

Objective

Paper Code

8465

Intermediate Part Second

BIOLOGY (Objective) GROUP - I

Time: 20 Minutes

Marks: 17



Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	Sickle cell anemia is caused when glutamic acid is replaced in hemoglobin by:	Glycine	Valine ●	Alanine	Arginine
2	The transfer of information from RNA to ribosomes for synthesis of polypeptide is called:	Transduction	Transcription	Translation ●	Replication
3	Plant tissue becomes pitted during:	Cell division	Maturation	Differentiation ●	Both "B" and "C"
4	When a female cat shows desire for mating, she is said to be on:	Menstrual cycle	Growth period	Heat ●	Both "A" and "B"
5	Mechanoreceptors are not present in:	Stomach	Ear	Carotid arteries	Muscles ●
6	A bundle of axons and dendrites bounded by connective tissue is called:	Neuron ●	Nerve	Grey matter	White matter
7	What is not true about skeletal muscle fibers?	10–100 μm dia	Store glycogen ●	Store myoglobin	10–100 nm dia
8	Nastic movements are due to the balance between:	Abscisic acid and gibberellin	Abscisic acid and auxins	Abscisic acid and cytokinins	Gibberellins and auxins ●
9	The elimination of nitrogenous wastes from body is known as:	Defecation	Excretion ●	Secretion	Both "B" and "C"
10	Which one is a nutritional disorder?	Kwashiorkor ●	AIDS	Alzheimer	Osteoarthritis
11	Productivity of an ecosystem is indicated by:	Consumption of CO <sub>2</sub>	Evolution of O <sub>2</sub> ●	Number of plants	Both "A" and "B"
12	Which is a biotic factor?	Air	Water	Soil	Plants ●
13	Stamens of flowers evolved from:	Sepals	Petals ●	Leaves	Stem
14	What is not true about gel electrophoresis?	Used for carbohydrate test ●	Used for DNA fragments separation	Used for separation of nucleotides	Both "B" and "C"
15	PBR <sup>122</sup> has antibodies resistance gene for:	Tetracycline ●	Streptomycin	Ampicillin	Both "A" and "C"
16	How many gene pairs contribute to wheat grain colour?	1	2	3 ●	4
17	Sisters having same parents are not similar due to:	Mitosis	Synapsis	Apoptosis	Crossing over ●

**BIOLOGY ( Subjective ) GROUP - I**

Time: 02:40 Hours

Marks: 68

**SECTION – I****2. Write short answers to any EIGHT parts.**

16

- (i) How is hypertonic urine formed during the state of dehydration?
- (ii) Name the plasma proteins synthesized by liver. Also write their function.
- (iii) How would you differentiate between peritoneal and hemodialysis?
- (iv) What is antagonistic action of muscles?
- (v) Why does moulting takes place in arthropods?
- (vi) How disc-ship is treated?
- (vii) Which disease is caused by treponema pallidum? Give its symptoms.
- (viii) How does ovulation occur in female reproductive cycle?
- (ix) How plants and animals cope with the challenge of force of gravity on land?
- (x) What type of organisms are present in limnetic zone of a lake ecosystem?
- (xi) How is ozone layer being depleted?
- (xii) Differentiate between deforestation and afforestation.

**3. Write short answers to any EIGHT parts.**

16

- (i) Classify hormones on the basis of chemical composition.
- (ii) Compare relative abundance of different type of receptors in our body.
- (iii) Define habituation with example.
- (iv) How genetics of blood groups help in solving cases of disputed parentage?
- (v) How blood groups are categorized as +ive or –ive?
- (vi) Why pattern of Y-linked inheritance is very peculiar?
- (vii) How can you describe plasmid?
- (viii) Write any two principles of gene sequencing.
- (ix) How hypercholesterolemia is cured with gene therapy?
- (x) How would you define synecology? Give an example.
- (xi) Write role of root nodules in plants.
- (xii) What do you understand by ammonification?

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**4. Write short answers to any SIX parts.**

12

- (i) How temperature affects growth of plants?
- (ii) Differentiate between morula and gastrula stage of chick embryo.
- (iii) Differentiate between sub meta centric and telocentric chromosomes.
- (iv) What is minimal medium for the growth of neurospora?
- (v) Define point mutation. Give example.
- (vi) How cytokinesis occurs in animal cell?
- (vii) What is bivalent or tetrad?
- (viii) Give examples Lamarck cited in favour of his theory of evolution.
- (ix) Define population and gene pool.

<b>SECTION – II</b>	Attempt any THREE questions. Each question carries 08 marks.
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5. (a) Discuss osmoregulation in animals of marine environment.

04

(b) What is interphase? Explain its various phases.

04

6. (a) Define joint. Also give various types of joints.

04

(b) Explain symbiosis with examples. How it is different from mutualism?

04

7. (a) Compare nervous system of hydra with that of planaria.

04

(b) Explain endosymbiont hypothesis for origin of eukaryotic cell.

04

8. (a) What structures are associated with male reproductive system? What are their functions?

04

(b) What is incomplete dominance? Explain the phenomenon of incomplete dominance with one example.

04

9. (a) Discuss the role of nucleus in development with the help of an experiment on alga.

04

(b) What is gene therapy? Describe two main types of gene therapy with one example of each.

04

## Faisalabad Board-2023

Roll No. : \_\_\_\_\_

Objective  
Paper Code

Intermediate Part First

### BIOLOGY ( Objective ) GROUP - I

Time: 20 Minutes

Marks: 17



**6461**

Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	The control of pests by some living organism is called:	Pest control	Living control	Biological control	Organismic control
2	The human bone cells contain the amount of water is:	5 %	10 %	15 %	20 %
3	Which of the enzyme has pH = 9?	Pancreatic lipase	Pancreatic amylase	Chymotrypsin	Arginase
4	The haploid number of chromosomes in drosophila melanogaster is:	2	4	8	16
5	The botanical name of tomato is:	Solanum-nigrum	Solanum-tuberosum	Solanum-esculentum	Solanum-melongena
6	Antonie Van Leeuwen Hock was the first to report the microbes:	Bacteria and protozoa	Bacteria and virus	Bacteria and algae	Bacteria and fungi
7	The animal live in the gut of termites is:	Ciliate	Trypanosome	Choanoflagellates	Trichonymphs
8	The multinucleated fungus group is:	Zygomycota	Ascomycota	Basidiomycota	Deuteromycota
9	Prosopis-glandulosa belongs to family:	Rosaceae	Mimosaceae	Fabaceae	Poaceae
10	The red blood cells of mammals are:	Nucleated	Many nucleated	Non-nucleated	Nucleated first then non-nucleated
11	The organ madreporite is found in:	Coelenterates	Annelids	Molluscs	Echinoderms
12	In cyclic phosphorylation electrons from primary acceptor of photosystem-I flows back to:	Pq	Pc	Cytochrome complex	NADP <sup>+</sup>
13	In prokaryotes the chlorophyll is present in:	Photosynthetic membranes	Stroma of chloroplast	Thylakoid membranes	Granum of chloroplast
14	The examples of parasitic plant is:	Lichen	Dodder	Drosera	Neotia
15	How much air, lungs can hold when they are fully inflated:	3.5 litre	1.5 litre	5 litre	4 litre
16	The hydrostatic pressure in xylem is increased when root pressure:	Increased	Decreased	Remain static	Increased first then decreased
17	Antiserum is a serum containing:	Antigens	Antibodies	Platelets	Lymphocytes

1115-XI123-38000

## SECTION – I

## 2. Write short answers to any EIGHT parts.

16

- (i) Lipids has double amount of energy as compared to same amount of carbohydrates. Why?
- (ii) At pH2 pepsin works while arginase does not work. Why?
- (iii) What are reversible inhibitors?
- (iv) Differentiate between prosthetic group and coenzyme.
- (v) What is candidosis?
- (vi) How genetic recombination occurs in imperfect fungi?
- (vii) Differentiate between ostia and osculum.
- (viii) Define polymorphism.
- (ix) What are beneficial insects?
- (x) What is syrinx and where it is situated?
- (xi) How entry of CO<sub>2</sub> into leaves is controlled?
- (xii) Calvin cycle is called C<sub>3</sub> pathway. Justify it.

## 3. Write short answers to any EIGHT parts.

16

- (i) What do you know about biome?
- (ii) Give the two advantages of tissue culture techniques.
- (iii) Differentiate between primary cell wall and secondary cell wall.
- (iv) Suggest any two functions of Golgi complex.
- (v) What do you know about kelps?
- (vi) How does locomotion take place in apicomplexans?
- (vii) What do you know about choanoflagellates?
- (viii) Give the special features of giant amoeba.
- (ix) Differentiate between protonema and paraphyses?
- (x) Explain the term double fertilization.
- (xi) Differentiate between symplast pathway and apoplast pathway.
- (xii) Suggest the location and function of coronary artery.

## 4. Write short answers to any SIX parts.

12

- (i) What are pocks?
- (ii) Define plasmids. How these are important?
- (iii) What is saliva? Give its ingredients.
- (iv) Compare saprophytic and parasitic mode of nutrition.
- (v) What are omnivores? Give example.
- (vi) Differentiate between epiglottis and glottis.
- (vii) What are spiracles? Give their function.
- (viii) Write two factors which affect transport of oxygen in blood.
- (ix) How does respiration occur in earthworm?

## SECTION – II

Attempt any THREE questions. Each question carries 08 marks.

5. (a) How can you solve biological problem with help of biological method?

04

(b) Write a note on blood plasma.

04

6. (a) Write a note on importance of water.

04

(b) Discuss economic losses due to fungi.

04

7. (a) Illustrate various methods to control bacteria in home, industry as well as in medical fields.

04

(b) Write significance of alternation of generation in plants.

04

8. (a) What are small pox and herpes simplex diseases?

04

(b) Draw the sketch of electron transport chain and chemiosmosis, coupling ETC and formation of ATP by chemiosmosis.

04

9. (a) What are plastids? Describe their different types.

04

(b) Describe digestion of food in planaria.

04

1115-XI123-38000

Roll No. : \_\_\_\_\_

**Faisalabad Board-2023**



Objective  
Paper Code  
**6466**

Intermediate Part First  
**BIOLOGY (Objective) GROUP - II**  
Time: 20 Minutes Marks: 17



Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	The oyster mushroom is considered as:	Parasitic fungi	Saprotrophic fungi	Carnivorous fungi	Omnivorous fungi
2	The type of algae takes part in coral reef formation is:	Brown	Green	Golden	Red
3	Which type of respiration is found in bacterium E.Coli?:	Aerobic	Anaerobic	Micro aerophilic	Facultative anaerobic
4	The mysterious brain infection is caused by:	Virion	Prion	Bacteria	Fungi
5	The protein present in microtubules is:	Actin	Myosin	Tubulin	Tropomysin
6	The vitamins are essential raw material for the synthesis of:	Activator	Co-factor	Co-enzyme	Prosthetic group
7	Monosaccharides which rare in nature and occur in some bacteria are:	Troises	Tetroses	Pentoses	Hexoses
8	The stomach can digest the:	Proteins	Fats	Starch	Cellulose
9	Which is agranulocyte?	Basophilis	Eosinophilis	Monocyte	Neutrophilis
10	The volume of blood in a body weight of 72 kg is:	5 litres	6 litres	7 litres	8 litres
11	About 70% of CO <sub>2</sub> is carried as:	Carbonates	Bicarbonate	Carbonic acid	Acetic acid
12	Pepsinogen is secreted by:	Mucous cells	Parietal cells	Zymogen cells	Oxyntic cells
13	The first action spectrum was obtained by:	Van Neil	Engelmann	Melvin Calvin	Van Mohl
14	Chlorophyll-b is found along with chlorophyll-a in:	Bacteria	Cyanobacteria	Bryophytes	Embryophytes
15	The length of giant squid in meters is equal to:	5	10	15	20
16	The exclusively marine phylum is:	Protozoa	Porifera	Coelenterata	Echino dermata
17	The scientific name of egg plant is:	Capsicum annum	Solanum tuberosum	Solanum melangena	Solanum nigreem

1116-XI123-2000

**SECTION – I**

**2. Write short answers to any EIGHT parts.**

16

- (i) Differentiate between amylose and amylopectin.
- (ii) Do you think that koshland change the idea of enzyme action?
- (iii) Write any two properties of enzymes.
- (iv) How heat influence the rate of enzyme action?
- (v) What are two main ecological importances of Lichen's?
- (vi) Differentiate parasitic fungi from saprophytic fungi.
- (vii) Differentiate protostomes from deuterostomes.
- (viii) Why arthropods have reached the peak of invertebrate evolution?
- (ix) How swim bladder help the fish to survive in aquatic environment?
- (x) Write any four characters of birds.
- (xi) Define compensation point.
- (xii) How is daily rhythmic activity of stomata governed?

**3. Write short answers to any EIGHT parts.**

16

- (i) Name and define the method used to protect walnut tree from pest.
- (ii) The environmental pollution is a national problem in Pakistan. Why?
- (iii) Cell membrane offers a barrier between cell content and environment. Justify it.
- (iv) Golgi complex is concerned with cell secretions. Why?
- (v) Why fungus like protists are not fungi?
- (vi) Water mold played infamous role in human history. Justify it.
- (vii) Write two uses of chlorella.
- (viii) What are red tides?
- (ix) Define protonema.
- (x) What is the role of meristematic tissue in hornworts?
- (xi) Differentiate between source and sink.
- (xii) The heart of fish is single circuit. Why?

**4. Write short answers to any SIX parts.**

12

- (i) What are the symptoms of AIDS?
- (ii) Differentiate between prions and virions.
- (iii) What is hunger pang? Also write its causes.
- (iv) How gastric juice production is regulated?
- (v) Differentiate between oxyntic cells and zymogen cells.
- (vi) What is diving reflex and how it is activated?
- (vii) Suggest the various characteristics of respiratory surface.
- (viii) What is respiratory distress syndrome?
- (ix) How does respiration take place in Earthworm?

**SECTION – II Attempt any THREE questions. Each question carries 08 marks.**

**5. (a) Discuss biological method.**

04

**(b) Give comparison between closed and open circulatory system.**

04

**6. (a) What are polysaccharides? Discuss in detail.**

04

**(b) Give economic losses due to fungi.**

04

**7. (a) Discuss the structure of bacterial cell wall. Also give comparison between Gram positive and negative bacteria.**

04

**(b) Discuss the life cycle of Moss.**

04

**8. (a) Explain five kingdom system of classification in detail. Discuss its modification as well.**

04

**(b) Discuss various photosynthetic pigments in detail.**

04

**9. (a) What role plays cytoskeleton in the cell?**

04

**(b) Discuss parasitic nutrition and its various types.**

04

1116-XI123-2000

Objective  
Paper Code

Intermediate Part Second - 103

**BIOLOGY ( Objective ) GROUP - I****8465**

Time: 20 Minutes

Marks: 17



Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.coa

S.#	Questions	A	B	C	D
1	In DNA structure are more strongly linked:	Adenine with thymine	Guanine with cytosine	Bases with sugar	All these
2	Intercalary meristems are situated at:	Root apex	Shoot apex	Top of internode	Base of internode
3	Germ layers are formed at:	Cleavage	Gastrulation	Organogenesis	Neurulation
4	The plants which are stimulated to flower by exposure to low temperature are said to have:	Vernalization	Parthenocarp	Parthenogenesis	Apomixis
5	Adrenocorticotrophic hormone (ACTH) is secreted by:	Adrenal gland	Hypothalamus	Pituitary gland	Thyroid gland
6	Bone dissolving cells are:	Osteoblasts	Osteoclasts	Osteocytes	Chondrocytes
7	Disease in which bone resorption outpaces bone deposit:	Osteoporosis	Osteomalacia	Rickets	Spondylosis
8	Liver functions are pivotal to:	Osmo-regulation	Excretion	Homeostasis	Thermo-regulation
9	As CFCs rise to atmosphere, ultraviolet rays release:	Chlorine	Fluorine	Carbon	Hydrogen
10	The desert of Southern Punjab is:	Thal	Sahara	Thar	Cholistan
11	The conversion of nitrate to ammonium with in plant cell is called:	Ammonification	Nitrification	Assimilation	Denitrification
12	Prokaryotes have arisen more than:	1.5 billion years ago	2.5 billion years ago	3.5 billion years ago	4.5 billion years ago
13	If correct proportions of auxin and cytokinin are added in a liquid medium, thousands of copies of new shoots will develop from a single shoot tip by:	Protoplast culture technique	Meristem culture technique	Anther culture technique	Cell suspension technique
14	Which one of them is mostly used to develop transgenic animal?	Sanger method	Maxam Gilbert method	Particle gun method	Micro injection method
15	What is the risk of a haemophiliac child in a family when father is haemophiliac but mother is carrier?	All sons normal	All sons affected	All sons affected but all daughters normal	Half sons and half daughters affected
16	The actual decrease of chromosome number occur in:	Meiosis-I	Meiosis-II	Mitosis	Cytokinesis
17	Which tumor has branches:	Malignant	Benign	Both	None of these

313-XII132021-30000

## SECTION - I

## 2. Write short answers to any EIGHT parts.

16

- Distinguish between osmoconformers and osmoregulators.
- Compare the nitrogen excreted in lower quantities with the one excreted in very small quantities.
- Differentiate between protonephridium and metanephridium. Give examples.
- What is vascular cambium? Which new tissues develop from it?
- What is phototactic movement? Give example.
- Define vertebral column. What names can be given to them according to their location?
- Differentiate between identical and fraternal twins.
- Which hormone is released by pituitary gland at puberty? Also define follicle atresia.
- Write a note on profundal zone. Which organisms inhabit this zone?
- Write the names of any eight animals which inhabit coniferous alpine and boreal forests.
- Write a note on ocean thermal gradient.
- Write any two factors which are responsible for modification of environment.

## 3. Write short answers to any EIGHT parts.

16

- Compare Addison's disease and Cushing's disease.
- Give the role of midbrain in humans.
- What are neurotransmitters? How acetylcholine is different from other neurotransmitters?
- Why Mendel uses *Pisum sativum* (Garden Pea) in his experiments?
- What is test cross? Write its significance.
- What are multiple alleles?
- What are restriction endonucleases? Give an example.
- What is PCR? Write the role of taq polymerase.
- What is gene therapy? What are its two methods?
- How the relationship of predator and prey is maintained?
- Compare primary and secondary succession.
- Differentiate between autecology and synecology.

## 4. Write short answers to any SIX parts.

12

- Define neurulation. State events of neurulation and explain its significance.
- What is morulla and blastula?
- Interpret how many types of tRNA molecules are necessary for a living cell, if the genetic code is triplet code.
- On the basis of position of centromere describe the four types of chromosomes.
- Differentiate between point mutation and chromosomal mutation.
- Describe the symptoms and causes of down syndrome.
- Compare mitosis with meiosis.
- How does fossil record provide evidence of evolution?
- What is genetic drift?

## SECTION - II Attempt any THREE questions. Each question carries 08 marks.

5. (a) Explain the structure of nephron with the help of a diagram.

04

(b) What predation? Discuss its significance.

04

6. (a) How is support provided to those animals which lack a hard skeleton? Explain your answer with two examples.

04

(b) Describe the replication process of DNA in detail.

04

7. (a) Explain how reflex action prevent the body damage during emergency.

04

(b) Describe the importance of forest.

04

8. (a) Explain the process of birth in humans.

04

(b) Define diabetes and explain type-I in detail.

04

9. (a) Define growth correlation. Describe apical dominance in detail.

04

(b) Can the comparative anatomy and fossil record be discussed as evidence of evolution? Explain it.

04

## Faisalabad Board-2022

Roll No. : \_\_\_\_\_



Objective  
Paper Code

Intermediate Part Second

**BIOLOGY ( Objective ) GROUP - II**

**8462**

Time: 20 Minutes

Marks: 17

Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	The special excretory structures of terrestrial arthropods are called:	Nephridia	Protonephridia	Malpighian tubules	Nephrons
2	The plant tissues that lack secondary walls.	Parenchyma	Collenchyma	Sclerenchyma	Aerenchyma
3	How many pair of ribs are present in human rib cage?	Ten pairs	Twelve pairs	Six pairs	Twenty four pairs
4	The neurotransmitter that lie outside the central nervous system:	Adrenaline	Serotonin	Dopamine	Acetylcholine
5	The plant which is not a day neutral:	Tomato	Soya bean	Cucumber	Zea mays
6	The optimum temperature for maximum growth of plant is:	0 – 35 °C	25 – 30 °C	5 – 10 °C	10 – 15 °C
7	Grey equatorial cytoplasm give rise to:	Notochord & neural tube	Gut	Muscle cells	Larval epidermis
8	Each segment of DNA that is coiled around eight histone proteins:	Karyotype	Genotype	Phenotype	Nucleosome
9	In which syndrome the 21st pair of chromosome fails to segregate?	Klinefelter's syndrome	Turner's syndrome	Down's syndrome	Jacobs
10	In human cell the duration of G2 phase is:	10 hours	30 min	9 hours	4.5 hours
11	The chromosomes that carry its linked genes en bloc in the form of called:	Linkage groups	Linkage	Recombinants	Linked genes
12	The major goal of genetic engineer is to increase the efficiency of rubisco to introduce cycle:	C2 cycle	C4 cycle	C3 cycle	C6 cycle
13	The example of vestigial organ is:	Nose	Hairs	Bones	Vermiform appendix
14	The profession or job of any organism in their ecosystem called:	Ecology	Niche	Autecology	Synecology
15	The overall weather patterns are known as:	Climate	Weather	Humidity	Precipitation
16	The last biome seen before reaching the polar ice caps is:	Taiga	Boreal	Arctic tundra	Desert
17	Nuclear power station can last only for years:	10 years	20 years	30 years	40 years

314-XII122-3000

**BIOLOGY (Subjective) GROUP - II**

Time: 02:40 Hours

Marks: 68

**SECTION – I****2. Write short answers to any EIGHT parts.**

16

- (i) How are xerophytes adapted to survive in dry environment?
- (ii) What are the structural differences between protonephridium and metanephridium?
- (iii) Describe the procedure adopted to remove kidney stones.
- (iv) Differentiate between heartwood and sapwood.
- (v) What is sciatica?
- (vi) What do you know about antagonistic arrangements of muscles?
- (vii) What is the location and function of Sertoli cells in the male reproductive system of man?
- (viii) Describe the process of generation of labour pain in human females.
- (ix) What do you know about deserts of Pakistan?
- (x) Describe profundal zone in fresh water lakes.
- (xi) What is algal bloom?
- (xii) Define soil and write its composition.

**3. Write short answers to any EIGHT parts.**

16

- (i) How does the nervous system of hydra differ from planaria? Give any two differences.
- (ii) Which part of the hind brain controls body movements and maintains position of body?
- (iii) Write the effects of over secretion and under secretion of somatotropin hormone.
- (iv) What are multiple alleles?
- (v) What is meant by genic system?
- (vi) What are sex limited traits?
- (vii) What are restriction enzymes?
- (viii) What is the significance of Taq polymerase enzyme?
- (ix) What is gene pharming?
- (x) Differentiate between autecology and synecology.
- (xi) What is ammonification?
- (xii) What are decomposers? Give their significance in ecosystem.

**4. Write short answers to any SIX parts.**

12

- (i) Why are morphogenetic determinants essential in gene selection?
- (ii) Discuss the concept of differentiation.
- (iii) Why is CsCl used for ultracentrifugation?
- (iv) Discuss properties of DNA Polymerase-III.
- (v) Discuss findings of Archibald Garrod in certain genetic diseases.
- (vi) Discuss importance of meiosis.
- (vii) What are events of cell death?
- (viii) What is artificial selection?
- (ix) What is the difference between endangered species and threatened species?

**SECTION – II** Attempt any THREE questions. Each question carries 08 marks.

5. (a) Write a detailed note on excretion in earthworm with the help of diagram. 04  
 (b) Explain principle stages of nitrogen cycle. Draw nitrogen cycle as well. 04
6. (a) Justify the division of joints on the basis of their structure. 04  
 (b) How does DNA encode protein structure? Discuss with special reference to the central Dogma of molecular biology. 04
7. (a) How does insulin depress blood glucose levels. Also discuss diabetes mellitus. 04  
 (b) Describe the importance of forests. 04
8. (a) Describe the events of menstrual cycle and explain its hormonal regulation. 04  
 (b) Discuss Rh-blood group system in man. 04
9. (a) Write a note on differentiation in plants. 04  
 (b) Discuss any two factors affecting gene frequency. 04

314-XII122-3000

## Faisalabad Board-2021

Roll No. : \_\_\_\_\_

Objective  
Paper Code  
**8467**

**Intermediate Part Second**  
**BIOLOGY ( Objective ) GROUP - I**  
Time: 20 Minutes Marks: 17



**Q.No.1** You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	DNA polymerase enzyme which plays a supporting role in DNA replication is:	Polymerase II	Polymerase I	Polymerase III	Polymerase IV
2	The S-phase of cell cycle takes:	9 hours	4.5 hours	1.30 hours	10 hours
3	Pairing of homologous chromosomes called synapsis starts during:	Leptotene	Zygotene	Pachytene	Diakinesis
4	A person having neither antigen A nor B would have blood group:	O	A	B	AB
5	Organisms that have a foreign gene inserted into them are called:	Transduct	Transform	Transgenic organism	Bioreactors
6	Archaeobacteria tolerate temperature up to:	10°C	40°C	120°C	140°C
7	Lithosphere includes:	Air	Water	Gases	Earth, soil
8	In grassland ecosystem, tropical climates have woody trees called:	Savanna	Pampas	Prairies	Alpine
9	The cause of acid rain is:	Oxides of hydrogen	NO <sub>2</sub> and SO <sub>2</sub>	Oxides of potassium	Oxides of magnesium
10	Removal of salts with water from sweat glands and of sebum seems to be:	Excretory	Protective	Thermo-regulation	Both B & C
11	Kidneys receive what amount of blood supplied with each cardiac beat:	10 %	20 %	1 %	25 %
12	Long tubular structures join end to end to form long water conducting pipes in xylem are known as:	Fibers	Vessels	Sclereids	Trachea
13	Tropomyosin is a complex of how many polypeptide chains?	Single	Double	Triple	None
14	The receptors which have undifferentiated endings and produce sensation of pain are called:	Chemo-receptors	Nociceptors	Mechano-receptors	Thermo-receptors
15	Which is a haploid cell?	Spermatogonia	Primary spermatocyte	Secondary spermatocyte	Germinal epithelium
16	The final size of a given type of a cell is attained during:	Maturation	Differentiation	Growth	Elongation
17	The peripheral part of the blastoderm where the cells lie unseparated from the yolk is called:	Hypoblast	Epiblast	Area pellucida	Area opaca

339-XII121-26000

## SECTION – I

## 2. Write short answers to any EIGHT parts.

16

- (i) Define anhydrobiosis with an example.
- (ii) What is glomerular filtrate?
- (iii) What is pyrexia?
- (iv) What is a ligament?
- (v) Differentiate between hyaline cartilage and elastic cartilage.
- (vi) How many ribs do not attach with the sternum?
- (vii) What is after birth?
- (viii) Define climacteric.
- (ix) What is the productivity of grassland ecosystem?
- (x) What are zooplankton? Give example.
- (xi) Define eutrophication.
- (xii) Give importance of forests.

## 3. Write short answers to any EIGHT parts.

16

- (i) Compare nerve impulse with saltatory impulse.
- (ii) What is cerebrospinal fluid? Give its function.
- (iii) What is acetylcholine? Give its role.
- (iv) Differentiate between alleles and multiple alleles.
- (v) What is universal blood donor?
- (vi) What are opsins?
- (vii) Give difference between ex-vivo and in-vivo gene therapy.
- (viii) How hypercholesterolemia can be cured by gene therapy?
- (ix) How cancer patients are being treated by gene therapy?
- (x) Define biosphere.
- (xi) Differentiate between habitat and ecological niche.
- (xii) Define food chain. Give example.

## 4. Write short answers to any SIX parts.

12

- (i) Compare morula and blastula.
- (ii) How does coelom develop in chick embryo?
- (iii) Compare heterochromatin and euchromatin.
- (iv) Define transformation.
- (v) Differentiate between template and coding strand of DNA.
- (vi) Calculate the length of human cell cycle.
- (vii) Compare kinetochore microtubules and polar microtubules.
- (viii) How does molecular biology provide an evidence for evolution? Give at least one example.
- (ix) Can migration affect the genotype frequency? If yes, how?

SECTION – II	Attempt any THREE questions. Each question carries 08 marks.
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## 5. (a) How osmoregulation occurs in fresh water and terrestrial environment?

04

(b) Describe symbiosis and mutualism.

04

## 6. (a) Write the process of ecdysis in arthropods.

04

(b) Explain process of translation.

04

## 7. (a) What are receptors? Write names and functions of any four receptors

04

(b) What is greenhouse effect?

04

## 8. (a) Give an account of sexually transmitted diseases in man.

04

(b) Write note on mother-foetal Rh incompatibility.

04

## 9. (a) Discuss the Notochord and Mesoderm formation in chick embryo.

04

(b) Describe the evidences of evolution from comparative anatomy.

04

339-XII121-26000

## Faisalabad Board-2021

Roll No. : \_\_\_\_\_

Objective  
Paper Code  
**8466**

**Intermediate Part Second**  
**BIOLOGY ( Objective ) GROUP - II**  
Time: 20 Minutes Marks: 17



Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	Environmental factors causing abnormal development are called:	Toxins	Carcinogens	Teratogens	Mutagens
2	A group of cells that is capable of division is known as:	Meristem	Primordium	Zone of cell division	Zone of cell elongation
3	Parthenocarpy is artificially induced for commercial purpose by adding:	Ethene	Abscisic acid	Cytokinins	Auxins
4	The earliest form of muscles to evolve was:	Smooth muscles	Cardiac muscles	Skeletal muscles	Voluntary muscles
5	Secondary walls of sclerenchyma cells are impregnated with:	Cutin	Suberin	Pectin	Lignin
6	A group of diseases in which bone resorption outpaces bone deposit is known as:	Osteoporosis	Osteoarthritis	Osteomalacia	Arthritis
7	Nitrogen of amino acids is converted into urea by:	Kidney	Liver	Spleen	Pancreas
8	Humming bird is included in:	Ectotherms	Endotherms	Heterotherms	Poikilotherms
9	Which is green house gas:	Oxygen	Nitrogen	Hydrogen	Carbon dioxide
10	Northern coniferous forests are called:	Taiga	Savanna	Prairies	Tundra
11	The process in which micro-organism use proteins and release ammonia or ammonium ion is called:	Nitrification	Denitrification	Ammonification	Assimilation
12	A group of bacteria that tolerate temperature up to 120°C are called:	Cyanobacteria	Eubacteria	Archaeobacteria	Mycoplasma
13	A gene is synthesized in laboratory from mRNA using:	Reverse transcriptase	DNA polymerase	Transcriptase	RNA polymerase
14	In a dihybrid cross the probability of plant with wrinkled and yellow seeds in F <sub>2</sub> is:	$\frac{1}{16}$	$\frac{3}{16}$	$\frac{9}{16}$	$\frac{16}{16}$
15	The spread of tumor cell and establishment of secondary areas of growth is called:	Metamorphosis	Cytostasis	Epistasis	Metastasis
16	The microtubules of spindle are composed of protein:	Actin	Myosin	Globulin	Tubulin
17	Synthesis of mRNA copy from DNA template is called:	Transcription	Translation	Transduction	Transformation

340-XII121-4000

**BIOLOGY (Subjective) GROUP - II**

Time: 02:40 Hours

Marks: 68

**SECTION – I****2. Write short answers to any EIGHT parts.**

16

- (i) Define excretophore and anhydrobiosis.
- (ii) Define panting with an example.
- (iii) Compare osmoregulation in marine fishes and fresh water fishes.
- (iv) Define moulting. Give the hormone involved.
- (v) Give the structural composition of synovial joint.
- (vi) What is osteomalacia and cleft palate?
- (vii) Give the mechanism of invitro fertilization.
- (viii) Define parthenocarpy and seed dormancy.
- (ix) Give the layering feature of grassland.
- (x) Write scientific names of any two animals of temperate deciduous forest.
- (xi) Define greenhouse effect. Give its causes.
- (xii) Define deforestation and afforestation.

**3. Write short answers to any EIGHT parts.**

16

- (i) Write any four junctions of cytokinins.
- (ii) Differentiate between photoreceptors and thermoreceptors.
- (iii) Write a note on Parkinson's disease.
- (iv) Differentiate between genotype and phenotype.
- (v) What do you understand by independent assortment of alleles?
- (vi) Write a note on codominance.
- (vii) What are palindromic sequences?
- (viii) What is a nectar in biotechnology? Give its role.
- (ix) What is gene pharming?
- (x) Differentiate between ecosystem and biosphere.
- (xi) Define food chain and food web.
- (xii) What is denitrification?

**4. Write short answers to any SIX parts.**

12

- (i) Differentiate between primary and secondary growth.
- (ii) Define teratology.
- (iii) Write the function of DNA polymerase III.
- (iv) What is meant by karyotype?
- (v) Draw the structure of typical nucleotide.
- (vi) Differentiate between benign tumor and malignant tumor.
- (vii) What is tetrad?
- (viii) State theory of special creation.
- (ix) What are vestigial organs?

**SECTION – II**

Attempt any THREE questions. Each question carries 08 marks.

5. (a) Write a note on adaptations in plants to low and high temperature. 04  
(b) What is predation? Write significance of predation. 04
6. (a) What are turgor movements? Describe their types. 04  
(b) Describe the replication process of DNA. 04
7. (a) What are neurons? Explain their different types with the help of diagrams. 04  
(b) Describe acid rains. Describe their adverse effects. 04
8. (a) Write a note on test tube babies and identical twins. 04  
(b) Describe and explain multiple alleles with the help of example. 04
9. (a) Discuss any four factors affecting gene frequency. 04  
(b) Write a note on regeneration. 04

# Faisalabad Board-2019



Roll No. : \_\_\_\_\_



Objective  
Paper Code  
**8467**

Intermediate Part Second (New Scheme)  
**BIOLOGY ( Objective ) GROUP - I**  
Time: 20 Minutes Marks: 17

Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	Structure of human brain that controls hunger is:	Amygdala	Hippocampus	Thalamus	Hypo-thalamus
2	Cancer is mainly caused by mutations in:	Malignant cells	Somatic cells	Sex cells	Reproductive cells
3	Synapsis takes place during:	Leptotene	Zygotene	Pachytene	Diplotene
4	Release of egg from follicle is called as:	Ovulation	Menstruation	Follicle atresia	Fertilization
5	The first convoluted part of vas deferens is:	Epididymis	Seminiferous tubule	Urethra	Germinal epithelium
6	Turgor pressure is generated by high osmotic pressure of cell:	Cytoplasm	Vacuole	Cell wall	Cell membrane
7	The joint that allows movement in two directions only:	Cartilaginous joint	Fibrous joint	Hinge joint	Ball & socket joint
8	The incidence of uric acid kidney stones is:	None	15%	20%	70%
9	Fresh water protozoans pump out excess water by:	Food vacuole	Contractile vacuole	Pinocytosis	Phagocytosis
10	The decline in thickness of ozone layer is due to increasing level of:	CO <sub>2</sub>	CFCs	Hydrogen	Hydrocarbons
11	Northern coniferous forests are called as:	Boreal	Taiga	Alpine	Deciduous
12	Once nitrate enters the plant cell it is reduced to:	Nitrite	Ammonia	Proteins	Carbohydrate
13	Biogeography, is the geographical distribution of:	Phylum	Class	Species	Genus
14	Which enzyme acts as molecular scissors?	DNA polymerase	RNA polymerase	Restriction endonuclease	DNA gyrase
15	Blood serum containing antibodies is called as:	Plasma	Antigen	Immuno-globulin	Antiserum
16	The particular array of chromosomes that an individual possesses is:	Kinetochore	Centromere	Karyotype	Kinesis
17	In ascidian fertilized egg, yellow cytoplasm gives rise to:	Muscle cells	Larval epidermis	Notochord & neural tube	Gut

339-XII119-10000

## SECTION - I

Write short answers to any EIGHT parts.

16

- (i) Write at least two characters of xerophytes.
- (ii) What is lithotripsy? How it takes place?
- (iii) What are heat-shock proteins? Give their role.
- (iv) Define cartilage. Give its types.
- (v) What is osteoporosis? Why it occurs in aged women?
- (vi) Differentiate between passive and active flight.
- (vii) What is plasmid? Give an example.
- (viii) What is cystic fibrosis?
- (ix) Define climate and weather.
- (x) How the productivity of aquatic ecosystem is determined?
- (xi) Enlist at least two ways to conserve energy.
- (xii) Differentiate between reforestation and afforestation.

Write short answers to any EIGHT parts.

16

- (i) Differentiate between chemoreceptors and mechanoreceptors.
- (ii) Define reflex arc and give its components.
- (iii) Which hormones are secreted by posterior lobe of pituitary gland?
- (iv) Define seed dormancy. Give its importance.
- (v) What is ovoviviparity? Give its example.
- (vi) Describe the process of cloning.
- (vii) What is a test cross? Give its significance.
- (viii) What are multiple alleles? Give one example.
- (ix) Explain testicular feminization syndrome.
- (x) Define succession. Name its types.
- (xi) Differentiate between habitat and niche.
- (xii) Differentiate between predation and parasitism.

I. Write short answers to any SIX parts.

12

- (i) What is Hensen's node?
- (ii) What is discoidal cleavage?
- (iii) Differentiate between karyokinesis and cytokinesis.
- (iv) What changes occur in a cell during G<sub>1</sub>-phase of interphase?
- (v) What are vestigial organs? Give two examples.
- (vi) Define genetic drift. Give its effect on a population.
- (vii) Name three types of RNA's. Give function of each RNA.
- (viii) What are Okazaki fragments?
- (ix) Differentiate between transcription and translation.

## SECTION - II

Attempt any THREE questions. Each question carries 08 marks.

5. (a) Define osmoregulation. Describe the various categories of plants on the basis of osmoregulation. 04  
(b) Define an ecosystem. Write a note on biotic components of an ecosystem. 04
6. (a) What are paratonic movements? Discuss its various types. 04  
(b) Discuss Meselson and Stahl experiment to show semi-conservative replication. 04
7. (a) Explain gonadotrophic hormones. 04  
(b) What do you know about wild life? Explain it. 04
8. (a) Describe the process of birth in human female. 04  
(b) Describe the different patterns of sex determination. 04
9. (a) Explain signs and process of aging. 04  
(b) How did evolution proceed from prokaryotes to eukaryotes. 04

## Faisalabad Board-2019

Roll No. : \_\_\_\_\_



Objective  
Paper Code

Intermediate Part Second (New Scheme)  
**BIOLOGY ( Objective ) GROUP – II**

**8462**

Time: 20 Minutes

Marks: 17

Q.No.1

You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	The active uptake of sodium ions in the loop of Henle is provided by the action of hormone:	Insulin	Aldosterone	Oxytocin	Adrenaline
2	Fresh water protozoans pump out excess water by:	Food vacuoles	Cilia	Contractile vacuoles	Pseudopodia
3	The disease which causes immobility and fusion of vertebral joints is called:	Sciatica	Microcephaly	Arthritis	Spondylosis
4	Number of cervical vertebrae in human is:	7	5	12	9
5	Galls are growth on plants that are induced by:	Fungi	Parasites	Insects	Protozoans
6	Oviduct opens into:	Uterus	Cervix	Vagina	Bladder
7	Decrease of FSH and increase of estrogen cause pituitary gland to secrete:	Progesterone	Luteinizing hormone	Lactogen	Oxytocin
8	Which type of light favours elongation of cells in plants?	Yellow	Green	Red	Blue
9	Particular array of chromosomes that an individual possess is called:	Genome	Genotype	Phenotype	Karyotype
10	Programmed and organized process of cell death is called:	Apoptosis	Necrosis	metastasis	Metamorphosis
11	Duplication of chromosomes occur during the phase of cell cycle:	G <sub>1</sub> -phase	S-phase	G <sub>2</sub> -phase	G <sub>0</sub> -phase
12	The cross which is used to find homozygous or heterozygous nature of genotype:	Reciprocal cross	Monohybrid cross	Dihybrid cross	Test cross
13	Adult transgenic tobacco plant glowed when sprayed with substrate:	Luciferin	Luciferol	Luciferase	Luciferous
14	Archaeobacteria can tolerate temperature up to:	50°C	70°C	100°C	120°C
15	Moderate grazing is very helpful to maintain ecosystem:	Grassland	Desert	Tundra	Forest
16	Drifting or floating microscopic organisms are called:	Phytoplanktons	Zooplanktons	Planktons	Photons
17	Establishment of new forests where no forests existed before is called:	Forestation	Reforestation	Deforestation	Afforestation

340-XII119-10000

## SECTION – I

2. Write short answers to any EIGHT parts. 16
- Define osmoregulation and thermoregulation.
  - How loss of water is prevented in insects and terrestrial vertebrates?
  - Define heat shock proteins at which temperature they work.
  - Define phototactic and chemotactic movements.
  - Write few lines on disease Rickets.
  - Define unguligrades. Write its two examples.
  - Give two uses of biofilters.
  - How gene therapy in Cancer patients be done?
  - How productivity of an aquatic ecosystem can be determined?
  - Define Savanna and Prairies.
  - Write two modifications of environment.
  - Define pollution. Write only names of its four kinds.
3. Write short answers to any EIGHT parts. 16
- What is habituation? Give an example.
  - Characterize Pacinian Corpuscles.
  - Write two uses of 2,4 dichloro phenoxy acetic acid.
  - What is vernalization? Give an importance.
  - What is follicle atresia?
  - Give some disadvantages of cloning.
  - Define crossing over. Give its importance.
  - What are multifactorial traits? Give an example.
  - Differentiate between autosomes and sex chromosomes.
  - Differentiate between micronutrients and macronutrients.
  - Define predation. Give its importance.
  - Define primary succession.
4. Write short answers to any SIX parts. 12
- Define term gerontology and terminology.
  - What is gray crescent?
  - State "The Chromosomal Theory of Inheritance".
  - What is the difference between heterochromatin and euchromatin?
  - Differentiate between template and coding strands.
  - What changes occur in dividing cell during diplotene?
  - How does cell death help in multicellular development?
  - What are vestigial organs? Give an example.
  - What do you mean by endosymbiont hypothesis?

SECTION – II Attempt any THREE questions. Each question carries 08 marks.

5. (a) Describe the structure of nephron of human kidney. 04  
 (b) Define succession. Discuss succession on land. 04
6. (a) Discuss sliding filament model of muscle contraction. 04  
 (b) Write a note on transformation. 04
7. (a) Define nerve impulse. How is it initiated? 04  
 (b) Write a note on importance of forests. 04
8. (a) What are phytochromes? Discuss their role in photoperiodism. 04  
 (b) Define test cross. Discuss its both cases with example. 04
9. (a) Explain the role of nucleus in development. 04  
 (b) Explain the evidences of evolution from embryology and molecular biology. 04

## Faisalabad Board-2018

Roll No. : \_\_\_\_\_

**Objective  
Paper Code**

**Intermediate Part Second (New Scheme)**

**BIOLOGY ( Objective )**

**8461**

**Time: 20 Minutes**

**Marks: 17**



**Q.No.1** You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.

S.#	Questions	A	B	C	D
1	The excretory product which require minimum water for its removal:	Urea	Uric acid	Creatinine	Ammonia
2	Meta nephridia are the excretory structure present in:	Hydra	Planaria	Cockroach	Earthworms
3	A condition in which palatine processes of maxilla and palatine fail to fuse is called:	Cleft palate	Microcephaly	Cretinism	Myxedema
4	The fusion of four posterior vertebrae in pelvic region form:	Sacrum	Lumbar	Coccyx	Chest Cage
5	The corpuscles situated quite deep in the body and are in form of encapsulated neurons ending, receive deep pressure stimulus are:	Meissner's	Pacinian	Nissal's	White blood cells
6	Fruit ripening is often accompanied by a burst of respiratory activity, called:	Fertilization	Photoperiod	Climacteric	Vernalization
7	The condition in which biennial and perennial plants are stimulated to flower by exposure to low temperature is called:	Photoperiodism	Vernalization	Parthenogenesis	Apomixis
8	The negative physiological changes in our body is called:	Teratology	Degeneration	Aging	Abnormalities
9	The number of chromosomes in mouse is:	40	26	20	16
10	The stage of meiosis that last for days, weeks or even year is called:	Leptotene	Zygotene	Pachytene	Diplotene
11	The tumor which is localized and not transferred to the other body parts:	Malignant	Benign	Apoptosis	Necrosis
12	A single gene with multiple phenotypic effect is describe as:	Co-dominance	Epistasis	Pleiotropy	Gene linkage
13	The first restriction enzyme was isolated by:	Kary Mulis	Hamilton O. Smith	Sanger	Maxam Gilbert
14	Darwin "Origin of species" was published in:	1840	1859	1865	1890
15	Study of different communities with relation to environment is called:	Synecology	Autecology	Embryology	Zoology
16	The scientific name for rhesus monkey is :	Macaca mullata	Taxus baccata	Felis catus	Solenorctor tibetanus
17	Water present in form of frozen ice caps is:	1%	2%	3%	4%

336-XII118-19000

**SECTION – I****2. Write short answers to any EIGHT parts.**

16

- (i) What is pyrexia?
- (ii) What are excretophores and why?
- (iii) Differentiate between protonephridia and metanephridia.
- (iv) Differentiate between heart wood and sap wood.
- (v) What is moulting? Write its stages.
- (vi) What is cramp? Write its causes.
- (vii) What is apomixis?
- (viii) Define seed dormancy, write its significance.
- (ix) What is eutrophication?
- (x) Write the consumers of grassland.
- (xi) Write four methods of energy conservation.
- (xii) What is deforestation, and write its two harmful effects.

**3. Write short answers to any EIGHT parts.**

16

- (i) Differentiate between mechanoreceptors and thermo receptors.
- (ii) What are effectors? Give examples.
- (iii) What are neurotransmitters? Quote an example.
- (iv) Differentiate between population and gene pool.
- (v) What is law of segregation?
- (vi) What are multiple alleles? Give an example.
- (vii) Define biotechnology.
- (viii) Write three possible ways, how to get a gene?
- (ix) Differentiate between hydrosere and xerosere.
- (x) What is foliage lichen stage? Give an example.
- (xi) What is cloning of a gene?
- (xii) Define commensalism. Give an example.

**4. Write short answers to any SIX parts.**

12

- (i) What is blastoderm?
- (ii) What are teratogens? Give an example.
- (iii) What is mutation? Give its name of two classes.
- (iv) What is phenylketonuria?
- (v) Differentiate between euchromatin and heterochromatin.
- (vi) Differentiate between necrosis and apoptosis.
- (vii) Define theory of special creation.
- (viii) Define metastasis.
- (ix) Differentiate between homologous and analogous organs.

<b>SECTION – II</b> Attempt any THREE questions. Each question carries 08 marks.
--

5. (a) Describe adaptations in plants to low and high temperature.

04

- (b) Describe the phenomenon of grazing.

04

6. (a) Describe paratonic movements in plants.

04

- (b) Write a note on chemical composition of chromosomes.

04

7. (a) Describe the functions and commercial application of cytokinins.

04

- (b) Write a note on degradation and depletion of resources.

04

8. (a) Write a note on identical twins.

04

- (b) Write a note on diabetes mellitus.

04

9. (a) Write a note on growth correlations.

04

- (b) Describe comparative anatomy and biogeography as an evidence of evolution.

04

336-XII118-19000