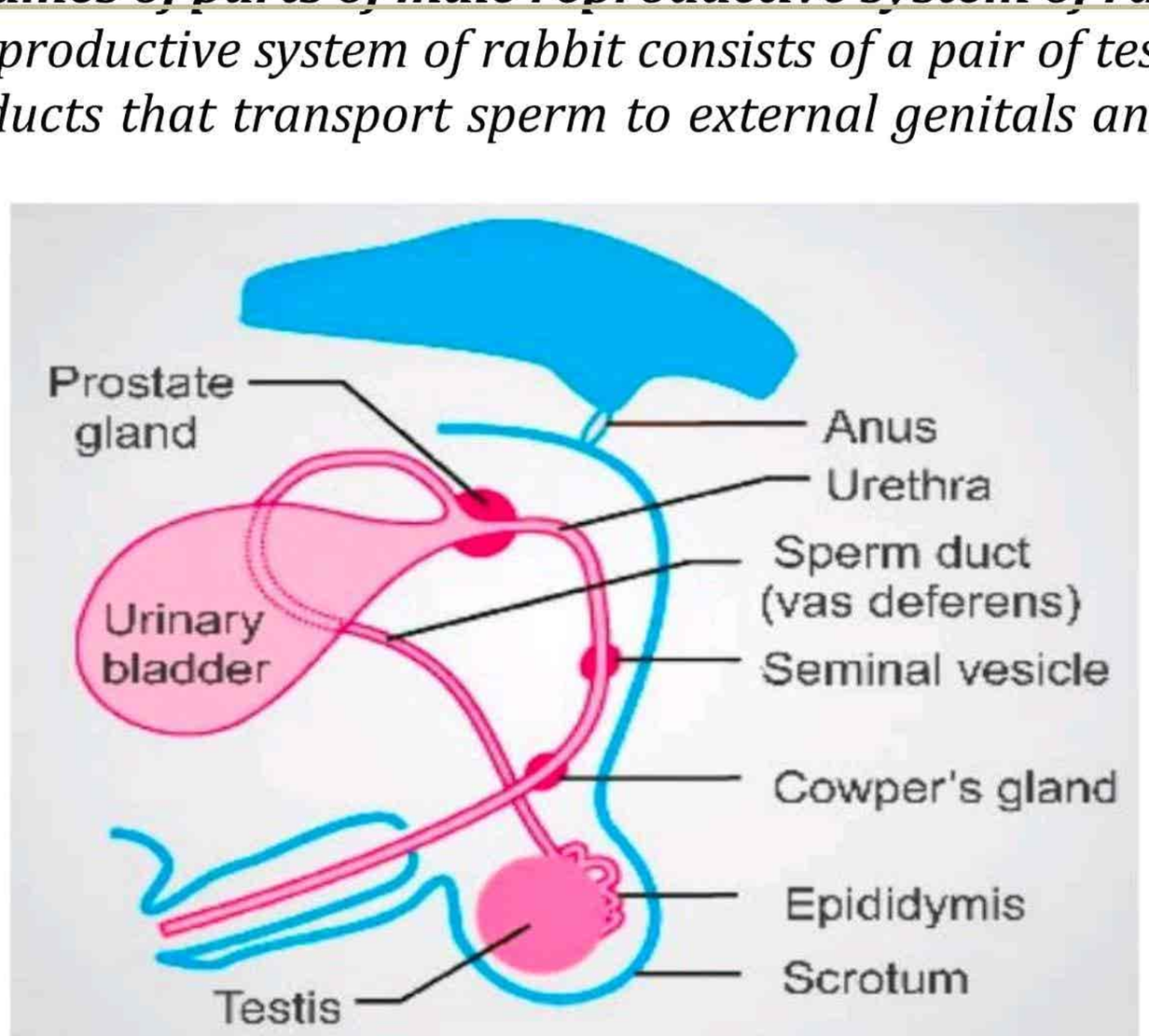
In this, egg cells are fertilized outside of body. It occurs mostly in aquatic environment.

Q62: ***Define placenta.***

Ans: A connection, called placenta, is established between embryo and uterus wall.

Q63: ***Write the names of parts of male reproductive system of rabbit.***

Ans: The male reproductive system of rabbit consists of a pair of testes that produce sperms, the associated ducts that transport sperm to external genitals and glands that add secretions to sperms.



Rabbits reingest their own pellet-like faeces to digest their food further and extract sufficient nutrients.

Q64: ***Differentiate between Prostate glands and Cowper's glands.***

Ans: The difference between prostate glands and Cowper's glands is:

Prostate glands	Cowper's glands
Prostate gland produces a secretion that neutralizer the acidity of the fluid.	*Cowper's glands produce secretions that lubricate the ducts.*

Q65: ***What is difference between micropyle and hilum.***

Ans: The difference between micropyle and hilum is:

Micropyle	Hilum
At one end of hilum, there is micropyle. This is the same opening through which pollen tube entered ovule.	*There is a scar on seed coat called hilum.*

Q66: ***How fertilization takes place in rabbit.***

Ans: Rabbits can breed throughout the year but male are commonly sterile during summer months. Male rabbit, deposit its sperm in the vagina (birth canal) of female. Sperms swim through cervix and uterus to fallopian tube to uterus, where they fertilize the egg cells, released from ovary.

Q67: ***From which seed and fruit develop?***

Ans: Seed develop from ovule and fruit develop from ovary.

Q68: ***How does yeast reproduce asexually?***

Ans: In case of yeast, a small bud is formed on one side of the cell. The nucleus of the cell divides and one of the daughter nuclei is passed into the bud. Parent cell many form more than one bud at a time. Each bud enlarges and develops the characteristics of parent organism. The bud many separate from the parent body.

Q69: ***Write down two main causes for spread of AIDS.***

Ans: It spreads through transfer of body fluids such as blood and semen. Its main causes are unprotected sexual activities, use of infected needles or transfusion of infected blood.

Q70: ***Write down two main objectives of National AIDS Control Program.***

Ans: Two main objectives of National AIDS Control Program are:

- *Change Public attitude for safe sexual activities.*
- *Create demand for information of HIV and Aids.*

Q71: ***What are STD? Write one STD name.***

Ans: Sexually transmitted diseases:

Sexually transmitted diseases (STDs) are defined as the diseases that are transmitted through sexual act.

The name of one STD is:

AIDS is sexually transmitted diseases

Q72: ***Why do gardeners use the methods of cutting and grafting?***

Ans: Gardeners and farmers use artificial methods of vegetative propagation to increase the stock of a plant.

Chapter : 14	Reproduction

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Long Questions

Q.1: Explain spermatogenesis and oogenesis in animals. (v.imp)

Q.2: Describe the structure of Female Reproductive Part of Flower. Diagram is necessary.

Q.3: Explain external and internal fertilization with examples.

Q.4: Explain male reproductive system in Rabbit. OR Explain female reproductive system in Rabbit.

Q.5: Why reproduction is necessary for living organism. Describe any three methods of a sexual reproduction.

Q.6: Describe process of Binary Fission in Bacteria. (v.imp)

Q.7: What do you know about Multiple Fission?

Q.8: Explain Budding with example. (v.imp)

Q.9: By how many ways natural vegetative propagation occurs? Explain these. (v.imp)

Q.10: Discuss two types of artificial vegetative propagation.

Q.11: Describe the structure of Flower.

Q.12: Explain sexual reproduction in flowering plants. Draw life cycle of flowering plant.

Q.13: What is Pollination? Discuss its kinds. OR Compare the insect and wind pollinated flowers.

Q.14: Write down about the development and structure of seed in plants. (v.imp)

Q.15: What is germination of seed? Explain its types with examples.

Q.16: Explain conditions necessary for Seed Germination.

Q.17: Differentiate between Epigeal and Hypogeal Germination with labeled diagram.

Q.18: Write two advantages and two disadvantages of vegetative propagation in plants.

Q.19: Write down a note on alternation of generation in the life cycle of Plants

Chapter: 15

Inheritance

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Objective

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1. These are the units of inheritance:

Ⓐ phenotype Ⓑ Alleles Ⓒ genotype **Ⓓ genes**

2. Inherited characters are called:

Ⓐ fertilization Ⓑ Genetics **Ⓒ Traits** Ⓓ Genes

3. The branch of Biology in which we study about inheritance is called:

Ⓐ Ecology **Ⓑ Genetics** Ⓒ Physiology Ⓓ Microbiology

4. …… hydrogen bonds are present between cytosine and guanine.

Ⓐ 3 Ⓑ 4 Ⓒ 5 Ⓓ 2

5. Alternative form of a gene are called:

Ⓐ Gamete Ⓑ Chromosome Ⓒ DNA **Ⓓ Allele**

6. Locations of genes on chromosomes are called:

Ⓐ Genotypes Ⓑ Phenotypes **Ⓒ Loci** Ⓓ Allele

7. Cytosine always makes pair with:

Ⓐ Adenine **Ⓑ Guanine** Ⓒ Thymine Ⓓ Hydrogen

8. Dominant alleles are represented by:

Ⓐ Capital letters Ⓑ Roman numbers Ⓒ Numerical number Ⓓ Small letters

9. Physical appearance of organisms such as colour and height etc. are called:

Ⓐ karyotpe **Ⓑ phenotype** Ⓒ Genotype Ⓓ Genome

10. How many pairs of homologous chromosomes are present in human body cells:

Ⓐ 25 Ⓑ 24 **Ⓒ 23** Ⓓ 22

11. In the structure of DNA adenine of one nucleotide pairs with which of the nitrogenous base of opposite nucleotide:

Ⓐ cytosine Ⓑ Uracil Ⓒ guanine **Ⓓ thymine**

12. Formation of messenger RNA from DNA is called:

Ⓐ Transduction Ⓑ Translocation Ⓒ Translation **Ⓓ Transcription**

13. It is a genetic material:

Ⓐ r. RNA Ⓑ RNA **Ⓒ DNA** Ⓓ T, RNA

14. The no. of pairs of homologous chromosome in human is:

Ⓐ 28 **Ⓑ 23** Ⓒ 46 Ⓓ 56

15. Model of DNA structure was presented by:

Ⓐ Watson & Crick Ⓑ Mendel Ⓒ Watson Ⓓ Crick

16. Albinism is a trait:

Ⓐ heterozygous **Ⓑ recessive** Ⓒ dominant Ⓓ co-dominant

17. DNA is surrounded by a protein and from a structure called:

Ⓐ Nucleoside Ⓑ Nucleus **Ⓒ Nucleosome** Ⓓ Nucleotide

18. Chromatin material is made up of:

Ⓐ RNA and Protein Ⓑ DNA Ⓒ Protein **Ⓓ DNA and Protein**

19. No, of hydrogen bonds between Adenine and thymine is:

Ⓐ 1 Ⓑ 4 Ⓒ 3 **Ⓓ 2**

20. James Watson and Francis Crick proposed the structure of DNA in:

Ⓐ 1954 A.D Ⓑ 1952 A.D **Ⓒ 1953 A.D** Ⓓ 1951 A.D

21. Genotype in which Gene Pair contains two identical Alleles is called:

Ⓐ Heterologous **Ⓑ Homozygous** Ⓒ homologous Ⓓ Heterozygous

22. On which vegetable Mendel carried out a large number of experiments:

Ⓐ Garden pea Ⓑ Potato Ⓒ Cabbage Ⓓ Tomato

23. How many pea plants were used in the experiments of Mendel:

Ⓐ 27,000 **Ⓑ 28,000** Ⓒ 29,000 Ⓓ 26,000

24. Union of sperm and ovum is called:

Ⓐ Allele Ⓑ Genes **Ⓒ Fertilization** Ⓓ Gamete

25. Which organism has a short but fast life cycle by Mendel?

Ⓐ onion Ⓑ tulip Ⓒ ginger **Ⓓ pea**

26. The term “True breeding" means:

Ⓐ homologous Ⓑ heterologous Ⓒ heterozygous **Ⓓ homozygous**

27. In monohybrid crosses the ratio of the phenotypes was:

Ⓐ 4:0 Ⓑ 9:4:3:0 **Ⓒ 3:1** Ⓓ 9:3:3:1

28. If two plants having genotype (Rr) are crossed with each other what percentage of newly produced plants will have genotype (rr):

Ⓐ 50 % **Ⓑ 25 %** Ⓒ 75 % Ⓓ 100 %

29. A cross in which only one trait is studied is called:

Ⓐ Monohybrid Cross Ⓑ Mutualism Ⓒ Dihybrid Cross Ⓓ Simple Cross

30. Which scientist presented the law of segregation?

Ⓐ De-devi **Ⓑ Mendel** Ⓒ Newton Ⓓ Lamarck

31. The ratio of phenotype in the law of independent assortment is:

Ⓐ 9:3:1:4 Ⓑ 9:3:1:3 **Ⓒ 9:3:3:1** Ⓓ 9:3:2:2

32. If an organism have genotype of AA BB how many types of gametes can it produce:

Ⓐ 4 Ⓑ 3 Ⓒ 2 **Ⓓ 1**

33. Which of the following genes will be termed as homozygous Recessive?

Ⓐ RrYy Ⓑ Rr YY Ⓒ RR YY **Ⓓ rryy**

34. Pea plant with genotype RR yy will produce:

Ⓐ Wrinkled green Ⓑ wrinkled yellow **Ⓒ Round green** Ⓓ Round yellow

35. Human blood group AB is an example of:

Ⓐ Recessiveness **Ⓑ Co-dominance** Ⓒ Incomplete Ⓓ Complete dominance

36. Person with Genotype (ll) has blood group:

Ⓐ O Ⓑ A Ⓒ B Ⓓ AB

37. What will be the colour of flowers produced as a result of cross between red and with white flowered 4'0 clock plants:

(A) Red (B) Pink (C) Purple (D) White

38. Three alleles, I^A, I^B and i control blood group what is the blood group of a person having two alleles ii?

(A) Blood group B (B) Blood group AB (C) Blood group 0 (D) Blood group A

39. Example of co-dominance is:

(A) Blood group AB (B) Blood group O (C) Blood group A (D) Blood groupB

40. For which colour there is no gene in Four o Clock plants:

(A) white (B) red (C) green (D) pink

41. The Punnett square is also called:

(A) mendel board (B) genetic board (C) checker board (D) score board

42. An example of discontinuous variation is:

(A) Intelligence (B) Blood groups (C) Height (D) Weight

43. Sources of variations. in the Organisms are:

(A) Mitosis (B) Crossing Over (C) Both B & C (D) Mutation

44. The types of inheritable variations are:

(A) 2 (B) 5 (C) 4 (D) 3

45. Charles Darwin proposed the mechanism of organic evolution in:

(A) 1840 (B) 1839 (C) 1850 (D) 1838

46. Variations are source of:

(A) Population (B) Artificial Selection (C) Evolution (D) Pollution

47. The anti-evolution idea is called:

(A) Darwinism (B) breeding theory
(C) special evolution theory (D) theory of special creation

48. Theory of natural selection was presented by:

(A) Lamarck (B) Darwin (C) Mendel (D) Buffon

49. Term artificial selection was expressed by a Persian scientist:

(A) Abu Rayhan Biruni (B) C.D Buffon (C) Theophrastus (D) Aristotle

50. Bred plants are called:

(A) Carnivores (B) Cultivars (C) Herbivores (D) Breeds

51. An important example of incomplete dominances is:

(A) Shape of pea seed (B) Color of four O clock flower
(C) Size of pea plant (D) Color of pea plant flower

52. The Allele which is not expressed is called:

(A) Homozygous (B) Dominant (C) Recessive (D) Heterozygous

53. Which relationship is found in Alleles of Blood Group I^A and I^B:

(A) Recessive (B) complete Dominance
(C) Co-Dominance (D) incomplete Dominance

54. A define combination of Genes in an individual is called:

(A) Hybrid (B) Breeds (C) Phenotype **(D) Genotype**

55. Phenotypes ratio in incomplete dominance is:

(A) 1:2:1 (B) 3:1 (C) 1:3 (D) 3:3:1

56. The genotype of "O" blood group is:

(A) $I^A i$ **(B) ii** (C) $I^B I^B$ (D) $I^A I^A$

57. Changes in DNA are called:

(A) Zygous (B) Heterozygous **(C) Mutations** (D) Homozygous

58. The book "Natural selection" written by Darwin was published in:

(A) 1960 (B) 1959 (C) 1860 **(D) 1859**

59. How many years Darwin spent his voyage on HMS?

(A) 5 years (B) 6 years (C) 7 years (D) 4 years

60. The part of DNA that contains the instructions for the synthesis of a particular protein is known as:

(A) Chromosome **(B) Gene** (C) Alleles (D) Traits

61. Person with blood group B has genotype:

(A) $I^A i$ (B) ii **(C) $I^B I^B$** (D) $I^A I^A$

62. Transmission of characteristic from parents to offspring is:

(A) chromosome (B) trait (C) genetics **(D) inheritance**

63. Number of Nitrogen bases in DNA is:

(A) 4 (B) 5 (C) 6 (D) 7

64. In artificial selection, the bred animals are called:

(A) Varieties **(B) Breeds** (C) Cultivars (D) Hybrids

65. Transcription is carried out by:

(A) chromatids (B) DNA **(C) mRNA** (D) ribosomes

66. Variations are caused by:

(A) Same combinations of chromosomes in gametes (B) Asexual Reproduction
(C) Different combinations of chromosomes in gametes (D) Mitosis

67. Mendel got the ratio of tall to short plants in F2 as:

(A) 1:3 9:3 (B) 9.:3:3:1 (C) 2:3 **(D) 3:1**

68. In transcription, the specific sequence of DNA nucleotides is copied in the form of ..... nucleotides.

(A) m RNA (B) RNA -polymerase (C) t RNA (D) u RNA

69. Who was first to propose the mechanism of evolution:

(A) Abu Rayhan **(B) Lamarck** (C) Darwin (D) Buffon

70. DNA is a material:

(A) Homogenesis (B) Homotype **(C) Hereditary** (D) Homologus

71. Guanine forms pair with?

(A) Thymine (B) Adenine (C) Catbon **(D) cytosine**

72. How many contrasting traits Mendel studied in pea plant?

(A) 7 (B) 6 (C) 5 (D) 4

73. Which one is an example of continuous variations:

(A) Ribosome (B) Height (C) Blood groups (D) Nucleosome

74. Gregor Mendel was a Priest in:

(A) Australia (B) America (C) Austria (D) England

75. In human body cells, the number of chromosomes is:

(A) 26 (B) 23 (C) 46 (D) 48

76. The name of protein present in chromatin material is:

(A) Histone (B) Fibrin (C) Hemoglobin (D) Insulin

77. In which one histone protein is present:

(A) Centrosome (B) Chromosomes (C) RNA (D) DNA

78. Movement of genes from one population to another is called:

(A) Recombination (B) Mutations (C) Gene flow (D) Crossing over

Chapter : 15	Inheritance	pakcity.org

Subjective

Q1: ***What is meant by inheritance?***

Ans: *Inheritance means the transmission of characteristics from parents to offspring.*

Q2: ***Define genetics.***

Ans: ***Genetics:***

Genetics is the branch of biology in which we study inheritance.

Q3: ***Define Trait. Write two human Traits.***

Ans: ***Trait:***

The characteristics which are controlled or transmitted to next generation through genes called trait.

Human trait:

In human height colour of eyes, are traits.

Q4: ***What is meant nucleosomes?***

Ans: ***Nucleosomes:***

DNA wraps around histone proteins and forms round nucleosomes.

Q5: ***Define chromosome. OR What is Chromatin?***

Ans: ***Chromosome:***

Chromosome is made of chromatin material (simply as chromatin). Chromatin is a complex material, made of DNA and proteins (mainly histone proteins).

This diagram is just for information.

Figure Chemical composition of chromosome

Q6: ***What are homologous chromosomes?***

Ans: *Homologous chromosomes:*

The body cells have a constant number of paired chromosomes. The two chromosomes of a pair are known as homologous chromosomes.

Q7: ***How does the DNA of chromosome work?***

Ans: *DNA is the genetic material i.e it contains the instructions to direct all the functions of cells. It performs its role by giving instructions for the synthesis of specific proteins.*

Some proteins perform structural roles while the others act as enzymes to control all biochemical reactions of cells.

In this way, it actually controlled by its DNA. In other words, DNA makes the characteristic or trait of cell or organism.

This diagram is just for information.

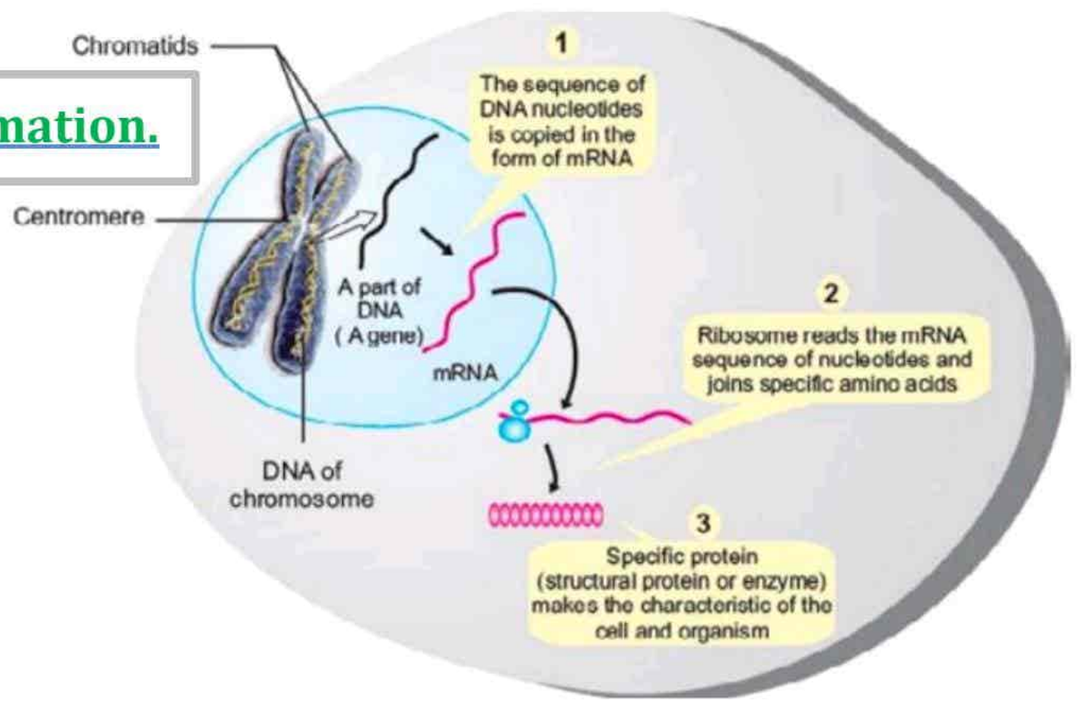

Figure Working of DNA (also called the Central Dogma)

Q8: ***Write two points of Watson - Crick Model of DNA.***

Ans: *The two points of Watson-Crick Model of DNA are:*

- *DNA molecule consists of two polynucleotide strands.*
- *There is a phosphate-sugar backbone on the outside of double helix, and the nitrogenous bases are on the inside.*

Q9: ***What is meant by genotype?***

Ans: ***Genotype:***

The specific combination of genes in an individual. It may be homozygous or heterozygous. This is called genotype.

Genotype has two types:

- *Homozygous*
- *Heterozygous*

Q10: ***What is meant by Phenotype?***

Ans: ***Phenotype:***

The expression of the genotype in the form of trait.

Example:

Albino.

Q11: ***What is difference between gene and loci?***

Ans: *The difference between gene and loci is:*

Gene	Loci
It is the unit of inheritance. It consists of the length of DNA that contains specific instruction for synthesis of a protein molecule.	*The location or position of gene on chromosomes is known as loci.*

Q12: ***What is the difference between transcription and translation?***

Ans: *The difference between transcription and translation is:*

Transcription	Translation
The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is	*The mRNA carries the sequence of its nucleotides to ribosome. This ribosome reads this sequence and joins specific amino*

called transcription.	*acids. According to it to form protein. This step is known as translation.*

Q13: ***What is difference between homozygous genotype and heterozygous genotype?***

Ans: The difference between homozygous genotype and heterozygous genotype is:

Homozygous genotype	***Heterozygous genotype***
The genotype in which the gene pair contains two similar alleles (AA) is called homozygous genotype.	*The genotype in which the gene pair contains two different alleles (Aa) is called heterozygous genotype.*

Q14: ***What is meant by dominant allele?***

Ans: ***Dominant allele:***

When in the heterozygous condition one, allele makes or prevents the expression of the other, it is called dominant allele.

Q15: ***What is meant by Recessive allele?***

Ans: ***Recessive allele:***

The allele which does not express is called recessive allele.

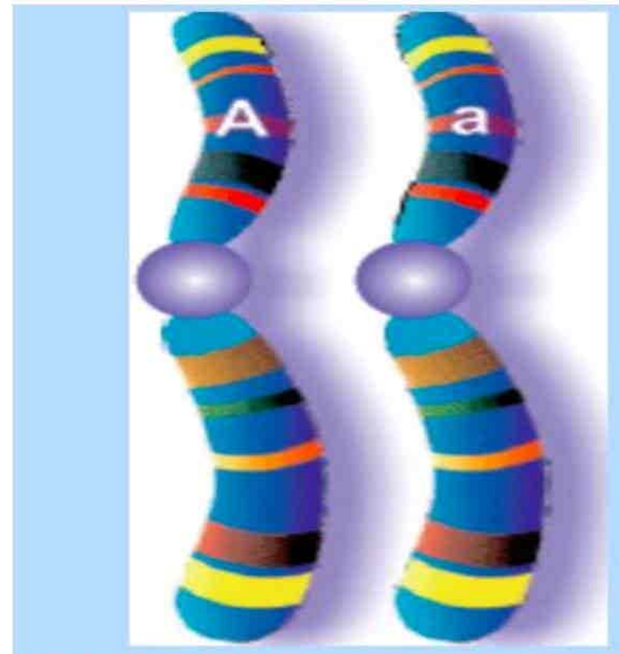

Figure Location of alleles on chromosomes

Q16: ***What is difference between gene and allele?***

Ans: The difference between gene and allele is:

Gene	***Allele***
It is the unit of inheritance consist the strand of DNA that contains specific instruction for the synthesis of protein molecule.	*The alternate, forms of genes are called alleles.*

Q17: ***What is meant by Albinism?***

Ans: ***Albinism:***

A condition in which normal body pigments are absent. It is a recessive trait. It is produced when both alleles are recessive.

Q18: ***Define DNA Replication.***

Ans: ***DNA Replication:***

DNA is replicated before a cell divides. It is done to make the copies of the chromatids of chromosomes. During replication, DNA double helix is unwound and the two stands are separated, much like the two sides of a zipper. Each stand act as template to produce another strand. Its nitrogenous bases make pairs with the N-bases' of new nucleotides. In this way, both template strands make new polynucleotide strands in front of them.

This diagram is just for information.

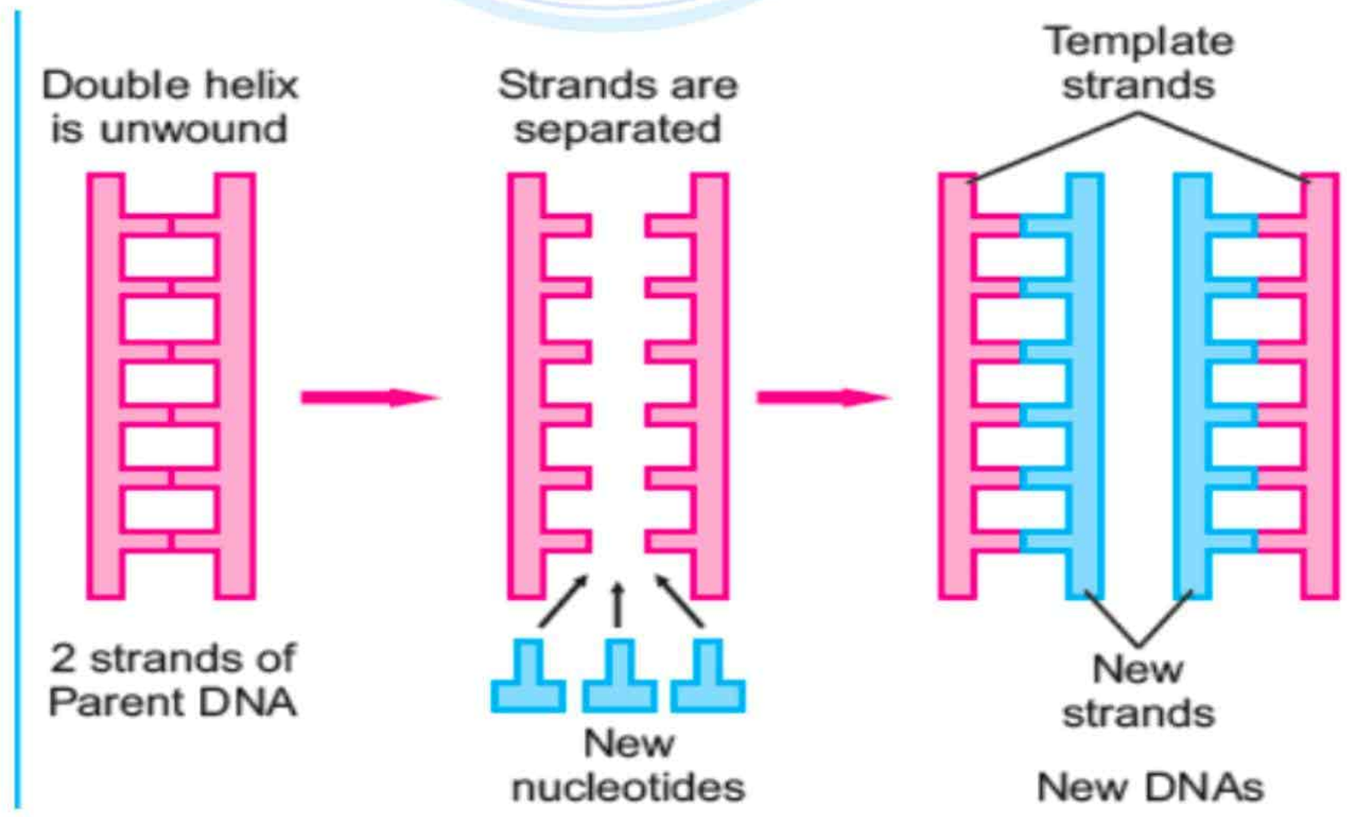

Figure How does DNA replicate?

Q19: ***Write the name of nitrogenous bases of DNA?***

Ans: The name of nitrogenous bases of DNA is:

- *Adenine*

- *Cytosine*
- *Thymine*
- *Guanine*

Q20: ***Why Mendel selected pea plants?***

Ans: Mendel selected pea plants because:

- *Pea plant has short life span and fast life cycle.*
- *Pea plant is self-pollinated as well as cross pollinated.*
- *There is presence of several contrasting character / sub character.*
- *Cross-pollination can be done easily.*

This diagram is just for information.

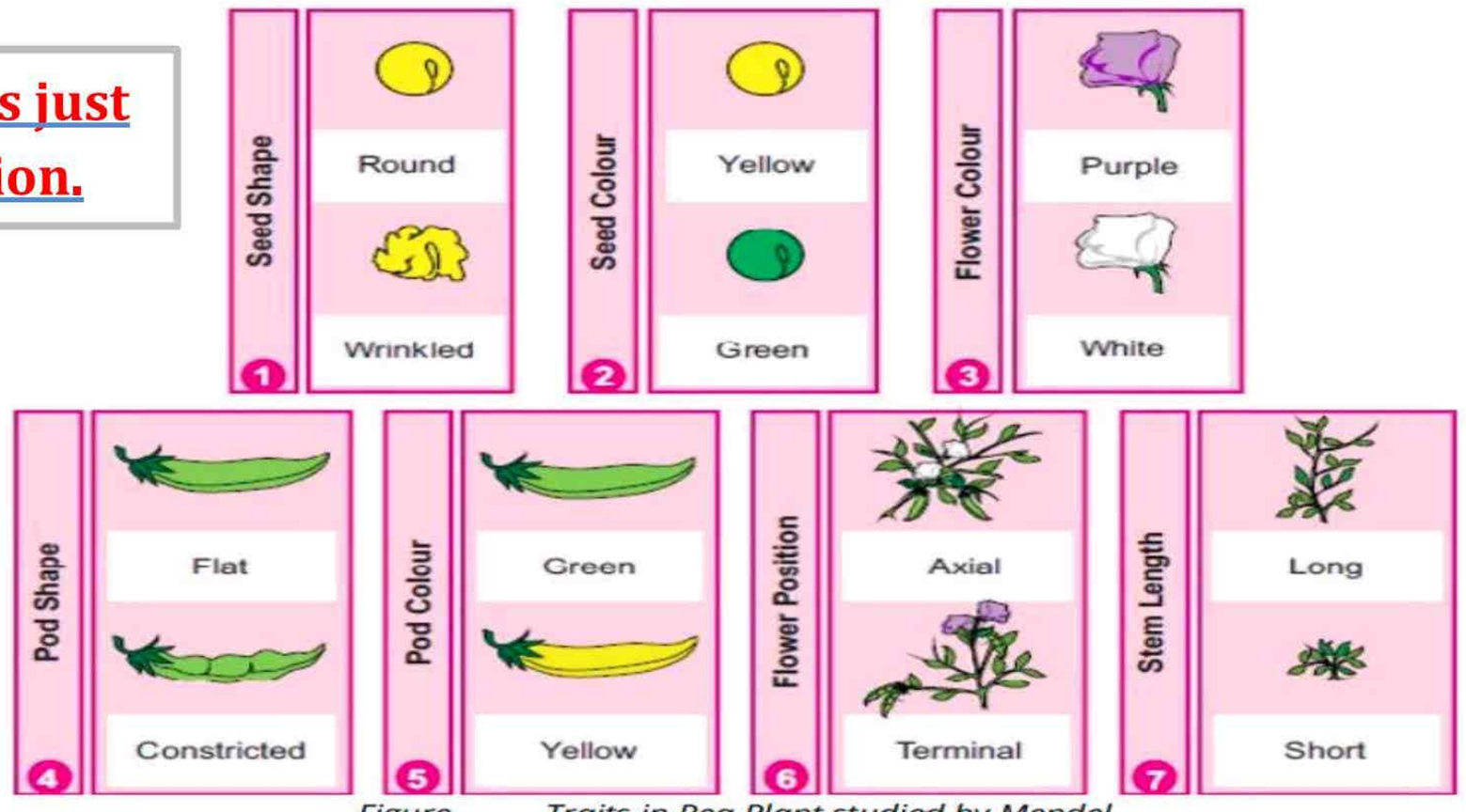

Figure . Traits in Pea Plant studied by Mendel

Q21: ***Write down scientific name of pea plant. How many pea plants were used by Mendel?***

Ans: Scientific name of pea plant is Pisum Sativum.
Mendel used 28000 pea plants in his experiment.

Q22: ***On which plant Mendel performed experiments.***

Ans: Mendal used 28,000 pea plants in his experiments.

Q23: ***Name any four Contrasting traits in pea plant.***

Ans: The name of four Contrasting traits in pea plant is:

- *Seed shape*
- *Pod shape*
- *Seed Colour*
- *Flower Colour*

Q24: ***State Mendel's law of segregation.***

Ans: When the gametes of male and female parents unite, the resulting offspring against gets the genes in pairs. These, conclusions were called the law of segregation.

Q25: ***What is meant by monohybrid and dihybrid cross?***

Ans: ***Monohybrid:***

A cross in which only one trait is studied at a time is called as monohybrid cross.

Dihybrid cross:

Crosses in which two contrasting traits are studied at a time are called dihybrid cross.

Q26: ***What is meant by true breeding?***

Ans: The term true breeding means Homozygous.

Q27: ***State Mendel's Law of Independent Assortment.***

Ans: Mendel's law of independent Assortment is stated as:
The alleles of gene pair segregate (get separated and distributed in gametes) independently from the alleles of other gene pairs.

Q28: ***What is punnet square?***

Ans: Punnet square is a diagram that is used to predict an outcome of a particular cross or breeding experiment.

Q29: ***Write genotype of blood group 'AB' and 'O'.***

Ans: Genotype of blood group "AB" is I^AI^B Genotype of blood group "O" is ii.

Q30: ***What will be the genotype and phenotype of plants produced as a result of cross between red flowered and white flowered" four-o-clock" plants?***

Ans: *In four O clock plants the trait of flower colour is controlled by two alleles (R&r). The true breeding plants RR and rr have red and white flowers. When a homozygous red flowered plant (RR) is crossed with homozygous, white flowered (rr), the heterozygous (Rr) plants produce pink flower.*

This result clearly indicates that neither of red flowered allele (R) and white flowered allele (r) is dominant.

In genotype:

The genes of red flower and white flower combines and produces resultantly blend pink flower.

Q31: ***Differentiate between Co-dominance and incomplete dominance.***

Ans: *The difference between Co-dominance and incomplete dominance is:*

Co-dominance	Incomplete dominance
It is the situation where two different alleles of a gene pair express themselves completely instead of showing a dominant recessive relationship. As a result the heterozygous organism shows a phenotype that is different from both homozygous parents. *The example of co-dominance, is the Expression of human blood group AB.*	*It is situation where in heterozygous genotypes, both the alleles express as blend (mixture) and neither allele is dominant over the other. As a result, an intermediate phenotype is expressed.*

Q32: ***What are two sources of Variations?***

Ans: *The two sources of Variations are:*

- *The genetic recombination produced through crossing over results in gametes with variation.*
- *Mutation is important source of variation. Mutations also happen during gametes formation through meiosis.*

Q33: ***What is meant by Continuous variations?***

Ans: ***Continuous variation:***

In this the phenotypes show a complete range of measurements from one extreme to the other.

Example:

- *Height*
- *Weight*
- *Feet size*
- *Intelligence etc.*

Q34: ***What is meant by discontinuous variations?***

Ans: ***Discontinuous variations****:*

It shows distinct phenotypes. The phenotypes of such variation cannot be measured. The individual of a population either have distinct phenotype, which can be distinguished from each other.

Q35: ***Define theory of special creation.***

Ans: *Theory of special creation is:*

According to this theory all living things had been created in their current form only a few thousand years ago.

Q36: ***Define organic or biological evolution.***

Ans: *Organic evolution (biological evolution) is the change in the characteristics of a population or species of organisms over the course of generations.*

Q37: ***Describe two major processes of organic evolution.***

Ans: *Two major processes of organic evolution are:*

- *Alternation in genetic characteristics (trait) of a type of organism over time.*

- *Creation of new types of organisms from a single type.*

Q38: ***Write the name of Darwin's book.***

Ans: *On the origin of species by means of natural selection.*

Q39: ***What is Difference between Natural selection and Artificial selection?***

Ans: *The difference between Natural selection and Artificial selection is:*

Natural selection	Artificial selection
It is a process by which genetic variation is successively transmitted in generations of a population. These are more common in generations.	*Artificial selection means intentional breeding between individuals for certain traits or combination of traits.*

Q40: ***Which scientist introduced artificial selection?***

Ans: *Artificial selection was introduced by Persian scientist Abu Rayhan Biruni in the 11th century.*

Q41: ***What are breeds and cultivars?***

Ans: *In artificial selection, breed animals are known as breed while breed plants are known as cultivars.*

Q42: ***What is the important of selective breeding?***

Ans: ***Continuous fermentation:***

It has revolutionized agricultural and livestock production throughout the world. Animals or plants having desirable characteristics are selected for breeding.

Q43: ***What are advantages of artificial selection?***

Ans: *Advantages of artificial selection are:*

Numerous breeds of sheep, goat, cow, hen etc have been produced by artificial selection to increase the production of wood, meat, milk eggs etc.

Q44: ***Define mutation.***

Ans: ***Mutation:***

Mutations mean changes in DNA. It is also important source of variations, Mutations also happen during gametes formation through meiosis.

Q45: ***What is the relation of favourable variations with natural selection?***

Ans: *The organisms with favourable variations are able to reproduce and pass these variations to their next generations.*

Q46: ***What is the effect of dominant allele on recessive allele?***

Ans: *A dominant allele only suppresses the expression of recessive allele. It does not affect its nature.*

Q47: ***Write down the bonding between nitrogenous bases in DNA model.***

Ans: *Adenine of one Nucleotide forms two hydrogen bonds with thymine. Guanine of Nucleotides forms three hydrogen bonds with cytosine of other, Nucleotides.*

Q48: ***What is Nucleotide? Write the name of three components?***

Ans: ***Nucleotide:***

DNA is made up of compounds called Nucleotides. A DNA molecule consists of two polynucleotide strands.

Nucleotides have three Components:

- *Nitrogenous base*
- *Phophate group*
- *Sugar*

Q49: ***Write down contributions of Charles Darwin for evolution.***

Ans: *Charles Darwin proposed the theory mechanism of organic evolution in 1838. It was called as "The theory of Natural Selection" He also published a book "On the origin of Species by mean of Natural Selection" in 1859.*

Q50: ***Genotype of plants produced as a result of cross between two plants having Genotype Rr?***

Ans: When two heterozygous plants with pink flower (R) are crossed F2 generation shows phenotypes of Red, pink and white flowers in the ratio of 1:2:1

Q51: ***Write all possible Genotypes of Blood group A and" Blood group B.***

Ans: All possible Genotypes of Blood group A and" Blood group B is:

- *Genotype of blood group A. I^AI^A or I^A i.*
- *Genotype for blood group B. I^BI^B or I^B i.*

This diagram is just for information.

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Genotype	Antigen produced	Phenotype	Relationship Between Alleles
I^AI^A or I^Ai	Antigen A	Blood Group A	Allele I^A is dominant over i
I^BI^B or I^Bi	Antigen B	Blood Group B	Allele I^B is dominant over i
ii	No Antigen	Blood Group O	Allele i is recessive
I^AI^B	Antigen A & Antigen B	Blood Group AB	Alleles I^A and I^B are co-dominant

Q52: ***How do variations bring about evolution? Describe briefly.***

Ans: Organic evolution is change in the characteristics of a population or species of organisms over the course of generation. The evolutionary changes are always inheritable. The changes in an individual are not considered as evolution, because evolution leads to population and not to individuals.

Q53: ***How biotechnology has helped us in improving the environment?***

Ans: Biotechnology is also being used for dealing with environmental issues like pollution control, development of renewable sources of energy, restoration of degraded lands and biodiversity conservation. Bacterial enzymes are used to treat sewage water to purify.

Q54: ***What you know about central dogma?***

Ans: The central dogma explains the flow of genetic information from DNA to RNA, to make a functional product, a protein. Working of DNA also called the central dogma.

$$DNA \rightarrow RNA \rightarrow Protein$$

Q55: ***For which purpose checker board is used? What is Test Cross? Why is it needed?***

Ans: A checker board is used to cross all the possible gametes of one parent with all the gametes of other parent. It this way, a biologist can find all possible genotypes of offspring.

Q56: ***What you know about gene flow?***

Ans: Gene flow means movement of genes from one population to another. It is an important source of variation.

Chapter : 15	Inheritance

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Imp.Long Questions

Q.1: ***Write a note on Replication of DNA OR Explain Watson-Crick Model of DNA. OR How does DNA of Chromosome Works? Explain. (V.imp)***

Q.2: ***Who was Mendel? Why Mendel selected pea plant for his experiments?***

Q.3: ***Describe Mendel's Law of segregation.***

Q.4: ***State Mendel's Law of Independent Assortment. Explain it with help of example.***

Q.5: ***Describe Co-dominance and Incomplete Dominance and give examples.***

Q.6: ***Differentiate between continuous and discontinuous variations.***

Q.7: ***Prove that variations lead to evolution.***

Q.8: ***What do you mean by natural selection? Explain it. OR Explain "Mechanism of Evolution - Natural Selection".***

Q.9: ***What is artificial selection? Give its scope and importance with examples.***

Chapter: 16

Man and his Environment

Objective

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1. An example of carnivore plants is:

(A) Pitcher plant (B) Ferns (C) Rose plant (D) Mosses

2. The biggest decomposer of biosphere are:

(A) Virus (B) Bacteria and fungi (C) Bacteria (D) Fungi

3. A group of organisms of the same species living in a particular area is called:

(A) Abiotic factor (B) Population (C) Ecology (D) Community

4. It is an example of secondary consumers:

(A) Wolf (B) Tiger (C) Cattle (D) Lion

5. Which is not biotic factor?

(A) Animals (B) Plants (C) Bacteria (D) Soil

6. It is the example of tertiary consumers:

(A) frog (B) cattle (C) lion (D) Snake

7. The study of the relation between living organisms and their environment is:

(A) morphology (B) histology (C) biology (D) ecology

8. The thickness of biosphere is about:

(A) 40 km (B) 30 km (C) 20 km (D) 10 km

9. Which animal is a primary consumer?

(A) fox (B) grasshopper (C) frog (D) lion

10. To fulfill their nitrogen requirements carnivorous plants eat:

(A) Worms (B) Fungus (C) Insects (D) Bacteria

11. The United Nations established Intergovernmental Panel on climate change in:

(A) 1990 (B) 2022 (C) 2021 (D) 2020

12. Which one ecologist developed the concept of ecological pyramids?

(A) Darwin (B) Lamarck (C) Charles Elton (D) Mendel

13. Which one is the reservoir of free gaseous nitrogen:

(A) Water (B) Consumers (C) Atmosphere (D) Producers

14. Which one is main producer in aquatic ecosystem:

(A) Bacteria (B) Fungi (C) Protozoans (D) Phytoplankton

15. The current level of urbanization in Pakistan is about:

(A) 52 % (B) 42 % (C) 32% (D) 22%

16. Which of the following is the abiotic component of the ecosystem?

(A) Carnivores (B) Oxygen (C) Herbivores (D) Producers

17. When we eat onions, our trophic level is:

(A) Primary consumer (B) Producer
(C) Secondary consumer (D) Decomposer

18. In the food chain "grass →rabbit →fox→ bear→ mushroom", how many types of decomposers are present?

Ⓐ 3 Ⓑ 2 **Ⓒ 1** Ⓓ 4

19. Organisms in the ecosystem that are responsible for the recycling of plant and animal wastes are:

Ⓐ Competitors Ⓑ Producers Ⓒ Consumers **Ⓓ Decomposers**

20. Which form of Nitrogen is taken by the producers of the ecosystem?

Ⓐ Nitrites Ⓑ Nitrogen gas Ⓒ Ammonia **Ⓓ Nitrates**

21. R-2 means:

Ⓐ Recycle Ⓑ Reduce **Ⓒ Reuse** Ⓓ Renewable

22. Which Plant is not a Carnivores:

Ⓐ Sundew **Ⓑ Cactus** Ⓒ Venus Flytrap Ⓓ Pitcher Plant

23. Materials can be recycled:

Ⓐ Paper, Glass, Plastic Ⓑ Paper Ⓒ Glass Ⓓ Plastic

24. Large mammals that feed on honey:

Ⓐ Elephant **Ⓑ Badger** Ⓒ Phenotype Ⓓ Genotype

25. Which type of symbiosis relationship is there in termite and protozoan?

Ⓐ predation Ⓑ parasitism **Ⓒ mutualism** Ⓓ commensalism

26. All carnivore animals are:

Ⓐ Predator Ⓑ Pathogen Ⓒ Host Ⓓ Parasite

27. Abiotic component of an ecosystem is:

Ⓐ Consumer Ⓑ Decomposet **Ⓒ Light/water/ soil** Ⓓ Producer

28. Biotic component of an ecosystem is:

Ⓐ Air Ⓑ Water Ⓒ Light **Ⓓ Plant/producers**

29. The primary / basic source of energy for all Ecosystems is the:

Ⓐ Environment Ⓑ Stars Ⓒ Moon **Ⓓ Sun**

30. The basic Trophic Level of all food chains is:

Ⓐ Consumers Ⓑ Reducers **Ⓒ Producers** Ⓓ Decomposers

31. Charles Elton developed the concept of ecological pyramid in:

Ⓐ 1926 **Ⓑ 1927** Ⓒ 1925 Ⓓ 1924

32. Conversion of nitrates into nitrogen gas is called:

Ⓐ Denitrification Ⓑ Ammonification Ⓒ Nitrogen fixation Ⓓ Assimilation

33. More than normal denitrification change the richness of soil as:

Ⓐ Finished **Ⓑ less** Ⓒ Increase Ⓓ Bad

34. Formation of nitrites and nitrates from Ammonia is called:

Ⓐ Ammonification Ⓑ Assimilation **Ⓒ Nitrification** Ⓓ Denitrification

35. To convert nitrogen gas into nitrate is called:

Ⓐ Ammonification Ⓑ Assimilation Ⓒ Denitrification **Ⓓ Nitrogen fixation**

36. It is perfect cycle in the sense that is returned to atmosphere as soon as it is removed:

(A) oxygen cycle (B) water cycle (C) nitrogen cycle **(D) carbon cycle**

37. Example of Endoparasites is:

(A) Leech (B) Lices **(C) plasmodium / ascaris** (D) Mosquito

38. Example of ectoparasite is:

(A) Ascaris **(B) Mosquito / lice** (C) bacteria (D) virus

39. The type of symbiotic association in which one partner gets benefits while other is not benefited nor harmed is called:

(A) Commensalism (B) predation (C) Mutualism (D) Parasitism

40. It is a consumer:

(A) Grass **(B) Rabbit** (C) Phytoplankton (D) Alga

41. Type of symbiosis in which both partners are benefited and neither is harmed is called:

(A) parasitism (B) commensalism **(C) mutualism** (D) symbiosis

42. 250 years ago, the population of world was approximately ..... millions.

(A) 400 (B) 500 (C) 700 **(D) 600**

43. pH of acid rain is:

(A) 2-3 (B) 3 -4 (C) 3 -5 **(D) 3-6**

44. Dengue fever is a /an ..... infection.

(A) algal (B) fungal **(C) viral** (D) bacterial

45. Dengue virus attacks on:

(A) red cells **(B) white cells** (C) brain (D) platlets

46. A recovery of one tone of paper can save how many tresses?

(A) 17 (B) 10000 (C) 170 (D) 200

47. The interaction between the members of the sane species is called:

(A) Mutualism **(B) Intra specific** (C) Interspecific (D) None of these

48. Biosphere surrounding the Earth is about:

(A) 18 km (B) 19 km **(C) 20 km** (D) 17 km

49. R-3 means:

(A) Refuse (B) Less use (C) Reuse **(D) Recycle**

50. The total amount of living matter in an ecosystem at any time is called:

(A) Food web (B) Food chain (C) Energy **(D) Biomass**

51. Mosquitoes, lice and leaches are examples of:

(A) Endoparasite (B) Obligate parasite (C) Both A & B **(D) Ectoparasite**

52. Non-renewable resources are:

(A) Soil (B) Water **(C) Fossil fuels** (D) Wind

53. All ecosystems of the world together form:

(A) habitat **(B) biosphere** (C) community (D) population

54. Since 1800 A.D, the amount of CO_2 increased in atmosphere is:

(A) 50% (B) 40% **(C) 30%** (D) 20%

55. The smallest unit in ecological organization is:

(A) species (B) ecosystem (C) population (D) community

56. The enrichment of nitrates and phosphates in water is called:

(A) nitrification (B) decomposition (C) pollution (D) Eutrophication

57. In 1927 an English Ecologist developed the concept of Ecological pyramids:

(A) Darwin (B) Lamark (C) Charles Elton (D) Mendel

58. ..... break down complex organic compound.

(A) Consumers (B) Decomposers (C) Producers (D) All of these

59. Which product is formed during industrial nitrogen fixation?

(A) Ammonia (B) Carbon dioxide (C) Urea (D) Nitrite

60. All Ecosystem of the world together form the:

(A) Habitate (B) Community (C) Population (D) Biosphere

61. Which form of nitrogen is taken by the producers of the ecosystem?

(A) Ammonia (B) Nitrogen gas (C) Nitrates (D) Nitrites

62. The consumers that eat animal flesh as well as plants and plant products are called:

(A) Producers (B) Omnivores (C) Carnivores (D) Herbivores

63. Which is the product of industrial nitrogen fixation?

(A) Ammonia (B) Carbon dioxide (C) Oxygen (D) Urea

64. Which one is the abiotic component of the ecosystem?

(A) Carnivores (B) Air (C) Herbivores (D) Producers

65. ..... is the example of tertiary consumer.

(A) snails (B) sparrows (C) hawk (D) leaves

66. Which animal is an Herbivore?

(A) Fox (B) Owl (C) Frog (D) Grasshopper

67. Animals cannot take Nitrogenous compound from:

(A) Fungi (B) Plants (C) animals (D) Virus

68. Which carnivores are called top carnivores:

(A) Producers (B) Tertiary carnivores
(C) Secondary carnivores (D) Primary carnivores

69. The abiotic component of an ecosystem is:

(A) Producer (B) Herbivore (C) Soil (D) Decomposer

70. When we eat Goat Meat, our Trophic Level is:

(A) Decomposer (B) Primary Consumer
(C) Secondary Carnivore (D) Primary Carnivore

71. The level of Urbanization in Pakistan was about .....as per report of World Bank during 1998 :

(A) 37 % (B) 32 % (C) 40 % (D) 27 %

72. The term R-4 means:

(A) Reforest (B) Recycle (C) Ruse (D) Reduce

73. There are ..... types of dengue virus.

(A) 5 **(B) 4** (C) 3 (D) 2

74. Dengue fever is an ..... infection.

(A) Fungal (B) Algal **(C) Viral** (D) Bacterial

75. The relationship between sucker fish and shark is:

(A) Predation (B) Parasitism (C) Mutualism **(D) Commensalism**

76. How many spermatids are produced from each primary spermatocyte?

(A) 8 (B) 6 (C) 2 **(D) 4**

77. There is ..... for utilization of resources among organism of ecosystem?

(A) Ammonification (B) Pollution **(C) Competition** (D) Population

78. Which one of the following plant is parasite?

(A) Venus flytrap **(B) Cuscuta** (C) Sundew (D) Pitcher plant

79. Lion is:

(A) Carnivore (B) Omnivore (C) Decomposer (D) Herbivore

80. Rabbit is:

(A) Carniyore **(B) Herbivore** (C) Producer (D) Secondary consumer

81. How many types of ecological pyramids are?

(A) 5 (B) 8 **(C) 3** (D) 7

82. The base of food chain is always formed by:

(A) Food web **(B) Plant (producer)** (C) Ecosystem (D) Animal

83. A network of food chains which are interconnected at various trophic levels is called:

(A) food web (B) biomass
(C) pyramid of numbers (D) pyramid of biomass

84. Smog forms a yellowish brown haze and hamper visibility during:

(A) spring (B) autumn **(C) winter** (D) summer

85. Maldives might become Uninhabitable:

(A) within 1000 years (B) within 500 years (C) within 10 years **(D) within 100 years**

86. When Rabbit eats mustard plant, its trophic level will be:

(A) secondary consumers (B) primary carnivores
(C) primary consumers (D) primary producers

Chapter : 16	Man and his Environment

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Subjective

Q1: ***Define ecosystem.***

Ans: ***Ecosystem:***

The self-sufficient unit of an environment that is formed as a result of interaction between its biotic and a biotic component is called ecosystem.

Q2: ***Define ecology.***

Ans: ***Ecology:***

The study of the interrelationship between organism and their environment is called ecology.

Q3: ***Differentiate between population and community.***

Ans: Difference between population and community is:

Population	Community
A group of organisms of the same species inhabiting a specific geographical area at particular time is called population.	*All the populations that live in a habitat and interact in various ways with one another are collectively called community.*

Q4: ***Define species.***

Ans: A species is a group of organisms which can interbreed freely in nature to produce fertile offspring.

Q5: ***Differentiate between Ecosystem and Biosphere.***

Ans: Difference between Ecosystem and Biosphere is:

Ecosystem	Biosphere
➢ *The self-sufficient unit of environment that is formed as a result of interaction between its biotic community and abiotic components is known as ecosystem.* ➢ *Example: A pond, a lake, and a forest.*	➢ *All ecosystems of the world together form the biosphere.* ➢ *Example: Biosphere ranges from floor of ocean to the top of highest*

Q6: ***What is meant by decomposers? Give example.***

Ans: ***Decomposers:***

Decomposers or reducers breakdown the complex organic compounds of dead matter into simple compound.

For example:

- *Bacteria*
- *Fungi*

Q7: ***Differentiate between carnivores and herbivores.***

Ans: Difference between carnivores and herbivores is:

Carnivores	Herbivores
➢ *Carnivores are animals and plants that only consume meat.* ➢ *Example: Lion, tiger etc.*	➢ *Herbivores: Are living organisms that feed on plants.* ➢ *Example: Cattle, deer, rabbit etc.*

Q8: ***What are omnivores?***

Ans: ***Omnivores:***

Omnivores are the consumers that eat animal flesh as well as plants and plant products.

Q9: ***What are carnivore's plants? Give two examples.***

Ans: Carnivores feed on other animals. Primary carnivores feed on herbivores. Fox, frog, snakes etc. are primary carnivores. Secondary carnivores feed on primary carnivore's wolf and owl

etc. is secondary carnivores. Tertiary carnivores e.g. lion, tiger etc. feed on secondary carnivores.

This diagram is just for information.

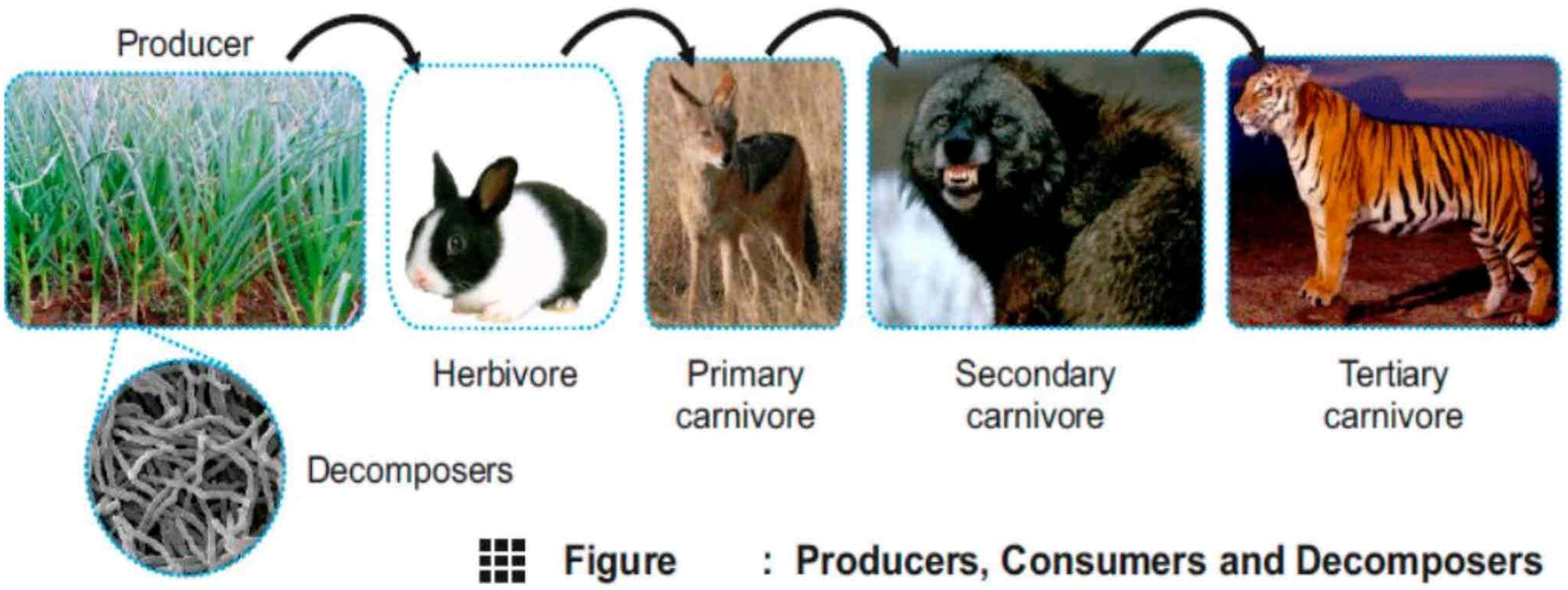


Figure : Producers, Consumers and Decomposers

Q10: ***What is the role of reducers in an ecosystem?***

Ans: Decomposers or reducers breakdown the complex organic compound of dead matter into simple compound. They secrete digestive enzymes into dead and decaying plants and animals to digest the organic material.

Q11: ***What is difference between producers and consumers?***

Ans: Difference between producers and consumers is:

Producers	***Consumers***
Producers are autotrophs present in an ecosystem. These include plants, algae and photosynthetic bacteria. These organisms are able to synthesize complex organic compound from inorganic materials.	*These are heterotrophs. They cannot synthesize their food, so depend upon producers for food. These includes fungi, animals etc.*

Q12: ***Difference between primary and secondary consumers.***

Ans: Difference between primary and secondary consumers is:

Primary consumers	***Secondary consumers***
Herbivores e.g. cattle, dear, rabbit etc. feed on plants. They are the primary Consumers.	*Carnivores feed on other animals. Primary carnivores (secondary consumers) feed on herbivores. Fox, frog, snake etc. are primary carnivores.*

Q13: ***How energy flows in an ecosystem?***

Ans: In an ecosystem, energy flow from one trophic level to the next. The flow of energy is different in different trophic level of ecosystem.

Q14: ***Write the names of abiotic and biotic components of ecosystem.***

Ans: ***Abiotic components:***

The abiotic components include the non-living factors present in ecosystem. The important non-living factors are light, air, water, soil and the basic elements and compound.

Biotic components:

The biotic components comprise the living part organisms) of the ecosystem.
Biotic components are further classified as, producers consumers and decomposers.

Q15: ***Why tertiary carnivores are called top carnivores?***

Ans: Tertiary carnivores are not eaten by any other animals. They are also called top carnivores.

Q16: ***If producers are eliminated from ecosystem; what will happen?***

Ans: The producers are the autotrophs present in an ecosystem. These organisms are able to synthesize complex organic compound (food) from inorganic raw materials. Producers form the basis of an ecosystem. If producers are eliminated from ecosystem the balance of ecosystem will be disturbed and ecosystem can be destroyed.

Q17: ***What is meant by Trophic Level?***

Ans: *Trophic (food) level is the level at which an organism feeds in food chain. The first trophic level is made of producers, the second of primary consumers and so on.*

This diagram is just for information.

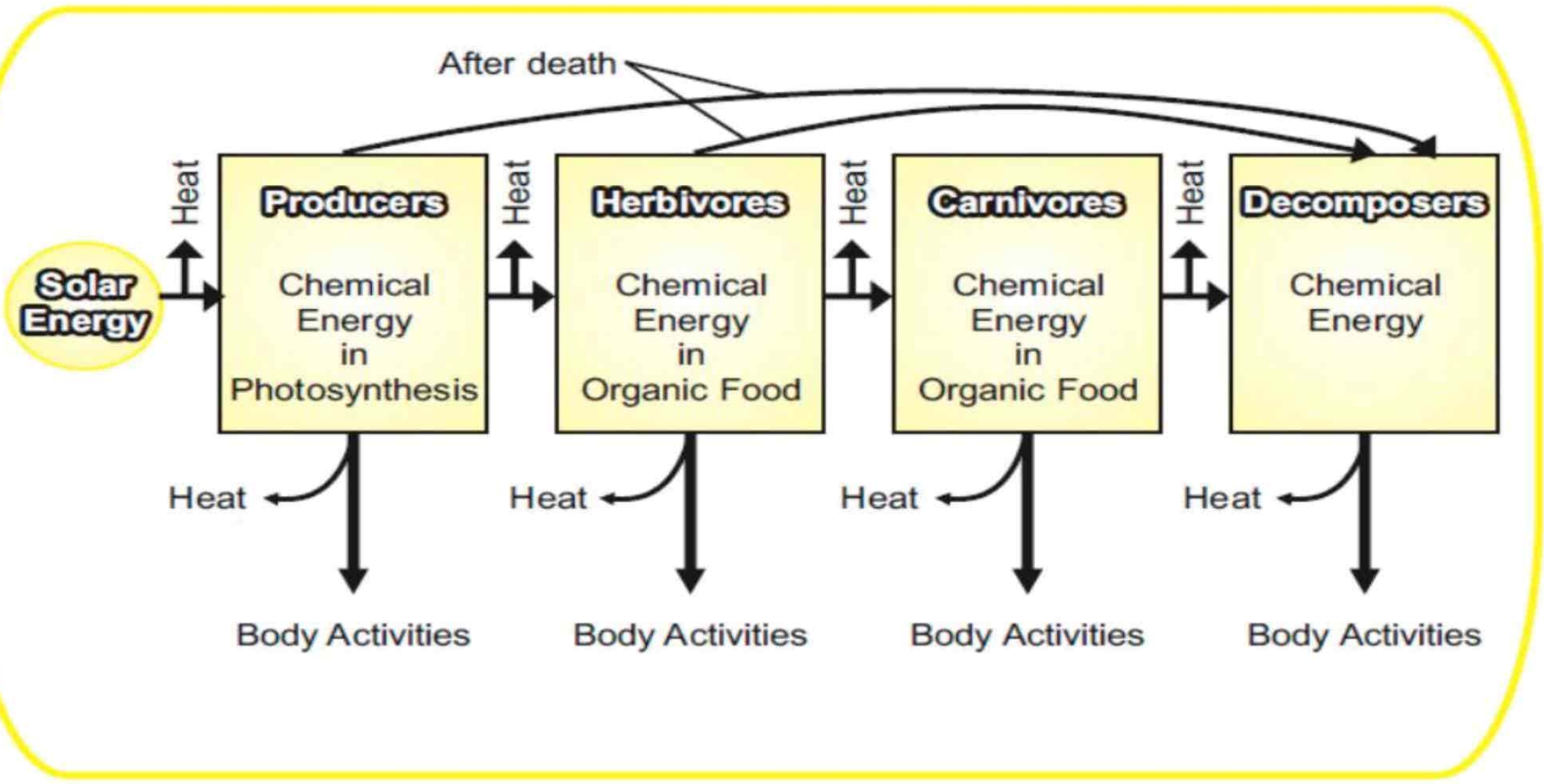


Figure : Energy flow in an ecosystem

Q18: ***How storage and expenditure of energy occur in ecosystem?***

Ans: *The storage and expenditure of energy in an ecosystem is in accordance with the basic law of thermodynamics. i.e energy can neither be created nor destroyed but can be transformed from one form into another.*

Q19: ***Differentiate between food chain and food web.***

Ans: *Difference between food chain and food web is:*

Food chain	***Food web*** pakcity.org
Food chain is a series of organisms within an ecosystem in which each organism feeds on the one before it and fed by the one after it.	*Food web is a network of food chains which are interconnected at various trophic levels.*

Q20: ***Write down the importance of food chain.***

Ans: *Materials flow from one trophic level to next by means of food chains and food web.*

Q21: ***Draw a simple food chain.***

Ans: *A simple food chain:*

Grass ⟶ *Grasshopper* ⟶ *Sparrow* ⟶ *Hawk*

Q22: ***Draw a food web of grassland ecosystem.***

Ans: *A food web of grassland ecosystem is:*

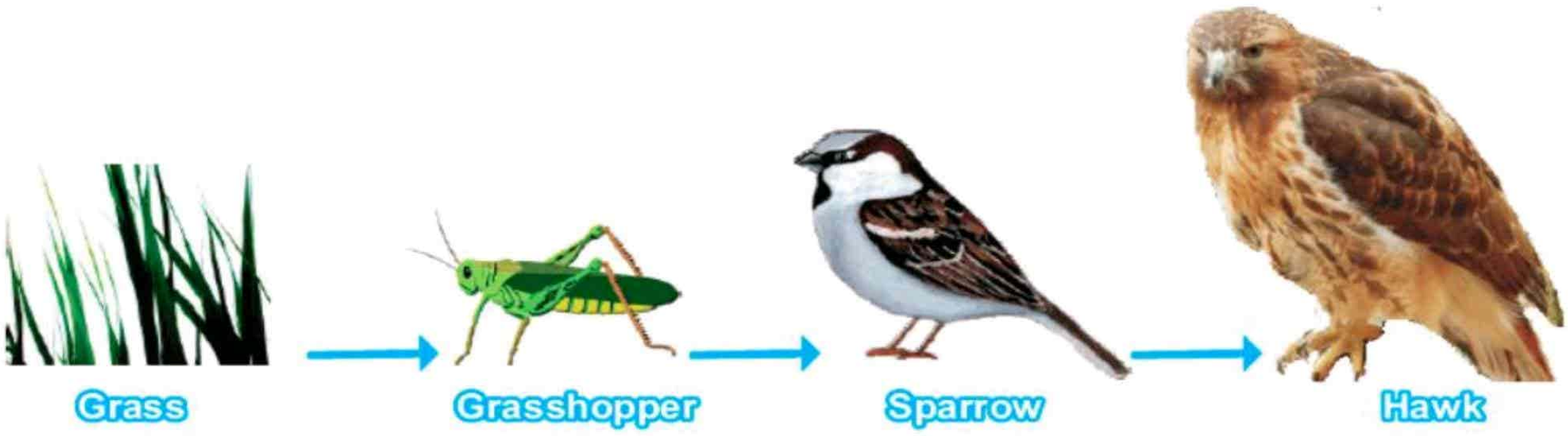


Figure A simple food chain

Q23: ***What is meant by ecological pyramids? Write names of its two types.***

Ans: *A representation of the number of individuals or amount of biomass or energy present in various trophic levels of a food chain. Ecological pyramids are of three types.*

Names of its two types:

- *Pyramid of Numbers*
- *Pyramid of biomass*

Q24: ***Define biomass.***

Ans: *The total amount of living or organic matter in an ecosystem at any time is called Biomass.*

Q25: ***What is meant by pyramids of numbers?***

Ans: *It is the graphic representation of the number of individuals per unit area at various trophic levels. Usually producers are present in lesser number; secondary consumers are fewer and so on. So, the producers are smallest size but maximum in number, while Tertiary consumers are large in size but lesser in number.*

Q26: ***What is meant by pyramids of biomass?***

Ans: *It is the graphic representation of biomass present per unit area at different trophic levels. In a terrestrial ecosystem, the maximum biomass occurs in producers, and there is progressive decrease in biomass from lower to higher trophic levels.*

Q27: ***Why is carbon cycle called a perfect cycle?***

Ans: *Carbon cycle is a perfect Cycle in the sense that carbon is returned to atmosphere as soon as it is removed.*

Q28: ***What is meant by fossil fuel? Give two examples.***

Ans: *Fossil fuels are formed over long period of time from decay of plants and animals. Petroleum, natural gas and coal are the fossil fuels.*
Examples of the fossil fuels are:

- *Petroleum*
- *Natural gas*
- *Coal*

Q29: ***What are environment friendly fuels?***

Ans: *Lead-free fuels should be used in automobiles. Similarly, Sulphur-free should be used in coal based industry to reduce pollution by Sulphur. OR*
Lead-free and sulphur free fuels are environment friendly fuel.

Q30: ***Define Nitrogen Fixation. Write its various types.***

Ans: ***Nitrogen Fixation:***
Conversion of nitrogen gas into nitrates is called nitrogen fixation.
Nitrogen Fixation has two types:

- *Atmospheric nitrogen Fixation*
- *Biological nitrogen fixation*

Q31: ***What is meant by biogeochemical cycles?***

Ans: ***Biogeochemical cycles:***
Biogeochemical cycles are the cyclic pathways through which material move from environment to organism and back to the environment.

Q32: ***Define ammonification.***

Ans: *Ammonification is the breakdown of the proteins of dead organisms and nitrogenous wastes (urea, uric acid etc.) to ammonia. It is done by ammonifying bacteria.*

Q33: ***What is meant by assimilation?***

Ans: ***Assimilation:***
The nitrates formed by the above processes are absorbed by plants and are utilized for making proteins etc. Animals take nitrogenous compounds from plants. The utilization of nitrates by organisms is called assimilation.

Q34: ***What is industrial nitrogen fixation?***

Ans: *Industrial nitrogen fixation is:*
In industrial nitrogen fixation, hydrogen is combined with atmospheric nitrogen under high pressure and temperature. It produces ammonia which is further converted into ammonium nitrate.

This diagram is just for information.

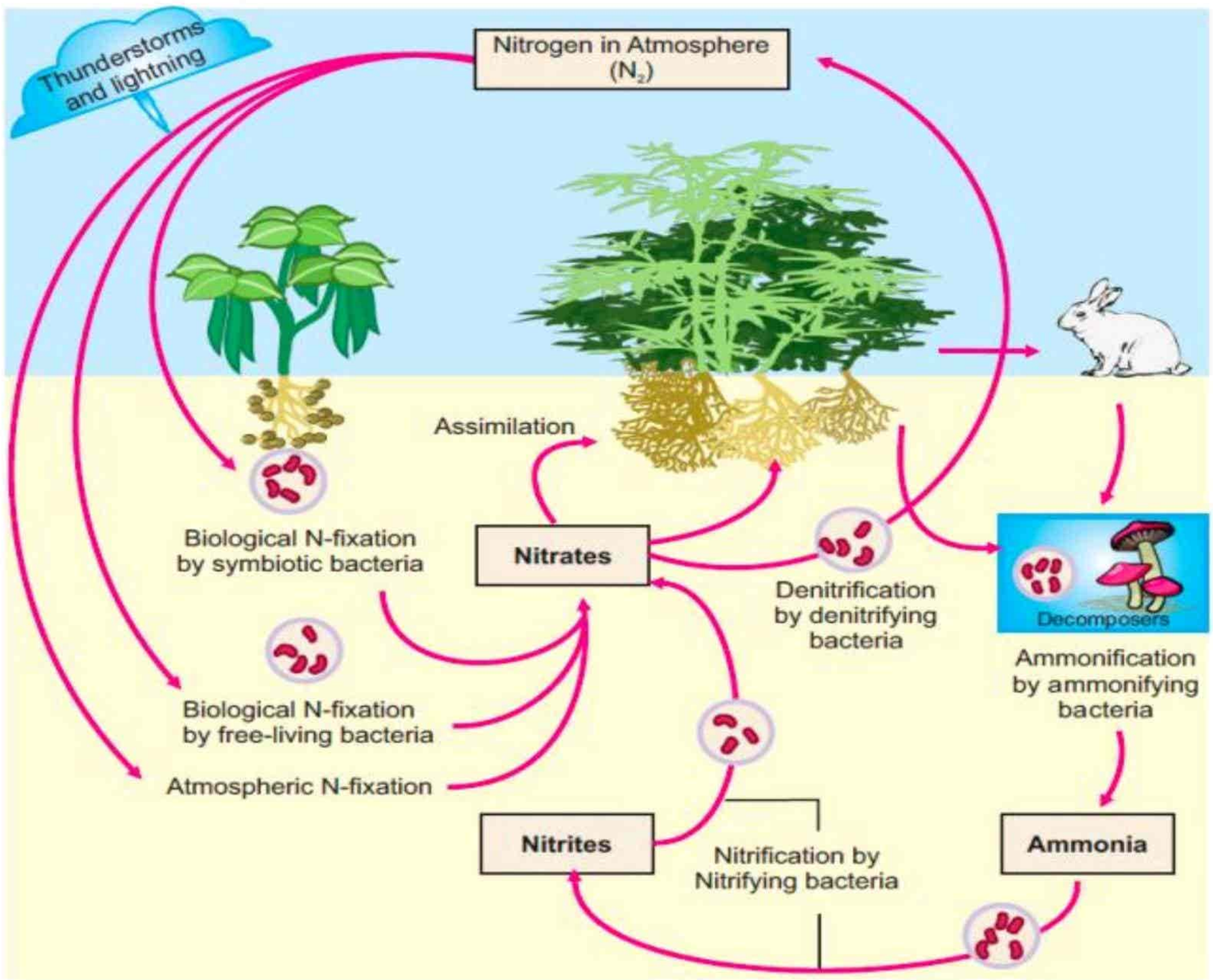


Figure Nitrogen cycle

Q35: ***Differentiate between nitrification and de-nitrification.***

Ans: Difference between nitrification and de-nitrification is:

Nitrification	De-nitrification
When ammonia is converted into nitrites and nitrates called nitrification.	*It is biological process in which nitrates and nitrites are reduced to nitrogen gas by denitrifying bacteria. By this process, nitrogen is returned to atmosphere called de-nitrification.*

Q36: ***Write down two methods of Nitrogen Fixation.***

Ans: Two methods of Nitrogen Fixation are:

- *Thunderstorm and lighting convert atmosphere gaseous nitrogen to oxides of nitrogen. These oxides dissolve in water and form nitrous acid and nitric acid. The acid in turn combined with other salts to produce nitrates it is called atmospheric nitrogen fixation.*
- *Some bacteria also have the ability to transform gaseous nitrogen into nitrates. It is called biological nitrogen fixation.*

Q37: ***What is difference between intra-specific and inter-specific interactions?***

Ans: The difference between intra-specific and inter-specific interactions is:

Intra-specific interactions	Inter-specific interactions
The interaction between the members of the same species is called intraspecific interaction.	*The interaction between the members of different species is called interspecific interaction.*

Q38: ***What is Competition? What are its types?***

Ans: In ecosystem, the natural resources e.g nutrients and space etc. are usually in short supply. So there is a competition among the organisms of ecosystem for the utilization of resources. The competition may be intraspecific or interspecific.

Q39: ***Define Predation. Give two examples.***

Ans: ***Predation:***

Predation is an interaction between two animals of different species or a plant or an animal. In this one organism attacks, kills and feeds on other organisms.

Example:

- *Frog preys upon mosquito.*
- *Fox prey upon rabbit.*

This diagram is just for understanding.

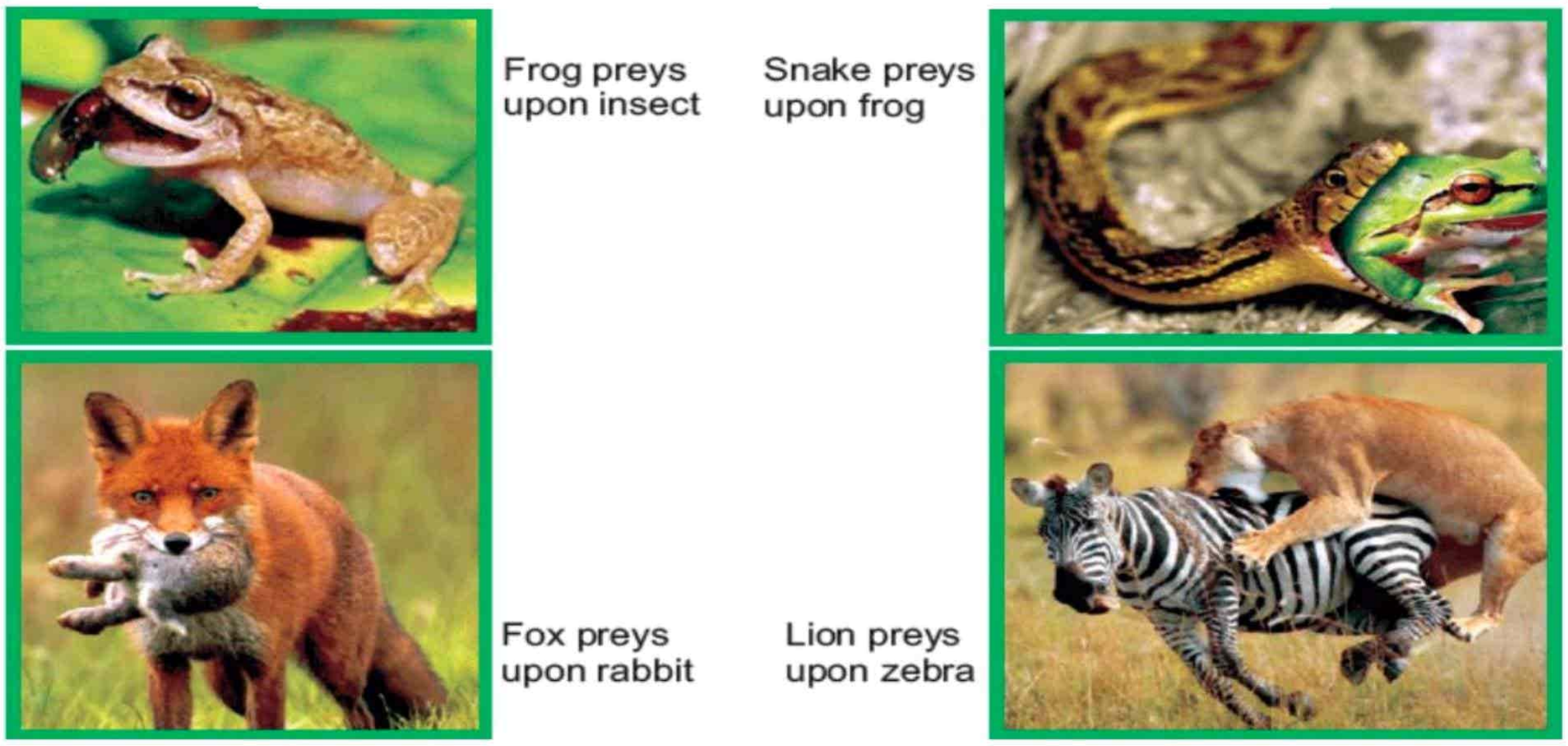


Figure Examples of predators and their preys

Q40: ***Differentiate between symbiosis and commensalism.***

Ans: The difference between symbiosis and commensalism is:

Symbiosis	Commensalism
Symbiosis is a relationship between members of different species, in which they live together for longer or shorter period of time.	*Commensalism is a type of symbiosis in which one partner is benefited while the other is neither benefited nor harmed.*

Q41: ***Name different types of symbiosis.***

Ans: Symbiosis is of three types:

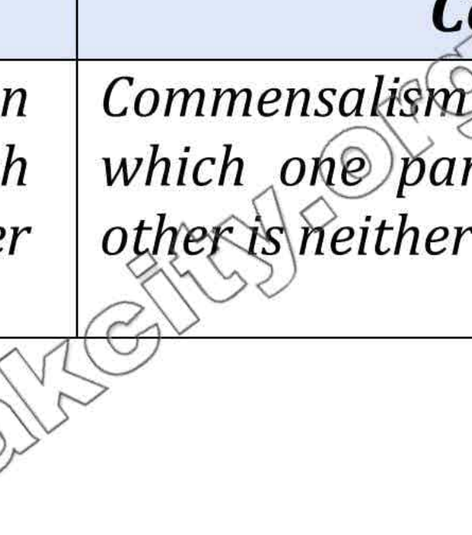
- *Parasitism*
- *Mutualism*
- *Commensalism*

Q42: ***Define parasitism and give an example.***

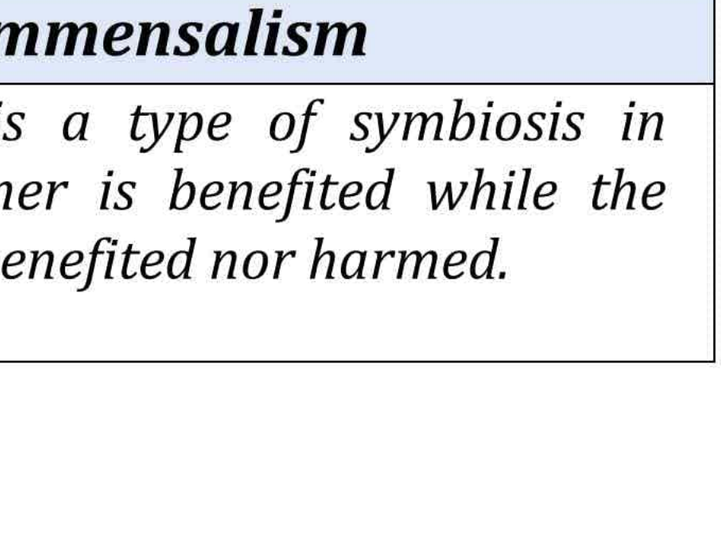
Ans: It is a type of symbiosis in which smaller partner derives food and shelter from the body of large partner and in turn harms it.

Examples:

- *Mosquitoes*
- *Leeches*
- *Lice*



Leeches

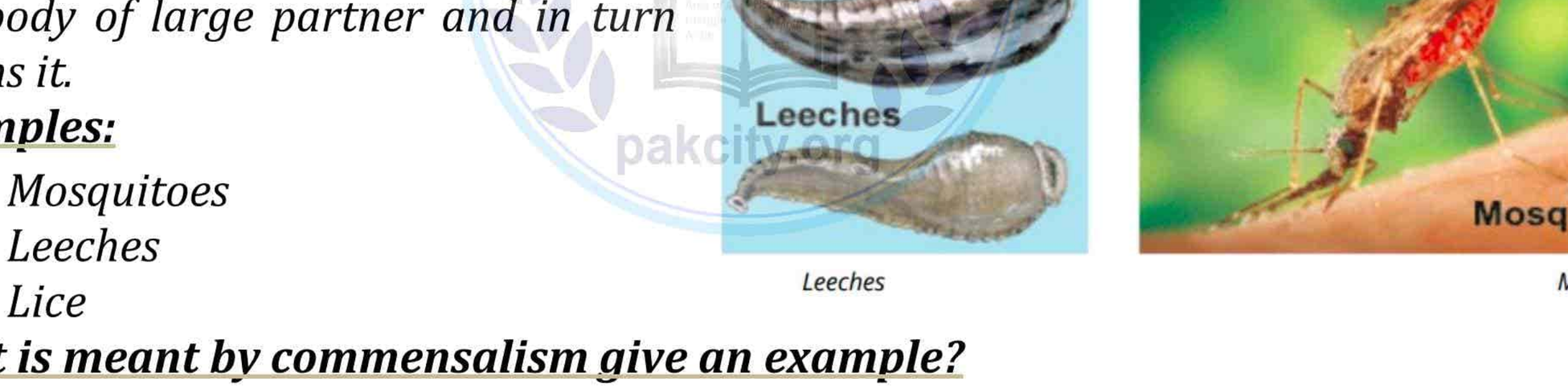


Mosquito

Q43: ***What is meant by commensalism give an example?***

Ans: It is a type of symbiosis in which one partner is benefited while the other is neither benefited nor harmed.

Commensalism example Sucker fish attacks to the surface of sharks by its sucker. In this way, the shark provides easy transport to the sucker fish to new feeding grounds.



a- b-

Figure a- An epiphyte orchid plant growing on a tree trunk; b- A sucker fish attached with shark

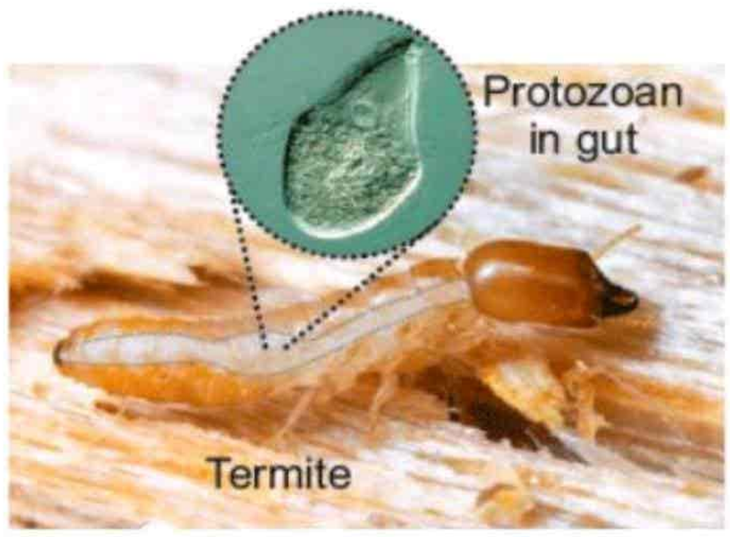


Figure : Termite, with a protozoan in its gut

Q44: ***Define mutualism and give example.***

Ans: *In this type of symbiotic interaction, both partners get benefit and neither is harmed.*

For example termites eat wood but are not able to digest it. A protozoan lives in its intestine. It secretes cellulose enzyme to digest the cellulose of wood. In return the termite provides food and shelter to the protozoan.

Q45: ***What are epiphytes?***

Ans: *Epiphytes are small plants found growing on other larger plants for space only. They absorb water and minerals from atmosphere and prepare their own food. The larger plants are neither benefited nor harmed in any way.*

Q46: ***Differentiate between ectoparasite and endoparasite.***

Ans: *The difference between ectoparasite and endoparasite is:*

Ectoparasite	Endoparasite
Ectoparasites live outside i.e. on the surface of host's body and get food from there. Mosquitoes, leeches, lice etc. are the examples of ectoparasites.	*Endoparasites live inside the body of host and get food and shelter. Bacteria, viruses, tapeworm, Ascaris, Entamoeba, Plasmodium etc. are the examples of endoparasites.*

Q47: ***Define Global Warming.***

Ans: ***Global Warming:***

The addition of greenhouse gases (e.g, carbon dioxide, methane or ozone) in atmosphere. These gases remain in the lowest part of earth's atmosphere and do not allow the solar radiation to reflect into the space is called global warming.

Q48: ***What are the effects of global warning?***

Ans: *The effects of global warning are:*

Due to global warming, polar ice-caps and glaciers are melting fast than the time taken for new ice layers to form sea water is also expanding causing sea level to rise. Due to melting of glaciers, rivers overflow and cause floods.

Q49: ***Write the examples of human impacts on ecosystem balance.***

Ans: *The examples of human impacts on ecosystem balance are:*

- *Global warming*
- *Acid Rain*
- *Deforestation*
- *Urbanization*
- *Overpopulation*

Q50: ***What is Over Population?***

Ans: *When population exceeds the carrying capacity of an area of environment, it results in over population.*

Just for your information.

Year	Population
1981	85,096,000
1984	92,284,301
1987	99,953,232
1990	107,975,060
1993	116,444,165
1996	125,409,851
1999	134,790,000
2002	144,902,409
2005	155,772,000
2008	166,111,487
2009	169,708,303
2010	173,510,000

Pakistan Population Growth Rates
Source: Pakistan Economy survey
Ministry of Population Welfare
Government of Pakistan

Pakistan Urban population in %age
Source: The world Bank

Q51: ***What is urbanization? Give its two reasons.***

Ans: *Urbanization means growing of cities.*
People move from rural areas to cities in search of better jobs, education opportunities and higher standards of living.

Q52: ***Write the effects of air pollution.***

Ans: *We have studied that global warming is one of the consequences of air pollution. Other effects of air pollution are as follows.*

- *Smog formation.*
- *Acid Rains.*
- *Ozone depletion.*

Q53: ***Write two disadvantages of deforestation.***

Ans: *The effects of deforestation include floods, droughts, landslides, soil erosions, global warming and loss of habitat of many species.*

Q54: ***What is Acid Rain? Give its one ill effect.***

Ans: ***Acid Rain:***
The air pollutant like sulphur dioxide and nitrogen oxide react with water in atmosphere and producing acid rain.
Effect:
Acid rain washes nutrients out of soil, damages the bark and leaves of trees and harms root hairs. Leaf pigment also destroyed.

Q55: ***Write the two causes of land Pollution.***

Ans: *The two causes of land Pollution are:*

- *The Acid rain changes the pH of soil making it unsuitable for cultivation.*
- *Open Latrines in villages and cities are also the source of land pollution.*

Q56: ***What is Ozone Depletion?***

Ans: ***Ozone Depletion:***
The air pollutant like chlorofluorocarbon (CFCS) destroy the ozone layer, Ozone holes are created which permit UV rays to reach the earth surface. The UV rays increases the temperature and causes skin cancer.

Q57: ***Which chemicals is damaging ozone layer?***

Ans: *Chlorofluorocarbons (CFCs) destroy the ozone molecules so, break the ozone layer.*

Q58: ***How is smog formed? Write its two disadvantages.***

Ans: *When pollutants like hydrocarbons and nitrogen oxides combine in the presence of sunlight, smog is formed. This is the mixture of gases. It forms a yellowish brown haze especially during winter and hampers visibility. It also causes many respiratory disorder and allergies as it contains polluting gases.*

Q59: ***How can we control the land pollution?***

Ans: *There should be suitable and safe disposal of wastes including nuclear wastes. Non-biodegradable materials like plastic, glass, metals etc. should by recovered and recycled. Inorganic pesticides should be replaced by organic pesticides.*

Q60: ***What is greenhouse effect? Write the name of two important greenhouse gases.***

Ans: *The Term Greenhouse effect refers to the phenomenon in which certain gases trap heat in the atmosphere. These gases act like the glass in a greenhouse, which does not allow the inner heat to escape.*
Carbon dioxide, methane and nitrous oxide are important greenhouse gases.

Q61: ***What is eutrophication? Write it's any one reason.***

Ans: ***Eutrophication:***
Enrichment of water with inorganic nutrients is called eutrophication.
The sewage and fertilizer contain large amount of inorganic material. When sewage and fertilizer reach water bodies, the nutrient present in them promote algal blooms there. Rich algal growth leads to increase in the number of the decomposers.

Q62: ***What are pollutants? Give two examples?***

Ans: The substances that actually cause pollution are called the pollutants.

Examples:

Carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons etc.

Q63: ***Write names of two heavy metals causing water pollution.***

Ans: Names of heavy metals causing water pollution are:

- *Lead*
- *Mercury*
- *Arsenic*
- *Cadmium also makes the water polluted.*

Q64: ***Differentiate between deforestation and afforestation.***

Ans: The difference between deforestation and afforestation is:

Deforestation	Afforestation
It is the cutting down plants. Deforestation means cutting of trees to get wood.	*It means the establishment of new forests by planting on non- forest areas.*

Q65: ***What is pollution?***

Ans: Pollution is defined as any undesirable change in the physical, chemical or biological characteristics of air, water and land that may harmfully affect living organisms and natural resources.

Q66: ***Write Down the symptoms of dengue fever.***

Ans: Symptoms of dengue fever include high fever, severe headache, pain behind the eyes, muscle and joint pain and rash.

Q67: ***Differentiate between renewable and non-renewable resources.***

Ans: The difference between renewable and non-renewable resources is:

Renewable resources	Non-renewable resource
The renewable resources are e.g. air are reproduces easily.	*The non-renewable resources e.g. minerals and fossil fuels are not replenished once they get depleted.*

Q68: ***What is meant by R-3?***

Ans: ***R-3 Recycle:***

Materials such as paper, plastic, glass etc. can be recycled. This decreases the volume of refuse and helps in the conservations of natural resources.

Q69: ***Write biological name of dengue mosquito.***

Ans: Aedes aegypti is the biological name of dengue mosquito.

Q70: ***Differentiate between Predator and Prey.***

Ans: It is an interaction between two animals of different species or between a plant and an animal. In predation, one organism (the predator) attacks, kills and feeds on other organism (the prey).

Q71: ***Why should we reduce the use of natural resources?***

Ans: We have to conserve the non-renewable resources because their reserves are limited and humans are heavily dependent on them for daily needs. To ensure sustainable use of resources in our environment, we should act upon the principle of 'The 3R' i.e. Reduce, Reuse, and Recycle.

Q72: ***Write the name of two types of pollutants.***

Ans: The name of two types of pollutants is:

- *Bio degradable*
- *Non bio degradable*

Q73: ***Narrate the kinds of Interaction in Ecosystem.***

Ans: In all ecosystems, there are many kinds of interactions among living organisms. The interactions between, the members of the same species are called intraspecific interactions

while the interactions between the members of different species are called interspecific interactions.

Some important interactions among living organisms in ecosystems are given below.

- *Competition*
- *Predation*
- *Symbiosis*

Q74: ***State the mutual relationship of sucker fish and shark.***

Ans: Sucker fish attaches to the surface of sharks by its sucker. In this way, the shark provides easy transport to the sucker fish to new feeding grounds.

Q75: ***What is dengue fever? How it is transmitted?***

Ans: Dengue fever is a viral infection transmitted through a mosquito Aedes aegypti.

Q76: ***Define Thermodynamics.***

Ans: Energy can neither be created nor destroyed but can be transformed from one form into another.

Q77: ***What is meant by environment of an organism?***

Ans: An organism's environment is the-sum of physical and biological Conditions which influence that organism.

Q78: ***What is meant by 3R principle?***

Ans: 3R principle is:

- *R-1: Reduce*
- *R-2: Reuse*
- *R-3: Recycle*

Q79: ***What are two major sources of carbon in the living world?***

Ans: Major Source of Carbon for the living world is Carbon dioxide present in. atmosphere and water.

Q80: ***Why tertiary carnivores are called top carnivores?***

Ans: Tertiary carnivores are not eaten by any other animals so they are also called-top carnivores.

Q81: ***Write down examples of Carnivores plants.***

Ans: Pitcher plants, Sundew, Venus fly trap are carnivore's plants.

Q82: ***From where producers get their energy and in which form they store it?***

Ans: Producers get solar energy and transform it into chemical energy by the process of photosynthesis. They store their energy in their tissues and also transmit into mechanical and heat energy during their metabolic activities.

Q83: ***In which form carbon is found in nature?***

Ans: Carbon is found as graphite and diamond in nature.

Q84: ***What is the threat of Maldives of ocean?***

Ans: Scientist fears that the sea level is rising up to 0.9cm a year. Rise in sea level has worst effect on coastal countries. Most of the islands of the Maldives are less than 1m above sea level. It is estimated that within 100 year the Maldives might become uninhabitable and the citizens would be forced to evacuate.

Q85: ***What are the effects of de-nitrification above normal?***

Ans: Excessive de-nitrification reduces soil fertility and is stimulated by water logging, lack of aeration and accumulation of organic matter in the soil.

Chapter : 16 Man and his Environment

Long Questions

Q.1: What methods are used to control air pollution?
Q.2: Write a short note on Aids.
Q.3: Describe the causes and bad effects of acid rains.
Q.4: Write a note on Land Pollution.
Q.5: Describe produces and consumers of an ecosystem. OR Describe the components of ecosystem. OR Write a note on consumers. V.imp
Q.6: Explain the flow of materials in an ecosystem.
Q.7: Define Ecological Pyramids. Explain Pyramid of Biomass.
Q.8: Explain different methods of nitrogen fixation. V.imp
Q.9: What is Mutualism?
Q.10: How do both the organisms get benefit?
Q.11: What is symbiosis? Describe it with an example. V.imp
Q.12: Explain nitrogen cycle.
Q.13: Explain carbon cycle and draw its diagram.
Q.14: What is Commensalism? Explain with examples.
Q.15: What do you know about acid rain. Write its causes and disadvantages. V.imp

Chapter: 17

Biotechnology

Objective

1. This product is used in the production of soaps:

Ⓐ glycerol Ⓑ ethanol Ⓒ acrylic acid Ⓓ Formic acid

2. To preserve fruits vegetables and pickles we add:

Ⓐ Onion and garlic Ⓑ Flour and Salt
Ⓒ Salt and acid Ⓓ Water and yogurt

3. The animal whose DNA has been changed is:

Ⓐ dihybrid Ⓑ monohybrid Ⓒ transformed Ⓓ transgenic

4. The human genome project was started in:

Ⓐ 1991 A.D Ⓑ 1990 A.D Ⓒ 1992 A.D Ⓓ 1993 A.D

5. When was the work on Genetic Engineering started:

Ⓐ 1940 Ⓑ 1970 Ⓒ 1944 Ⓓ 1930

6. The design and arrangements for continuous fermentation are:

Ⓐ complex Ⓑ un-complicated Ⓒ impossible Ⓓ simple

7. The enzyme works as breaking enzyme:

Ⓐ Lipase Ⓑ Endonuclease Ⓒ Amylase Ⓓ Ligase

8. In Scotland in 1977 what an embryologist Ian Wilmut produced from the body cell of an adult sheep:

Ⓐ Buffalo Ⓑ Cow Ⓒ Goat Ⓓ Sheep Dolly

9. In the first step of glycolsis one molecule of glucose is broken down into two molecules of:

Ⓐ Formic acid Ⓑ Citric acid Ⓒ pyruvic acid Ⓓ lactic acid

10. The microorganism used in the production of Formic Acid is:

Ⓐ Bacillus Ⓑ Aspergillus Ⓒ Bacteria Ⓓ Yeast

11. Incomplete oxidation-reduction of ..... occurs in fermentation.

Ⓐ lipids Ⓑ fats Ⓒ proteins Ⓓ glucose

12. When did Ian Wilmut produced the sheep Dolly?

Ⓐ 2002 AD Ⓑ 1997 AD Ⓒ 1970 AD Ⓓ 1987 AD

13. The main source of all types of Fermentation:

Ⓐ Micro-organism Ⓑ Alleles Ⓒ Genes Ⓓ Chromosomes

14. In cattle, goats and deer, the foot and mouth disease is:

Ⓐ Viral Ⓑ Fungal Ⓒ Bacteria Ⓓ All of these

15. Painkiller chemical produced by brain is:

Ⓐ Thymosin Ⓑ Interferon Ⓒ insulin Ⓓ Betaendorphin

16. Fungi used in alcoholic fermentation is called:

Ⓐ zygomycetes Ⓑ algin
Ⓒ saccharomyces cervisiae Ⓓ basidiomycetes

17. In the process of Glycolysis, glucose molecule is broken down into two molecules of:

(A) Pyruvic acid (B) Ethanol (C) Ethanol and CO_2 (D) Lactic acid

18. Acrylic acid is used in the production of:

(A) Plastics (B) Beverages (C) Cosmetics (D) Vinegar

19. Name of the yeast, used in fermentation is:

(A) Lactobacillus (B) Aspergillus (C) Streptococcus (D) Saccharomyces

20. The process in which there is incomplete-oxidation-reduction of glucose is called:

(A) DNA technology (B) genetic engineering (C) biotechnology (D) fermentation

21. This product is used in the production of vinegar and beverages:

(A) glycerol (B) ethanol (C) acrylic acid (D) Formic acid

22. Which organism is used in fermentation for the preparation of glycerol?

(A) Saccharomyces (B) Bacillus (C) Streptococcus (D) Aspergillus

23. Which one is fermented food:

(A) Powdered milk (B) Vitamins (C) Yogurt (D) Wheat flour

24. This acid is used in electroplating:

(A) Glycerol (B) Ethanol (C) Acrylic acid (D) Formic acid

25. The microorganism used in the formation of Ethanol is:

(A) E-Coli (B) Bacillus (C) Virus (D) Sacchromyces

26. The product used in printing is:

(A) acrylic acid (B) ethanol (C) glycerol (D) formic acid

27. Vector DNA and Gene of interest, collectively called:

(A) Gene (B) Recombinant Gene
(C) Recombinant DNA (D) GMO

28. Human insulin was firstly prepared through bacteria:

(A) 1995 (B) 1978 (C) 1990 (D) 1970

29. The complete map of human genome was published in:

(A) 2002 (B) 2008 (C) 2006 (D) 2004

30. In Genetic Engineering, plasmid is used as:

(A) Donor (B) Ligases (C) Vector (D) Endonucleases

31. The enzyme used to dissolve blood clots is called:

(A) trypsin (B) pepsin (C) amylase (D) urokinase

32. The hormone which many prove effective against brain and lung cancer which is produced by genetically modified organism:

(A) thymosin (B) ligase (C) urokinase (D) insulin

33. Patients of which disease use insulin:

(A) diabeties (B) aids (C) cancer (D) hepatitis

34. Bacterium (E-Coli) which prepares human growth hormone was discovered in:

(A) 1910 (B) 1977 (C) 1970 (D) 1980

35. Human insulin gene was transferred into:

(A) Bacteria (B) Algae (C) Virus (D) Yeast

36. Interferons are …… Proteins.

Ⓐ Antifungal **Ⓑ Antiviral** Ⓒ Antidrugs Ⓓ Antibacterial

37. A hormone produced by genetically modified organisms used to cure cancer of brain and lungs is:

Ⓐ insulin tnymosin Ⓑ Tyroxin Ⓒ Anti-diuretic hormone **Ⓓ Thymosin**

38. The host country of the greatest no of refugees in the world is:

Ⓐ Pakistan Ⓑ America Ⓒ Canada Ⓓ India

39. When does it become possible to cut DNA?

Ⓐ 1990 A.D Ⓑ 1890 A.D Ⓒ 1980 A.D **Ⓓ 1970 A.D**

40. Single cell protein can be obtained from:

Ⓐ Bird **Ⓑ Algae** Ⓒ Cow Ⓓ Insect

41. The raw material for microorganism for the production of single cell protein is:

Ⓐ protozoans Ⓑ fungi **Ⓒ Agricultural wastes** Ⓓ Industrial wastes

42. The Enzyme used for joining Gene is:

Ⓐ Amylase **Ⓑ Ligase** Ⓒ Endonuclease Ⓓ Lipase

43. Algae grown in ponds produce protein per acre/year:

Ⓐ 40 tons Ⓑ 30 tons Ⓒ 10 tons **Ⓓ 20 tons**

44. Lactic acid fermentation is carried out by many:

Ⓐ Protozoans **Ⓑ Bacteria** Ⓒ Algae Ⓓ Fungi

45. The industrial product from aspergillums is:

Ⓐ acrylic acid Ⓑ glycerol Ⓒ ethanol **Ⓓ formic acid**

46. Organisms with modified genetic set up are called:

Ⓐ rearranged **Ⓑ transgenic** Ⓒ hybrid Ⓓ transformed

47. The enzyme which is used to cut the gene of interest is:

Ⓐ Amylase Ⓑ Lipase Ⓒ Ligase **Ⓓ Endonuclease**

48. Glucose molecule is broken into Pyruvic acid:

Ⓐ 1 **Ⓑ 2** Ⓒ 4 Ⓓ 5

49. Find the correct match for the fermentation product and the organism involved:

Ⓐ Formic acid - Saccharomyces Ⓑ Glycerol - Aspergillums
Ⓒ Ethanol - Saccharomyces Ⓓ Ethanol - Aspergillums

50. Which of these is an anti-viral protein?

Ⓐ Insulin **Ⓑ Interferon** Ⓒ Thymosin Ⓓ Urokinase

51. Animal Breeding is a form of:

Ⓐ Morphology **Ⓑ Biotechnology** Ⓒ Cell Biology Ⓓ Pharmacology

52. Who introduced the method of single cell protein?

Ⓐ Joseph Lister Ⓑ lan Wilmut **Ⓒ Scrimshow** Ⓓ Pasteur

53. …… product is used in the production of plastics.

Ⓐ formic acid **Ⓑ acrylic acid** Ⓒ glycerol Ⓓ ehanol

54. Treatment through genes is called:

(A) Genetherapy (B) Radiotherapy (C) Physiotherapy (D) Chemotherapy

55. Alcoholic Fermentation is carried out by:

(A) Fungi (B) Yeast (C) Aspergillus (D) Virus

56. Dolly is the names of a:

(A) Sheep (B) Mouse (C) Flower (D) Rabbit

57. Yogurt is made from milk fermentation by:

(A) Bacillus (B) Lactic acid bacteria (C) Yeast (D) Saccharomyces

58. Sewage water is purified by the use of:

(A) Minerals (B) Microbes (C) Hormones (D) Bacterial Enzymes

59. Ethanol is used in the production of:

(A) Vinegar (B) Rubber (C) Soap (D) Plastic

60. Very effective hormone for brain and lungs cancer is:

(A) Urokinase (B) Interferon (C) Beta-endorphin (D) Thymosin

61. Acrylic acid is used in the production of:

(A) Plastic (B) Soap (C) Printing (D) Vinegar

62. Interferons were first time produced in:

(A) 1976 (B) 1980 (C) 1978 (D) 1974

Chapter : 17 Biotechnology

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Subjective

Q1: ***Define Biotechnology.***

Ans: ***Biotechnology:***

It is define as use of living organism for the manufacturing of useful products or for services.

Q2: ***What is gene therapy?***

Ans: ***Gene therapy is:***

Gene therapy is the treatment through genes. Gene therapy has become important in recent years.

Q3: ***Write down the names of major techniques in biotechnology.***

Ans: *The names of major techniques in biotechnology are:*

Cross pollination of plants and cross breeding of animals were major techniques in biotechnology.

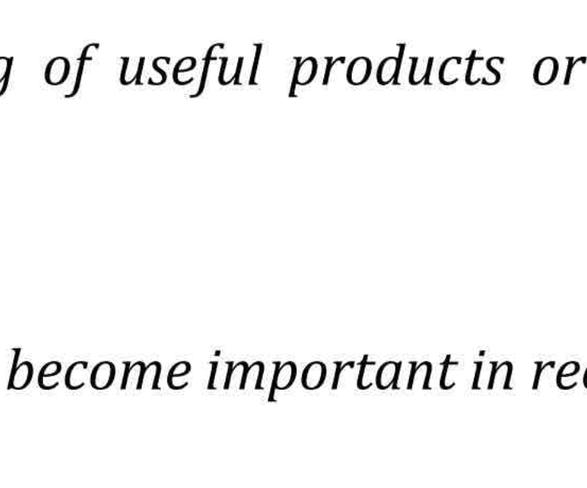
Q4: ***Describe human genome project.***

Ans: *In 1990 Human genome project" was launched to map all the genes in human cells. The complete map was published in 2002.*

Q5: ***Who produced dolly and when?***

Ans: *In Scotland, in 1997, an embryologist Lan Wilmut produced a sheep dolly from the body cell of an adult sheep.*

Q6: ***Write any two characteristics of transgenic animals.***



In Scotland, in 1997, an embryologist Ian Wilmut produced a sheep (Dolly) from the body cell of an adult sheep.

Ans: These are the following characteristics of transgenic animals:

- *Transgenic animals produce more yields.*
- *Resistance against diseases.*
- *Insects.*
- *Herbicides.*

Q7: ***Give example, how biotechnology is helping in the field of medicine.***

Ans: In the field of medicine, biotechnologists synthesized insulin and interferon from bacteria and released for sale. A large number of vaccines and antibodies, human growth hormone and other medicines have also been produced; various enzymes are being synthesized for medicinal as well as industrial use.

Q8: ***Describe scope and importance of biotechnology.***

Ans: The following are some areas of the applications of biotechnology:

- *Biotechnology and environment.*
- *Biotechnology in the field of food and agriculture.*
- *Biotechnology in the field of medicine.*

Q9: ***Why are Transgenic organisms being developed?***

Ans: Transgenic (organisms with modified genetic set up) plants are being developed, in which desirable characteristics are present.

Example:

More yields and resistant against diseases, insects and herbicides.

Transgenic goats, chickens, cows give more food and milk etc.
Many animals like mice, goats, cows etc. have been made transgenic to get medicine, through their milk, blood or urine.

Q10: ***Write one advantage of lactic acid fermentation.***

Ans: Advantage of lactic acid fermentation is:

- *It is quite important in dairy industry where it is used for souring milk.*
- *Also for production of various types of cheese.*

Q11: ***Describe the services of Pasteur for fermentation.***

Ans: The services of Pasteur for fermentation:
In 1857 Pasteur convinced the scientific community that all fermentations are the result of microbial activity.

Q12: ***Differentiate between Alcoholic Fermentation and Lactic Acid Fermentation. Or How lactic acid fermentation takes place?***

Ans: Difference between Alcoholic Fermentation and Lactic Acid Fermentation is:

Alcohalic Fermentation	Lactic Acid Fermentation
❖ The fermentation is carried out by many types of yeast. ❖ **Example:** Saccharomyces cerevisiae.	❖ In this process, pyruvic acid is reduced to lactic acid. It is carried out by many bacteria. ❖ **Example:** Streptococcus and many Lactobacillus species.

Q13: ***Describe the uses of fermentation in dairy products.***

Ans: The uses of fermentation in dairy products are:
Cheese and yogurt are important fermentation products. Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein. Yogurt is made from milk by different lactic acid bacteria.

Q14: ***What is meant by fermentation?***

Ans: ***Fermentation:***
It is a process in which there is incomplete oxidation, reduction of glucose. It was believed that it is purely a chemical process.

Q15: ***Write the name of any two basic types of fermentation.***

Ans: The name of two basic types of fermentation is:

- *Alcoholic Fermentation.*
- *Lactic Acid Fermentation.*

This diagram is just for understanding.

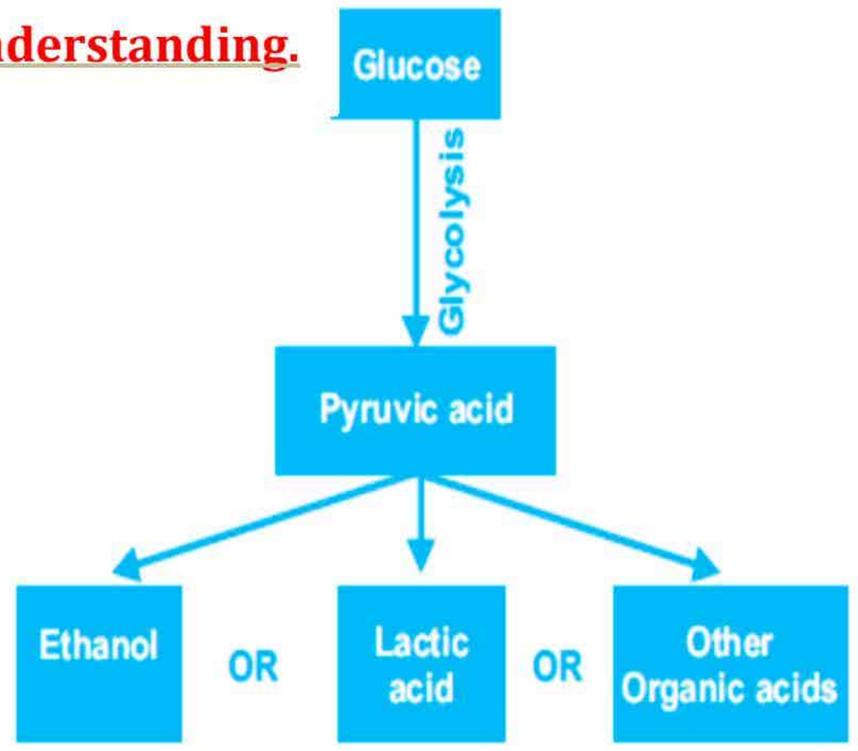


Figure Carbohydrate fermentation and its products

Q16: ***Define glycolysis and name its product.***

Ans: ***Glycolysis:***

Glycolsis is the process in which glucose molecule is broken down into two molecules of pyruvic acids.

Product's name:

- *Pyruvic acid.*

Q17: ***Write any two applications of fermentation.***

Ans: The applications of fermentation are:

Fermented Foods:

Fermentation often makes the food more nutritious, more digestible and tastier. It also tends to preserve the food, lowering the need for refrigeration.

Cereal products:

Bread is the commonest type of fermented cereal product. Wheat dough is fermented by S-cerevisiae along with some lactic Acid bacteria.

Q18: ***Write two products of fermentation of carbohydrates.***

Ans: The initial steps of carbohydrates fermentations are identical to those of respiration. The process begins with glycolysis, in which the glucose, molecule is broken into two molecules of pyruvic acid.

Different microorganisms precede the further reactions in different ways. It results in the formation of various products from pyruvic acid.

- *Alcohol*
- *Lactic Acid*

Q19: ***Write few uses of ethanol in individual products.***

Ans: Ethanol used as a solvent used in the production of vinegar and beverages.

Q20: ***Write four industrial products prepared by fermentation.***

Ans: Following industrial products are obtained from fermentation:

- *Ethanol.*
- *Acrylic acids.*
- *Glycerol.*
- *Formic acid.*

Q21: ***Write two uses of glycerol.***

Ans: Glycerol is used in following terms:

- *It is use in the production of plastics.*
- *Glycerol is used in cosmetics.*
- *Glycerol is used in soap.*

Using in printing:

- *It is use as sweetener.*

Q22: ***Write four uses of formic acid.***

Ans: Formic acid is used in:

- *Rubber manufacturing.*
- *Leather treatment.*
- *Used in textile dying.*
- *Electroplating.*

Q23: ***Write the name and uses of any two industrial products produced through fermentation.***

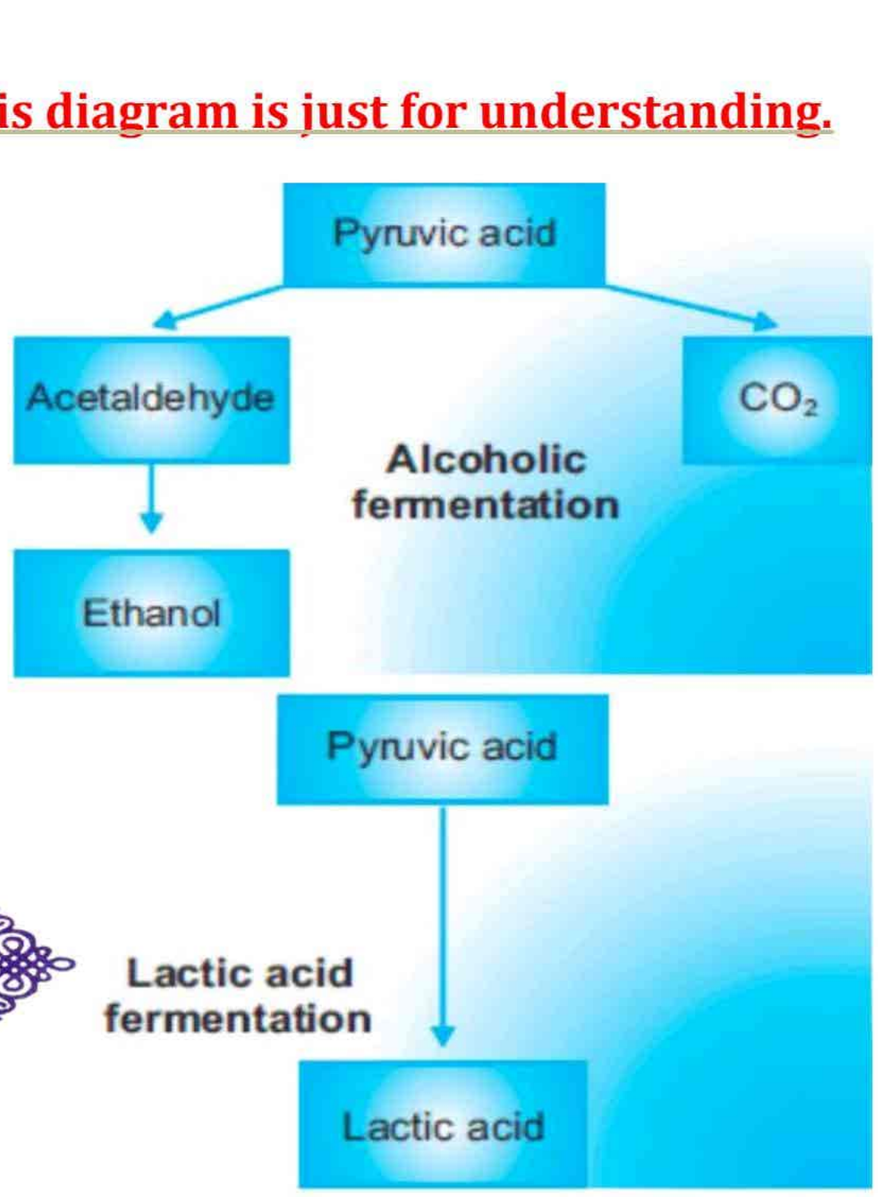
Ans: Name and uses of industrial products produced through fermentation:

Acrylic Acid:

Acrylic Acid used in the production of Plastics.

Formic Acid:

This diagram is just for understanding.



Formic Acid used in textile dying, leather treatment. Electroplating, rubber manufacture.

Q24: ***Write down the application of fermentation in beverage products.***

Ans: The application of fermentation in beverage products:

Beer is produced from cereal grains which have been malted, dried and ground into fine powder. Fermentation of the powder is done by yeast.
This process breaks the glucose present in powder into pyruvic acid and then into ethanol.
Grapes can be directly fermented by yeasts to wine.

Q25: ***Define fermentation with reference of biotechnology.***

Ans: In biotechnology the term fermentation means the production of any product by the mass culture of microorganisms.

Q26: ***Write down advantages of fermented food.***

Ans: The advantages of fermented food are:

- *Fermentation often makes the food more nutritious, more digestible and tastier.*
- *It also tends to preserve the food, lowering the need for refrigeration.*

Q27: ***What is malted food?***

Ans: ***Malted food:***

Bear is produced from cereal, grains, which have been malted, dried and ground into fine powder. Fermentation of the powder is done by yeast. This process breaks the glucose present in powder into pyruvic and then into ethanol.

Q28: ***State the Role of biotechnology in the field of Food and Agriculture.***

Ans: Fermented foods (e.g. Pickles Yogurt) malted food (e.g. Powdered milk: a mixture of Barely, wheat flour and whole milk), various vitamins are used in dairy products are produced by using microorganisms, Wine and bear are produced in beverage industry.

Transgenic (organisms with modified genetic set up) plants are being developed, in which desirable characteristics are present.

Example:

More yields and resistant against diseases, insects and herbicides.

Transgenic goats, chickens, cows give more food and milk etc.
Many animals like mice, goats, cows etc. have been made transgenic to get medicine, through their milk, blood or urine.

Q29: ***How cheese is formed?***

Ans: Cheese and yogurt are important fermentation products. Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein. Yogurt is made from milk by different lactic acid bacteria.

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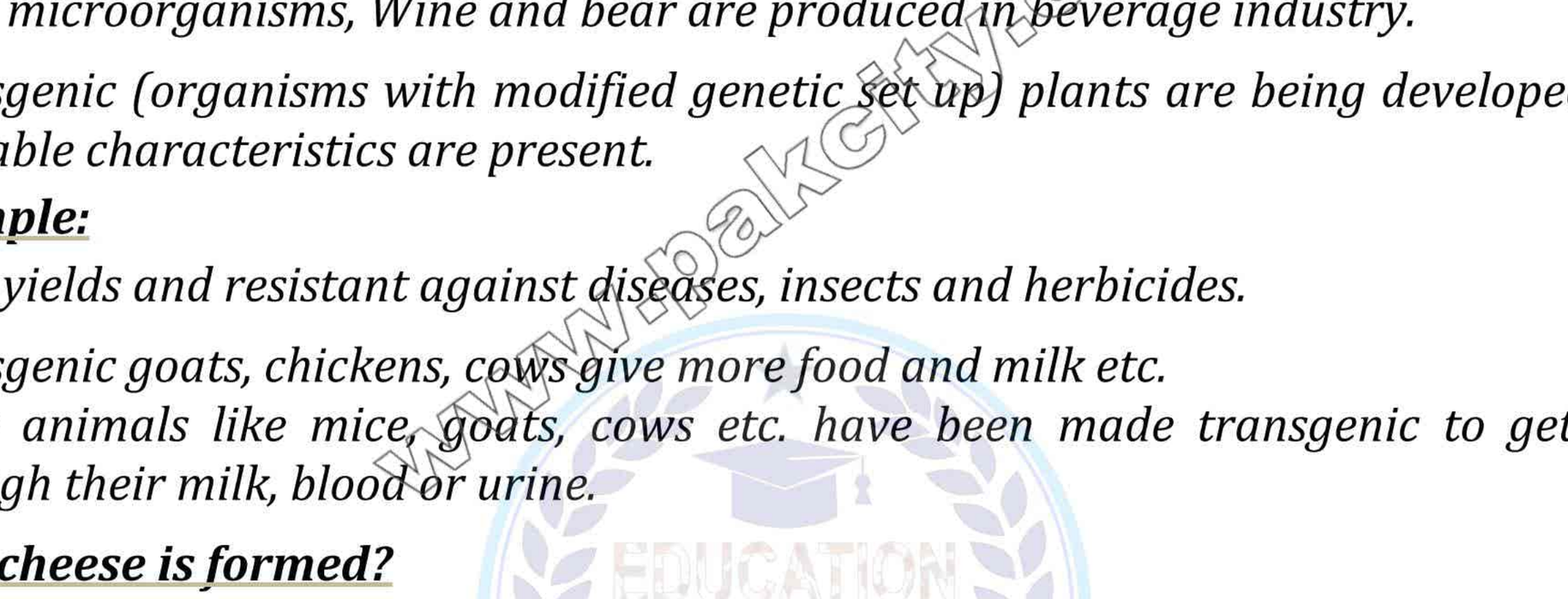

Figure : Fermented foods

Q30: ***For which propose microbes are used?***

Ans: Microbes are being developed to be used as bio-pesticides, bio-fertilizers, biosensors etc. such transgenic microorganisms are also used for the recovery of metals, cleaning of spilled oils and for much other purpose.

Q31: ***What is meant by genetically modified organism in biotechnology?***

Ans: Recombinant DNA is transferred to the target host. In this way, host organism is transformed into a genetically modified organism. GMO are provided suitable culture medium for growth to give as much copies of the gene of interest as needed.

Q32: ***Differentiate between batch fermentation and Continuous fermentation.***

Ans: Difference between batch fermentation and Continuous fermentation is:

Batch fermentation	Continuous fermentation
In this process, the tank of fermenter is filled with the raw materials to be fermented. The temperature and PH for microbial fermentation is properly adjusted, and nutritive supplements are added. All the materials are steam sterilized. The pure culture of microorganisms is added to fermenter from a separate vessel. Fermentation proceeds and after the proper time the contents of fermenter are taken out. Fermenter is clean and the process is repeated.	*In this process, the substrate is added to fermenter continuously at a fixed rate. This maintains the microorganisms in growth phase. Fermentation products are taken out continuously.*

Q33: ***What is fermenter?***

Ans: ***Fermenter:***

Fermenter is a device that provides optimum environment to microorganisms to grow into a biomass, so that they can interact with a substrate, forming the product. Fermentation is carried out in fermenters in the following two ways.

- *Continuous fermentation.*
- *Batch fermentation.*

Q34: ***What are the advantages of fermenter?***

Ans: The advantages of fermenter are:

- *For each biotechnological process, the environment provided to the organisms must be monitored and controlled.*
- *Such a control environment is provided by fermenters.*
- *A fermenter optimizes the growth of the organisms by controlling many factors like nutrients, oxygen and temperature.*

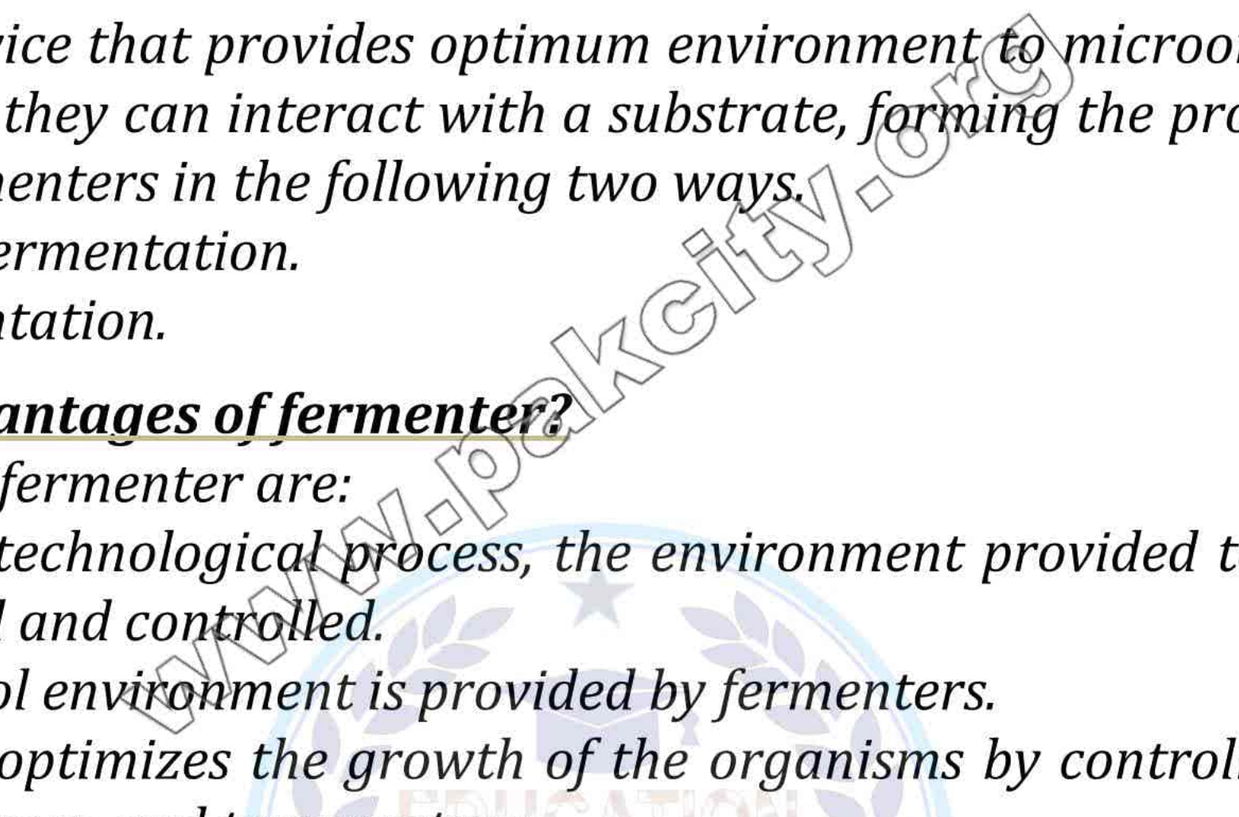

Figure: Fermenters used in food and pharmaceutical industry

Q35: ***Write types of fermenters?***

Ans: Types of fermenters:

- *Continuous fermentation.*
- *Batch fermentation.*

Q36: ***What do you know about continuous fermentation process?***

Ans: ***Continuous fermentation:***

In this process, the substrate is added to fermenter continuously at a fixed rate. This maintains the microorganisms in growth phase. Fermentation products are taken out continuously.

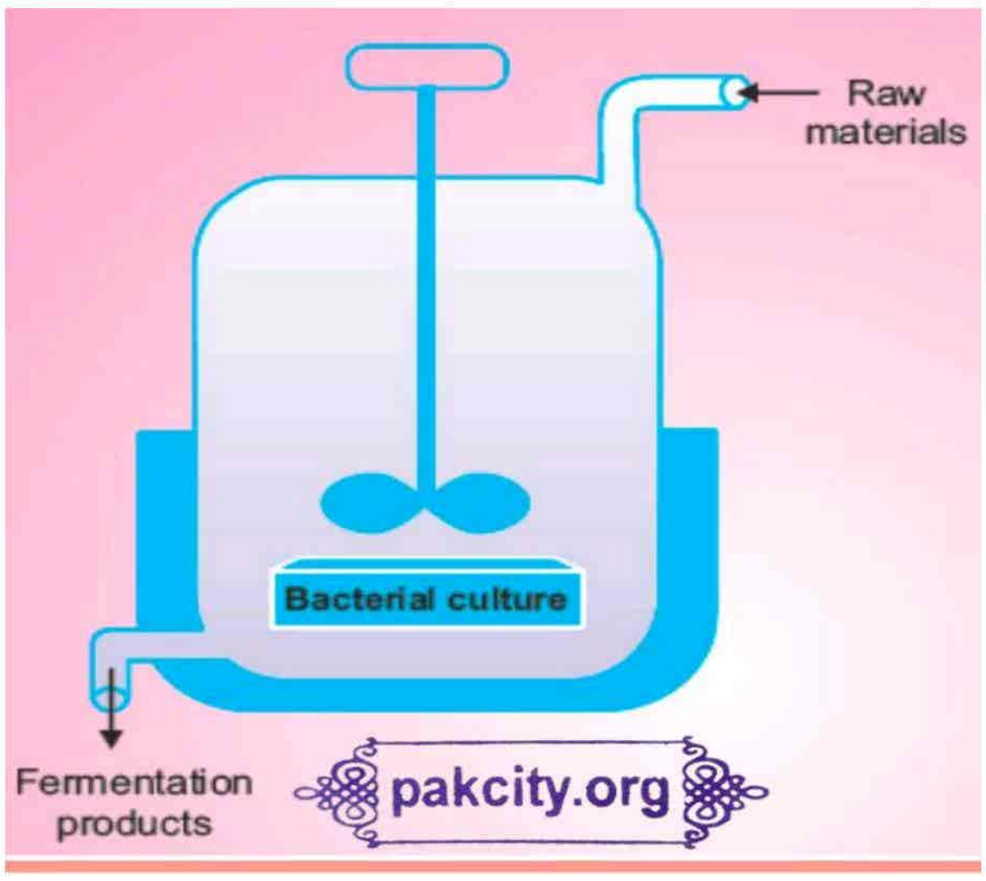

Fig A continuous fermenter

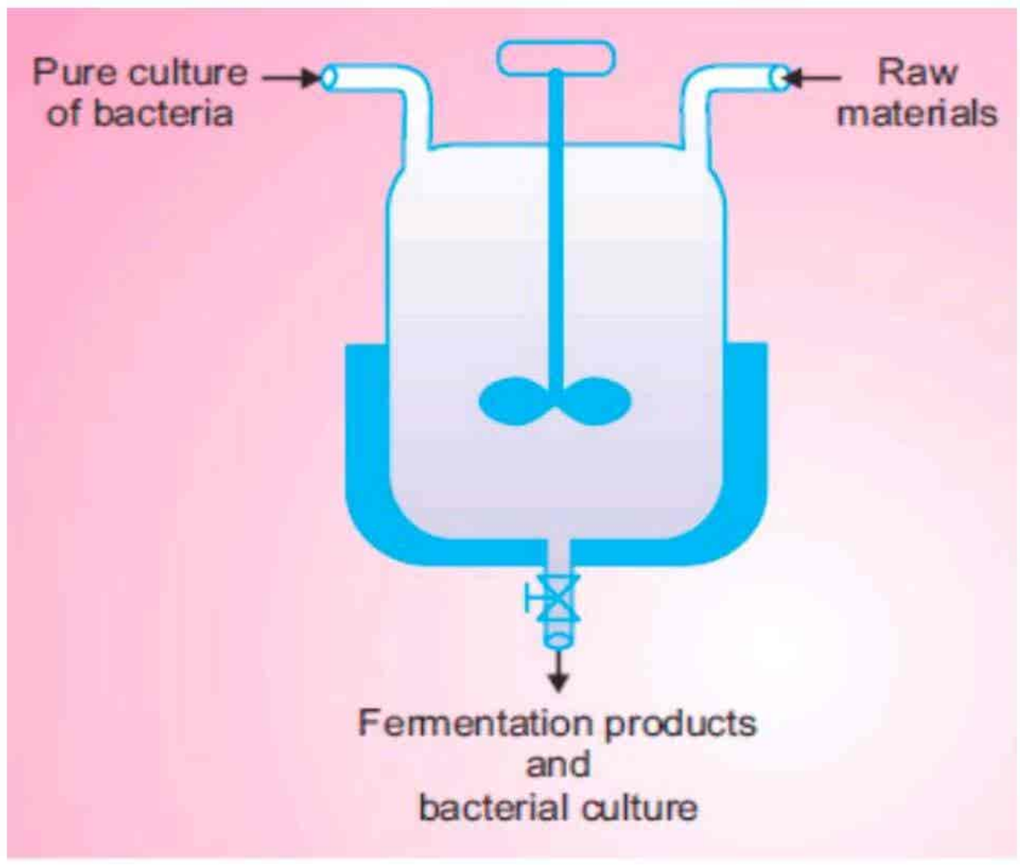

Figure : A batch fermenter

Q37: ***What is batch fermentation process?***

Ans: ***Batch fermentation:***

In this process, the tank of fermenter is filled with the raw materials to be fermented. The temperature and PH for microbial fermentation is properly adjusted, and nutritive supplements are added. All the materials are steam sterilized. The pure culture of microorganisms is added to fermenter from a separate vessel. Fermentation proceeds and after the proper time the contents of fermenter are taken out. Fermenter is clean and the process is repeated.

Q38: ***Write down names of three important drugs produced with the help of biotechnology.***

Ans: Human insulin, blood clot dissolving medicines and interferon are the names of three important drugs produced with the help of biotechnology.

Q39: ***What is the function of restriction endonucleases?***

Ans: Functions of restriction endonucleases is:

Restriction endonucleases are used to cut the identified gene from the total DNA of donor organism.

Q40: ***What is Genetic Engineering?***

Ans: Genetic Engineering or recombinant DNA technology involves the artificial synthesis, modification, removal, addition and repair of genetic material.

Q41: ***What is recombinant DNA?***

Ans: ***Recombinant DNA:***

Recombinant DNA is the vector DNA and the attached gene of interest.

Q42: ***Write briefly the basic steps in Genetic Engineering.***

Ans: The basic steps in Genetic Engineering are:

- *Isolation of gene of interest.*
- *Insertion of the gene into vector.*
- *Transfer of recombinant into host organism.*
- *Growth of the GMO.*
- *Expression of the gene.*

Q43: ***Write any four achievements of Genetic Engineering.***

Ans: Achievements of Genetic Engineering are:

- *In 1977, and E-Col bacterium was created that was capable by synthesizing the human growth hormone.*
- *The enzyme urokinase, which is used to dissolve blood clots, has been produced by genetically modified microorganisms.*
- *The hormone thymosin which may prove effective against brain and lung cancer has been produced by genetically modified microorganisms.*

- *Beta-endorphin, a painkiller produced by the brain, has been produced by genetic engineering techniques.*

Q44: ***How human growth hormone was obtained before genetic engineering.***

Ans: *Before Genetic engineering, 500,000 sheep brains were required to produce 5mg human growth hormone.*

Q45: ***When human growth hormone was prepared and by which micro-organisms.***

Ans: *In 1977 and E. coli bacterium was created that was capable of synthesizing the human growth hormone.*

Q46: ***What are endonuclease and Ligase?***

Ans: ***Endonuclease and Ligase:***

The enzyme which breaks, called endonuclease and the enzyme which is join is called ligase.

Q47: ***Give two important objectives of genetic engineering.***

Ans: *The important objectives of genetic engineering are as follows:*

- *Production of particular RNA and protein molecules.*
- *Isolation of a particular gene or part of a gene for various purposes such as gene therapy.*

Q48: ***Define biotechnology and give an example of old biotechnology.***

Ans: ***Biotechnology:***

Biotechnology is defined as the use of living organisms in processes for the manufacture of useful products or for services. Although the term biotechnology is new, the discipline itself is very old.

Fermentation and other such processes, which are based on the natural capabilities of organisms, are commonly considered as old biotechnology.

Q49: ***What are plasmids?***

Ans: ***Plasmids:***

The vector may be a plasmid (present in many bacteria) or a bacteriophage. These are broken pieces of DNA.

Q50: ***What are interferon and Urokinase?***

Ans: ***Interferon:***

Interferon are, anti-viral proteins produced by cells infected with viruses. In 1980, interferon was produced in the genetically modified microorganisms, for the first time.

Urokinase:

The enzyme urokinase which is used to dissolve blood clots has been produced by genetically modified microorganisms.

This diagram is just for information.

Figure : Some medicines produced by genetic engineers

Q51: ***Write the function of enzyme urokinase from which type of microbes it is obtained?***

Ans: *The enzyme urokinase which is used to dissolve blood clots has been produced by genetically modified microorganisms.*

Q52: ***How biotechnology has helped us in improving the environment?***

Ans: *Biotechnology is also being used for dealing with environmental issues like pollution control, development of renewable sources of energy, restoration of degraded lands and biodiversity conservation. Bacterial enzymes are used to treat sewage water to purify.*

Q53: ***Is inherited disease hemophilia curable? If yes then how?***

Ans: ***No,*** *it has become possible to modify the genes in the human egg cell. This can lead to the elimination of inherited disease like hemophilia.*

Q54: ***How genetic engineers have reduced the need of fertilizers for plants?***

Ans: Genetic engineers have developed plants that can fix nitrogen directly from the atmosphere. Such plants need less fertilizer.

Q55: ***What is meant by restriction endonucleases?***

Ans: ***Isolation of the gene of interest:***

In the first step, the genetic engineer identifies the gene of interest in a donor organism. Special enzymes, called restriction endonuclease, are used to cut the identified gene from the total DNA of donor organism.

Q56: ***What is a single cell protein? Write briefly.***

Ans: ***Single cell protein:***

Single cell protein refers to the protein content excreted from pure or mixed cultures of algae, yeast fungi or bacteria.

In single cell protein the microorganisms are grown in fermenters where they produce a high yield of protein.

Q57: ***Why is single cell protein gaining popularity?***

Ans: Single cell protein is gaining popularity day by day, because it requires limited land area for production.

Q58: ***What is novel protein or manifold?***

Ans: ***Novel protein or manifold:***

Microorganisms grow very vigorously and produce a high yield of protein. The protein content produced by microorganisms is also known as novel protein or manifold.

Q59: ***Name the breaking enzyme and joining enzyme.***

Ans: Breaking enzyme and joining enzyme are:

Breaking enzyme:

- *Breaking enzyme (endonuclease).*

Joining enzyme:

- *Joining enzyme (ligase).*

Q60: ***Write the names of two major techniques in biotechnology.***

Ans: The names of two major techniques in biotechnology are:

- *Cross pollination of plants.*
- *Cross-breeding of animals.*

Q61: ***Write two uses of aspergillus.***

Ans: Aspergillus used in:

- *Textile dying.*
- *In leather treatment.*
- *Electroplating.*
- *Rubber manufacturer.*

Q62: ***Who was professor Scrimshaw?***

Ans: Professor Scrimshaw of Massachusetts Institute of technology introduced the technique to use microbes as the producers of single cell proteins.

Q63: ***What is the role of Pasteur in the field fermentation?***

Ans: In 1857, Pasteur convinced the scientific community that all fermentations are the results of microbial activity. He showed that fermentation is always accompanied by the development of microorganisms. There are many kinds of fermentation and each kind is a characteristic of particular microbial group.

Q64: ***How gene is entered into a vector? OR***
What is vector in genetic engineering?

Ans: ***Insertion of the gene into a vector:***

A vector is selected for the transfer of the isolated gene of interest to the host cell. The vector may be a plasmid (the extra-chromosomal DNA present in many bacteria) or a bacteriophage.

The gene of interest is attached with the vector DNA by using endonuclease (breaking enzymes) and ligase (joining enzymes). The vector DNA and the attached gene of interest are collectively called recombinant DNA.

Q65: ***How maximum protein is obtained by yeast by genetic engineering?***

Ans: *All scientists recognize the significance of the production of single-cell proteins. The microorganisms grow very vigorously and produce a high yield. It has been calculated that 50 kilogram of yeast produces about 250 tons of protein within 24 hours. Algae grown in ponds produce 20 tons (dry weight) of protein per acre/year. This yield of protein is 10-15 higher than soybeans and 20-50 times higher than corn.*

Q66: ***How single cell proteins help in controlling pollution?***

Ans: *When single cell proteins are produced by using yeasts, the products also contain high vitamin content. In the production of single cell proteins, individual wastes are used as raw materials for microorganisms. It helps in controlling pollution.*

Q67: ***How did genetic engineering help in controlling heamophilia and thalassemia?***

Ans: *Now it has become possible to modify the genes in the human egg cell. This can lead to the elimination of infected diseases like hemophilia. Genetic engineering technique can also be used to cure blood diseases like thalassemia and sickle cell anemia, which results from defects in single genes. Normal genes- could be transferred into the bone marrow.*

Q68: ***Why Single cell protein is gaining popularity?***

Ans: *Single cell protein is gaining popularity day by day because it requires limited land area for production.*

Chapter : 18 Pharmacology

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Imp.Long Questions

Q.1: Describe the scope and importance of Biotechnology. V.imp

Q.2: Explain group of fermented food.

Q.3: Define fermentation. Describe alcoholic and lactic acid fermentation.

Q.4: Write the advantages of using fermenters.

Q.5: Write objectives of genetic engineering. V.imp

Q.6: Write eight achievements of genetic engineering.

Q.7: What are Single-Cell Proteins? Describe their importance. V.imp

Q.8: Describe two types of fermenter.

Q.9: Write any four basic steps in genetic engineering. V.imp

Chapter: 18

Pharmacology

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Objective

1. Aspirin is categorized as:
   - (A) A drug from plants
   - (B) A drug from minerals
   - (C) A synthetic drug
   - (D) A drug from animals

2. The substances used for the treatment, cure, prevention or diagnosis of disease are called:
   - (A) Sedatives
   - (B) Hallucinogens
   - (C) Narcotics
   - (D) Medicinal drugs

3. The drug used to reduce pain are known as:
   - (A) Sedatives
   - (B) Analgesics
   - (C) Antiseptics
   - (D) Antibiotics

4. Which of the following drugs is obtained from plants?
   - (A) Insulin
   - (B) Opium
   - (C) Cephalosporin
   - (D) Aspirin

5. What is true about vaccines?
   - (A) Protect against viral infections only.
   - (B) Treat existing infection and also protect against future infections.
   - (C) Treat the existing bacterial infections only.
   - (D) Protect against the future viral and bacterial infections.

6. Foxglove is a:
   - (A) Yellow flowered plant
   - (B) Black flowered plant
   - (C) Purple flowered plant
   - (D) Orange flowered plant

7. Which antibiotic is bactericidal?
   - (A) cephalosporins
   - (B) thiazide
   - (C) sulpha drugs
   - (D) tetracycline

8. Mescaline belongs to:
   - (A) Sulpha drugs
   - (B) Vaccine
   - (C) Hallucinogens
   - (D) Antibiotics

9. Digitalis stimulate the organ:
   - (A) Lungs
   - (B) Kidney
   - (C) Brain
   - (D) Heart

10. Which drug is a cardiotonic?
    - (A) Diazepam
    - (B) Aspirin
    - (C) Digitalis
    - (D) Morphine

11. The cardiotonic used to stimulate the heart is called:
    - (A) analgesics
    - (B) paracetamol
    - (C) aspirin
    - (D) digitalis

12. Morphine is derived from:
    - (A) Opium
    - (B) Foxglove
    - (C) Bacteria
    - (D) Fungi

13. Until 1890, the subject pharmacology was known as:
    - (A) Pharmacy
    - (B) Clinical pharmacology
    - (C) All of these
    - (D) Materia Medica

14. Study of composition and medical applications of drugs is called:
    - (A) physiology
    - (B) pharmacology
    - (C) Mycology
    - (D) Biotechnology

15. Some drugs often make persons dependent on them are called:
    - (A) addictive
    - (B) antibiotic
    - (C) analgesics
    - (D) sedative

16. Drug medicine derived from minerals:
    - (A) Tincture Iodine
    - (B) Antitoxins
    - (C) Aspirin
    - (D) Morphine

17. Streptomycin drugs obtained from:

Ⓐ Plants Ⓑ Fungi **Ⓒ Bacteria** Ⓓ Animals

18. Medicine Prepared in Laboratory are called:

Ⓐ Minerals made Ⓑ Animals made Ⓒ Plants made **Ⓓ Synthetic**

19. Which of these addictive drugs are also used as painkillers?

Ⓐ Hallucinogens Ⓑ Sedatives Ⓒ All can be used **Ⓓ Narcotics**

20. Sulfonamides affect bacteria in the following way:

Ⓐ Inhibit protein synthesis Ⓑ Stop the synthesis of new cell wall
Ⓒ Stop the synthesis of folic acid Ⓓ Break the cell wall

21. Medicines which induce sedation by reducing irritability and excitement are called:

Ⓐ antibiotics Ⓑ vaccines **Ⓒ sedatives** Ⓓ analgesics

22. Antibiotics inhibit or kill the:

Ⓐ Yeast Ⓑ Viruses Ⓒ Worms **Ⓓ Bacteria**

23. Medicines which kill or stop the growth of bacteria are called:

Ⓐ antibiotics Ⓑ antibodies Ⓒ antinarcotics Ⓓ analgesic

24. Diazepam is a type of drug:

Ⓐ Sedatives Ⓑ vaccines Ⓒ Antibiotics Ⓓ Analgesics

25. Reduce the possibility of infection on skin:

Ⓐ Digitalis **Ⓑ Antiseptics** Ⓒ Antibiotics Ⓓ Disinfectants

26. Flemming discovered the:

Ⓐ Penicillin Ⓑ cephalosporin Ⓒ Aspirin Ⓓ Tetracycline

27. Who presented the idea of sterile surgery for the first time:

Ⓐ Lamarck **Ⓑ Joseph Lister** Ⓒ Thomas Grill Ⓓ Sir Alexander

28. Penicillin was discovered by:

Ⓐ Robert Hook Ⓑ Lamarck Ⓒ Darwin **Ⓓ Alexander Fleming**

29. Joseph Lister introduced an acid to sterile the surgical instruments and to clean wounds:

Ⓐ Carbolic acid Ⓑ Nitric acid Ⓒ Carbonic acid Ⓓ Acetic acid

30. It affects the production of sperms in men and also weakens the short term memory:

Ⓐ psilocin Ⓑ caffeine Ⓒ morphine **Ⓓ marijuana**

31. From which painkiller drug morphine is obtained?

Ⓐ Fungi **Ⓑ Opium** Ⓒ Fish liver Ⓓ foxglove leaves

32. Hallucinogens effect on the:

Ⓐ hypothalamus Ⓑ spinal card
Ⓒ Sympathetic nervous system Ⓓ central nervous system

33. Which of the following addictive drugs is obtained from opium:

Ⓐ Psilocin Ⓑ Mescaline **Ⓒ Morphine** Ⓓ Marijuana

34. Drugs interact with Central Nervous system to depress its activities belong to the group of Drugs called:

Ⓐ Vaccines **Ⓑ Sedatives** Ⓒ Narcotics Ⓓ Analgesics

35. The pain reliever morphine is obtained from the flowers of which plant?

Ⓐ foxglove Ⓑ rose Ⓒ brassica **Ⓓ opium**

36. Medicines with expired date are hazardous to:

Ⓐ kidneys Ⓑ stomach Ⓒ lungs Ⓓ heart

37. Edward Jenner introduces vaccine of which disease?

Ⓐ malaria Ⓑ hepatitis Ⓒ aids **Ⓓ smallpox**

38. Which of the following diseases is cured by vaccines:

Ⓐ Typhoid **Ⓑ Measels** Ⓒ cholera Ⓓ Aids

39. Mescaline is obtained from a plant:

Ⓐ Morning Glory Ⓑ Cannabis Ⓒ Datura **Ⓓ Cactus**

40. Is an Analgesic:

Ⓐ Aspirin **Ⓑ Both A & C** Ⓒ Paracetamol Ⓓ Diazepam

41. Sir Alexander Fleming was awarded the Noble Prize in:

Ⓐ 1950 Ⓑ 1940 Ⓒ 1935 **Ⓓ 1945**

42. The cardiotonic known as digitalis is obtained from a plant:

Ⓐ memosa **Ⓑ fox glove** Ⓒ Brassica Ⓓ accacia

43. This group includes mescaline and psilocin:

Ⓐ narcotics **Ⓑ hallucinogans** Ⓒ sedatives Ⓓ vaccines

44. Psilocin is obtained from:

Ⓐ cactus Ⓑ opium **Ⓒ mushroom** Ⓓ cannabis

45. Which destroys microorganisms found on non-living objects:

Ⓐ Antibiotics **Ⓑ Disinfectants** Ⓒ Antiseptics Ⓓ Antibodies

46. Which drug is obtained from bacteria?

Ⓐ Streptomycin Ⓑ Terramycin Ⓒ Paracetamol Ⓓ Aspirin

47. Which drugs include aspirin:

Ⓐ Drugs from plants Ⓑ Addictive drugs
Ⓒ Synthetic drugs Ⓓ Drugs from bacteria

48. Which of these is a Bactericidal Drug:

Ⓐ Psilocin **Ⓑ Cephalosporin** Ⓒ Mescaline Ⓓ Morphin

49. An antibiotic is a drug that kills:

Ⓐ Bacteria Ⓑ Fungi Ⓒ Algae Ⓓ Viruses

50. ..... are the most frequently prescribed medications in modern medicine:

Ⓐ enzymes **Ⓑ antibiotics** Ⓒ antigens Ⓓ vaccines

51. The most common method of administering vaccines is by:

Ⓐ Injection Ⓑ Skin Ⓒ Nasal Spray Ⓓ Mouth

52. Which one of the following is not an addictive drug?

Ⓐ Codeine **Ⓑ Tetracycline** Ⓒ Morphine Ⓓ Sedatives

53. A substance that when absorbed into the body of a living organism and alter normal body function is called:

(A) Drug (B) Vaccine (C) Antiseptic (D) Antitoxin

54. Separate out painkiller drug:

(A) Sedatives (B) Antibiotics (C) Antiseptics (D) Analgesics

55. …….. drug is glandular product:

(A) diamorphine (B) musk (C) terramycin (D) penicillin

56. Tincture of iodine is obtained from:

(A) Animals (B) Plants (C) Fungus (D) Minerals

57. Psilosin belongs to:

(A) Vaccines (B) Hallucinogens (C) Sedatives (D) Antibiotics

58. This drug effects on the sympathetic nervous system causing dilation of pupils:

(A) Hallucinogens (B) Marijuana (C) Narcotics (D) Sedatives

59. Infections against which antibiotics are not effective are called:

(A) Viral (B) Bacterial (C) Fungal (D) Amoebic

60. It effects on central nervous system and causes drowsiness:

(A) Codeine (B) Psilocin (C) Mescaline (D) Morphine

61. Antibiotics are used for the:

(A) Treatment of bacterial & viral infections (B) Treatment of viral infections
(C) Treatment of bacterial infections (D) Immunization against infections

Chapter : 18 Pharmacology

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Subjective

Q1: ***Define pharmacology and distinguish it from pharmacy?***

Ans: ***Pharmacology:***

It is the study of drug composition, properties and medical are also studied in pharmacology.

Pharmacy:

While pharmacy, is the study of preparation of medicines and drugs. Pharmacology is not synonymous with pharmacy.

Q2: ***Name different sources of drugs.***

Ans: These are the name of different sources of drugs:

- *Drug from animals*
- *Drugs from bacteria*
- *Synthetic drugs*
- *Drugs from plants and fungi*
- *Drugs from minerals*

This diagram is just for information.

Animation Drugs from Bacteria
Source & Credit : leavingbio

Q3: ***Differentiate between Pharmaceutical drug or medicinal drug and addictive drugs.***

Ans: Differentiate between Pharmaceutical drug or medicinal drug and addictive drugs is:

Pharmaceutical drug	Addictive drugs

It is defined as any chemical substance used in the diagnosis, cure, treatment or prevention of disease.	*Some drugs often make person dependent on them or addicted. These may be called as addictive drugs.*

Q4: ***Write the names of drugs obtained from plants and fungi.***

Ans: Many important medicines are obtained from plants and fungi. These medicines include antibiotics, cardiotonics and certain analgesics. The antibiotic penicillin comes from fungus.

This diagram is just for information.

Figure Digitalis (foxglove)

Q5: ***Define pharmacology and pharmacologist.***

Ans: ***Pharmacology:***

Pharmacology is the study of drug composition properties and medical applications.

Pharmacologist:

The scientist who study and work on pharmacology is called Pharmacologist.

Q6: ***Give details of drugs obtained from animals.***

Ans: Drugs obtained from animals are usually their glandular products. Fish liver oils, musk, bees, wax, certain hormones and antitoxins are obtained from animal sources.

Q7: ***From which morphine is obtained?***

Ans: The pain reliever morphine is made from opium, which comes from the juice of opium poppy plant.

Animation Drug addiction
Source & Credit: teensandhealth

Q8: ***What is meant by drugs?***

Ans: ***Drugs:***

Any substance that when absorbed into the body of living organisms, alters normal body function is known as drug. Drugs are broadly classified into two types.

- *Pharmaceutical drug*
- *Addictive drugs*

Q9: ***What is iodine tincture? Write its use.***

Ans: The mineral iodine is used in making tincture of iodine, a liquid that helps prevent infection when applied to cuts and bruises.

Q10: ***What is use of powder silver nitrate?***

Ans: ***Powder silver nitrate:***

Powder of silver nitrate applied on wounds to stop bleeding & prevent infection.

Q11: ***Write names of two drugs obtained from minerals.***

Ans: Drugs obtained from minerals.

- *The powder form of silver nitrate.*
- *Mineral Iodine.*

Q12: ***What are Synthetic Drugs?***

Ans: ***Synthetic Drugs:***

Such drugs do not occur naturally but are synthesized in laboratories. Pharmaceutical companies produce these drugs.

For example:

- *Aspirin.*

Q13: ***What is difference between antibiotics and disinfectants?***

Ans: The difference between antibiotics and disinfectants is:

Antibiotics	***Disinfectants***
Antibiotic inhibit or kill bacteria and treat bacterial infection e.g. tetracycline,	*Disinfectant destroys micro-organism found on non-living objects.*

cephalosporin etc.	

Q14: ***Define antibiotics.***

Ans: *Antibiotic inhibits or kills bacteria and treats bacterial infection.*

For example:

- *Tetracycline, cephalosporin etc.*

Q15: ***Define analgesic.***

Ans: *Analgesic:*

Analgesics (painkillers) reduce pain e.g. aspirin, paracetamol etc. Antibiotics inhibit or kill bacteria and treat bacterial infections.

For example:

- *Tetracycline, cephalosporin etc.*

Q16: ***Define antiseptics.***

Ans: ***Antiseptics:***

It reduces the possibility of infections on skin.

Q17: ***Describe two precautions before taking medicine.***

Ans: *Two precautions before taking medicine:*

- *Always keep healthcare products out of the reach of the children.*
- *Do not take medicine in the dark.*

Q18: ***Define hallucinogens.***

Ans: ***Hallucinogens.***

Hallucinogens are the drugs that cause changes in perception, thoughts, emotions and consciousness. The group includes mescaline which comes from cactus and psilocin which comes from mushrooms.

Q19: ***Name two Narcotics obtained from opium.***

Ans: *Morphine and codeine are the narcotics, derived from opium.*

Q20: ***What is Narcotics?***

Ans: ***Narcotics:***

Narcotics are strong painkiller. These drugs are often prescribed in conjunction with other less potent painkiller.

For example:

- *Heroin, morphine etc.*

Q21: ***What are the uses of Narcotics?***

Ans: *The uses of Narcotics:*

Narcotics are used to relieve pain for patients with chronic disease such as cancer. These are also used to relieve acute pain after operation.

This diagram is just for information.

Figure *The fruits of the opium poppy plant*

Q22: ***Explain morphine and codeine.***

Ans: ***Morphine and codeine:***

Morphine and codeine are the narcotics, derived from opium (poppy). Morphine acts directly on central nervous system to relieve pain. Morphine has high potential for addiction the most common abused narcotic i.e heroin is a semi synthetic drug from morphine. It effects on CNS and cause drowsiness.

Q23: ***Write the uses of diamorphine.***

Ans: *The uses of diamorphine:*

Its use includes treatment for acute pain, such as in severe physical trauma, myocardial infarction, post-surgical pain etc.

Q24: ***What is Heroin? Give its bad effect.***

Ans: ***Heroin:***

The most commonly abused narcotic i.e. heroin is a semi-synthetic drug from morphine.

Bad effect:

It effects on central nervous system and causes drowsiness.

Q25: ***What are prescription drugs?***

Ans: ***Prescription drugs:***

Prescription drugs are sold only on physician's prescription. These include barbiturates, tranquillizers, antibiotics etc.

Q26: ***Write some problems in drug addiction.***

Ans: *Problems in drug addiction:*

Drug abusers go through withdrawal of social contact or communication. The compulsion for narcotic drugs makes every drug addict a law violator and á criminal. Most narcotics addicts get involved in various types of crimes. Drug addicts are very weak in their social behavior.

Q27: ***Write difference between antigens and antibodies.***

Ans: *The difference between antigens and antibodies is:*

pakcity.org **Antigens**	**Antibodies**
Pathogens contain special proteins called antigens.	*When pathogens enter the body (blood) of host, these proteins stimulate the immune response in host i.e. synthesis of antibodies.*

Q28: ***What is meant by social stigma?***

Ans: ***Social stigma:***

The drug addicts are very weak in their social behavior. They face social stigma i.e. the society dislikes them because of their unpredictable behaviors.

Q29: ***Write effects of hallucinogens.***

Ans: *Physiologically, hallucinogens effect on the sympathetic nervous system causing dilation of pupil's constriction of some arteries and rise in blood pressure.*

Q30: ***What is meant by Hallucinations?***

Ans: ***Hallucinations:***

Hallucinations are perceptions that have no basis in reality but that appear entirely realistic.

This diagram is just for information.

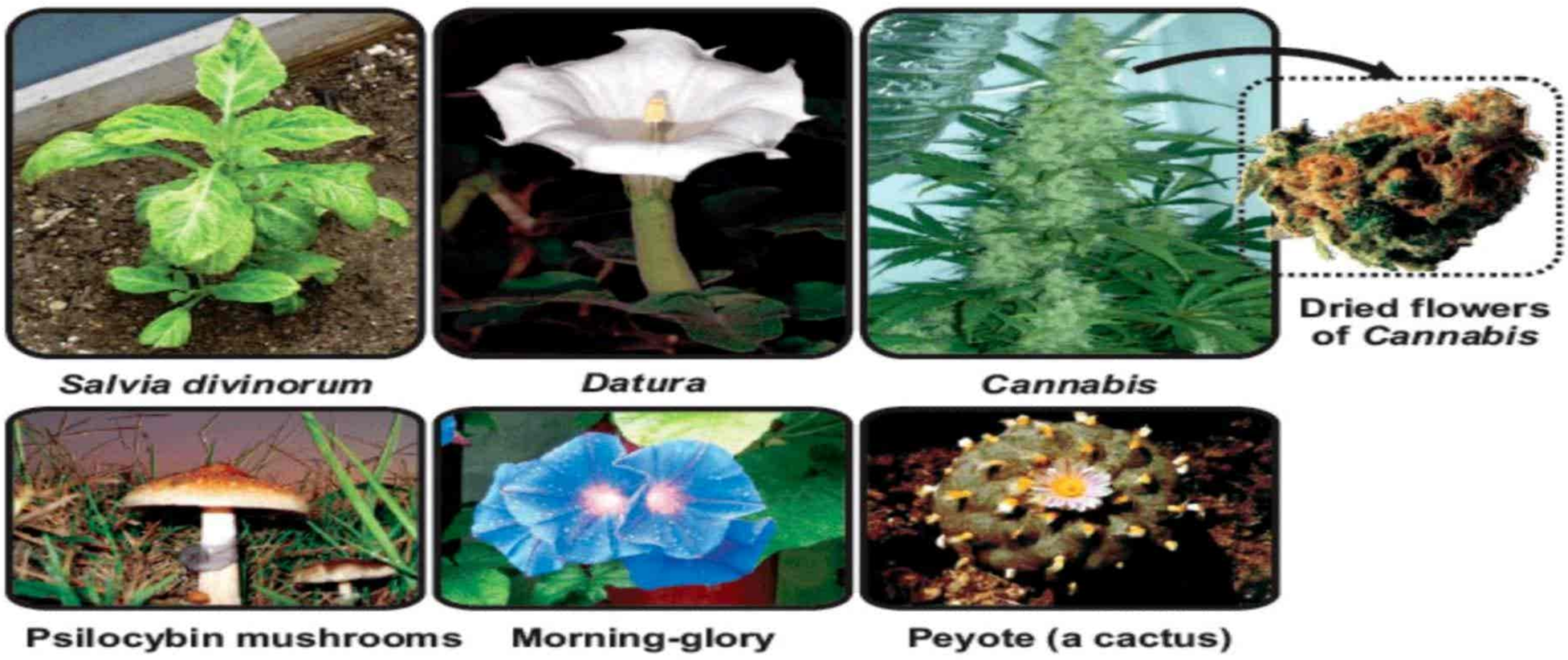


Figure *Plants from where hallucinogens are obtained*

Q31: ***Write two major groups of antibiotics.***

Ans: The major groups of antibiotics are:

- *Sulpha-Drugs*
- *Cephalosporins*
- *Tetracyclines*

Q32: ***Write a note on tetracycliens.***

Ans: ***Tetracycliens:***

These are broad spectrum bacteriostatic antibiotics and inhibit bacterial protein synthesis. Tetracyclien are used in the treatment of infection of respiratory tract, urinary tract, intestine etc.

Q33: ***Which organ is affected by the use of expired medicines?***

Ans: Expired drugs can cause damage to kidneys.

Image Metabolism
Source & Credit: microgene

Q34: ***Define Bactericidal and Bacteriostatic Antibiotics.***

Ans: Bactericidal meaning that they kill bacteria. Bactericidal meaning that they work by stopping bacterial growth.

Q35: ***Define Vaccine. Give its working briefly. Or What are Vaccines?***

Ans: ***Vaccines:***

Vaccines are used to develop immunity against viral and bacterial infections.

For example:

- *Vaccines against small pox, whooping cough and hepatitis B and C etc.*

A painting showing Edward Jenner, injecting the boy. It was the world's first vaccination.

Q36: ***Name four diseases in which vaccines are used.***

Ans: Four diseases in which vaccines are used:

- *Whooping cough*
- *Polio*
- *Small pox*
- *Hepatitis*

Q37: ***What do you know about sulpha drugs?***

Ans: ***Sulpha drugs:***

Sulpha drugs are synthetic antibiotic that contain sulfonamide group. Sulfonamides are broad spectrum bacteriostatic antibiotics. They inhibit the folic acid synthesis in bacteria. They are used to treat pneumonia and urinary tract infections.

Q38: ***Which medicines are used for lowering the blood pressure?***

Ans: The sulfonamide group is also present in other medications that are not antibiotics.

For example:

- *Thiazide diuretics (medicines for lowering blood pressure).*

Q39: ***What is the function of antibodies in blood?***

Ans: Antibodies bind to pathogens and destroy them. In addition, memory cell are produced, which remain in blood and provide protection against future infections with the same pathogen.

Q40: ***Define broad spectrum antibiotic and narrow spectrum.***

Ans: ***Broad spectrum antibiotic:***

Some antibiotics can be used to treat a wide range of infections and are known as broad-spectrum antibiotics.

Narrow spectrum:

Others are only effective against a few types of bacteria and are called narrow-spectrum antibiotics.

Q41: ***What is difference between vaccine and vaccination?***

Ans: The difference between vaccine and vaccination is:

Vaccine	***Vaccination***
A vaccine is a material containing weakened or killed pathogens and is used to produce immunity to a disease by stimulating the production of antibodies.	*Vaccination is the treatment with a vaccine to produce immunity against a disease.*

Q42: ***What is the most common method of administering vaccine?***

Ans: The most injection, but some vaccines are given by mouth or nasal spray.

Q43: ***What is the mode of action of vaccines?***

Ans: The mode of action of vaccines is:

Pathogens contain special proteins called antigens.

When pathogens enter the body of host, these proteins stimulate the immune response in host i.e synthesis of antibodies. Antibodies bind to pathogens and destroy them. In addition, memory calls are produced, which remain in blood and provide protection against future infections with the same pathogen.

Q44: ***What problem is faced by development of antibiotics resistant bacteria?***

Ans: Resistance to antibiotics poses a serious and growing problem, because some infectious diseases are becoming more difficult to treat. Some of the resistant bacteria can be treated with more powerful antibiotics, but these are some infections that do not eliminate even with new antibiotics.

Q45: ***Why does society dislike a drug abuser?***

Ans: The addicts are very weak in their social behavior. They face social stigma i.e. the society dislikes them because of their unpredictable behaviors.

Q46: ***Which antibiotic was discovered by Fleming?***

Ans: Sir Alexander Flemming (1881-1955) was a Scottish biologist. He discovered the antibiotic penicillin from the fungus Penicillium notatum, for which he was awarded the Nobel Prize in 1945.

Q47: ***Write down the name of two drugs obtained from minerals.***

Ans: Several common drugs are produced from minerals. The mineral iodine is used in making tincture of iodine, a liquid that helps prevent infection when applied to cuts and bruises. The powder form of silver nitrate is applied on wounds to stop bleeding and prevent infection.

Q48: ***Define sedative and give examples. OR***
Why sedative drugs are used?

Ans: ***Sedative:***

These drugs interact with central nervous system to depress its activities. Sedative drugs induce dizziness, lethargy; show brain function and depression induce suicidal thoughts irritability or excitement.

Example:

- *Diazepam.*

Q49: ***Which micro-organism is killed by cephalosporins? Name two diseases for which these are used.***

Ans: Cephalosporin's interfere with synthesis of bacterial cell wall and so are bactericidal.

Cephalosporins are used to treat:

- *Pneumonia*
- *Sore throat*
- *Bronchitis etc.*

Q50: ***How Edward Jenner made the use of vaccine in 1796? OR***
Write a short note on discovery of vaccines. OR
What is contribution of Edward Jenner?

Ans: In 1796, a British physician Edward Jenner injected a young boy with cowpox, by injecting pus cells after the boy had recovered from cowpox, Jenner injected the pus cell from a small pox patient into him. The body did not get small pox.
So, it becomes clear that intentional injection with cowpox protected from small pox. This method was named "vaccination" and the substance used to vaccinate was called a "vaccine".

Q51: ***How Terramycin developed?***

Ans: Researchers of pharmaceutical company spent two years testing soil from all parts of the world to find new antibiotics. The project resulted in the development of one antibiotic, terramycin, which is used to treat many infections.

Q52: ***What are the uses of carbolic acid in surgery?***

Ans: Carbolic acid is used to sterilize surgical instruments and to clean wounds.

Q53: ***Which antibiotic is used to treat many infections?***

Ans: Terramycin, antibiotic is used to treat many infections.

Q54: ***What happened when bacteria are exposed to the same antibiotics?***

Ans: When bacteria are exposed to the same antibiotics over and over, they can change and are no longer affected by the drug.

Q55: ***Why Non-Prescription drugs are sold over the counter?***

Ans: Non-Prescription drugs are sold over the counter, because these are considered safe enough. These includes aspirin and some cough medicines.

Q56: ***Write sources of mescaline and psilocin.***

Ans: The sources of mescaline and psilocin are:
Mescaline comes from cactus and psilocin comes from a Mushroom.

Q57: ***Write advantage of Leaves of foxglove.***

Ans: The advantage of Leaves of foxglove is:

- *The Cardio-tonic, known as digitalis is used to stimulate the heart.*
- *It is made from the leaves of fox glove.*

Q58: ***Write the difference between prescription and Non-prescription medicines.***

Ans: The difference between prescription and Non-prescription medicines is:

Prescription	Non-Prescription Medicines
Prescription drugs are sold only on physician's prescription.	Non-prescription medicines are sold over counter because these are considered safe enough.

Q59: ***Why tetrocycline are not used in children under age of 8?***

Ans: Tetrocycline are not used in children under age of 8, because it can cause permanently stain teeth.

Q60: ***On which work Sir Alexander Flemming was awarded Nobel prize?***

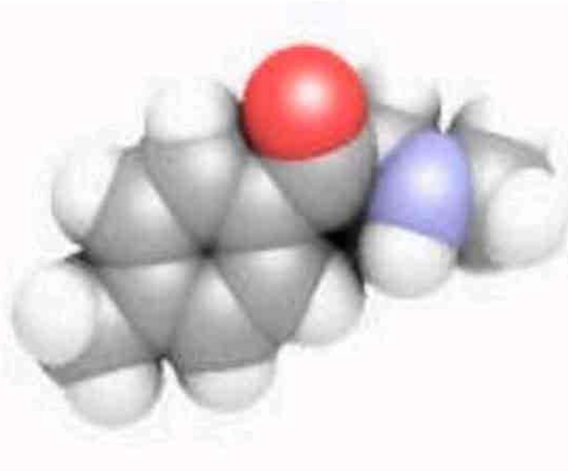
Ans: Alexander discovered the antibiotic penicillin from the fungus penicillium notatum for which he was awarded the Nobel Prize in 1945.

Q61: ***What is contribution of Joseph Lister in biology?***

Ans: Joseph Lister (1827-1912) was an English surgeon. He promoted the idea of sterile surgery for the first time. He introduced carbolic acid to sterilize surgical instrument and to clean wounds.

Q62: ***From where is Marijuana obtained? OR***
What are its effects on human body? OR
What is marijuana?

Ans: Marijuana is a hallucinogen, which is smoked. It is obtained from the flowers, stems, and leaves of the marijuana plant (cannabis sativa and C indicia). Small doses of marijuana result in a feeling of well-being that lasts two to three



Animation 3D Structure of Marijuana
Source & Credit: disinfo

hours. High doses increases heart rate. It also effects the production of sperms in men and also weakens the short term memory.

Chapter : 18 Pharmacology

Long Questions

Q.1: ***Describe narcotics with the examples of morphine and codeine. . V.imp***
Q.2: ***Write note on Sedative Drugs and Hallucinogens Drugs.***
Q.3: ***Differentiate between Medicinal drugs and Addictive drugs.***
Q.4: ***What are the sources of Drugs? V.imp***
Q.5: ***Explain principle usage of important medicinal drugs. V.imp***
Q.6: ***Write three types of medicines and their uses on the basis of chemical properties.***
Q.7: ***Write down mode of action of vaccines? . V.imp***
Q.8: ***Describe major groups of antibiotics. . V.imp***
Q.9: ***Write any three medicinal drugs. Explain in detail.***
Q.10: ***Classify Drugs on the basis of their mode of action and chemical properties.***
Q.11: ***How marijuana is used from which it is obtained and also write its two effects on.***
Q.12: ***Explain Narcotics and Hallucinogens.***
Q.13: ***Discuss the Drug Addiction and Associated problems.***
Q.14: ***How resistance is produced against antibiotics? Explain. . V.imp***
Q.15: ***What is the difference between Bactericidal and Bacteriostatic Antibiotics?***