Objective Biology Paper Group – II Gujranwala Board 2024

Roll No. _____ (To be filled in by the candidate) **Maximum Marks : 17**

Biology pakcity.org **224-1st Annual - (Inter Part-II)** **Time Allowed : 20 Minutes**

PAPER – II (Objective Type) **Group - II** **PAPER CODE = 8468**

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number, Use marker or when to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

1. The methyl containing nitrogenous base is:
   (A) uracil ● (B) cytosine (C) thymine (D) adenine
2. Fresh water ecosystem covers less than:
   (A) 2% (B) 3% (C) 1% ● (D) 97%
3. Tapeworm is primary parasite of:
   (A) octopus (B) pig (C) cattle (D) man ●
4. Rickets is caused by the deficiency of:
   (A) vitamin D ● (B) vitamin C (C) vitamin A (D) vitamin B
5. The negative physiological changes in our body are called:
   (A) regeneration (B) abnormalities (C) degeneration (D) aging ●
6. The inexhaustible resource of energy on earth is:
   (A) coal energy (B) solar energy ● (C) fossil fuel (D) natural gas energy
7. Archeobacteria tolerate temperature about:
   (A) 100 °C (B) 120 °C ● (C) 80 °C (D) 40 °C
8. The homologous chromosomes get separated during:
   (A) Prophase - I (B) Anaphase - I ● (C) Telophase - I (D) Metaphase - I
9. MODY starts before:
   (A) 50 years (B) 30 years ● (C) 40 years (D) 25 years
10. Sarcoplasmic Reticulum are devoid of:
    (A) Lysosomes ● (B) chloroplast (C) peroxisomes (D) Ribosomes
11. The effective drug for Parkinson's disease is:
    (A) Nicotine (B) AZT (C) L.dopa ● (D) GDNF
12. Apical dominance is caused by:
    (A) Auxins ● (B) gibberellins (C) ethene (D) cytokinins
13. Which one of the given is non-sense codon?
    (A) UAA ● (B) UCC (C) UCG (D) UCU
14. The commonly used restriction enzyme is:
    (A) EcoR1 ● (B) Bam H1 (C) pBR 322 (D) pSC 10
15. Excretory structures present in cockroach is:
    (A) Nephridia (B) Malpighian tubules ● (C) Contractile Vacuole (D) Flame cells
16. Cystic Fibrosis patients lack gene that code for transmembrane carrier of:
    (A) Chloride Ions ● (B) Carbonate Ions (C) Bromide lons (D) Sulphate lons
17. Which one is Parthenogenic fruit?
    (A) Mango (B) Pineapple ● (C) Peach (D) Apple

320-(IV)-1stA 424-24000

Roll No. _____ (To be filled in by the candidate)

Biology **224-1st Annual - (Inter Part-II)** **Time Allowed : 2.40 Hours**

PAPER – II (Essay Type) **Group - II** **Maximum Marks : 68**

SECTION - I

2. Write short answers to any eight (8) questions: **8×2 = 16**

(i) Account one each main adaptation in plants to high and low temperatures.
(ii) Why does filtration takes place only at glomeruli part of Nephron and nowhere else?
(iii) Mention two metabolic altered states that generally (70%) cause kidney stone formation.
(iv) What are unguligrade? Give example
(v) Name the unpaired bones of cranium.
(vi) What is pulvinus? Write down its role in turgor movements.
(vii) Define Haploid parthenogenesis. Give example.
(viii) Name disease caused by Treponema pullidum. Also write down its two symptoms.
(ix) Define soil. Mention its one role and one problem.
(x) What are plankton? Give their two types.
(xi) What is limnetic zone? Mention its life.
(xii) What is meant by Hydroelectric power? write down its advantages.

3. Write short answers to any eight (8) questions: **8×2 = 16**

(i) Is it possible to eliminate biorhythms in an organism?
(ii) Describe exocrine and endocrine function of pancreas.
(iii) What happens when dopamine production is stopped in brain?
(iv) Why AB blood group is universal recipient
(v) What is pleiotropy? Give one example.
(vi) What is vortex mixing technique?
(vii) What is testicular feminization syndrome?
(viii) How familial hypercholesterolemia is treated using gene therapy?
(ix) Why plasmids are naturally present in bacteria?
(x) Compare ecology with autecology.
(xi) What is the role of bacteria in leguminous plants?
(xii) Describe the importance of food chain in an ecosystem.

4. Write short answers to any six (6) questions: **6×2 = 12**

(i) How is primitive streak formed?
(ii) What do you know about intercalary meristem?
(iii) Name and draw the (P-O-C) bond responsible for the stability of nucleic acid molecule.
(iv) What was the effect of x-rays on neurospora spores in Beadle and Tatum experiment?
(v) What changes occur in a cell during apoptosis?
(vi) Why does DNA thread coils every 200 nucleotides around histone protein molecules?
(vii) What are functions of mitotic apparatus?
(viii) State theory of special creation.
(ix) What do you know about fixed alleles?

SECTION - II

Note: Attempt any three (3) questions: **8×3 = 24**

5. **(a)** Explain through a diagram the thermostat function of hypothalamus and feedback mechanism in human thermoregulation.
   (b) Explain the Nacrosis and apoptosis in development and growth.
6. **(a)** Describe sliding filament model. What does it explain?
   (b) What do you know about grazing?
7. **(a)** Describe nervous disorders.
   (b) What ideas support the inheritance of acquired characters?
8. **(a)** Write a note on reproduction system of human female.
   (b) Define and explain law of independent assortment.
9. **(a)** What does embryonic induction mean? Write down the experiments of Spemann and Mangold to demonstrate the phenomenon.
   (b) What are restrictions endonucleases? Elaborate their importance for bacteria and Recombinant DNA technology?

Roll No. _____ (To be filled in by the candidate) **Maximum Marks : 17**

Biology pakcity.org **224-1st Annual - (Inter Part-II)** **Time Allowed : 20 Minutes**

PAPER – II (Objective Type) **Group - I** **PAPER CODE = 8467**

Note: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number, Use marker or when to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

1. Which of the following is not considered as synthesis function of liver?
   (A) fibrinogen formation (B) albumin formation (C) urea formation (D) glycogen formation ●
2. According to endosymbiont hypothesis, tail in present day cells was developed by ingestion of:
   (A) Cyanobacteria (B) spirochete (C) aerobic bacteria (D) mitochondria ●
3. Fertilizer and insecticides are similar because both increase:
   (A) ● agriculture produce (B) increase fertility of soil (C) increase soil pollution (D) both (A) and (C)
4. Which of the following is not true statement?
   (A) Neisseria may cause eye infection ● (B) Syphilis is caused by a spirochete
   (C) Treponema pallidum can damage the joints (D) Epicotyl growth is damaged by red light
5. What is not true about eutrophication?
   (A) rise in phosphorus fishes (B) depletion of oxygen
   (C) rise in oxygen level ● (D) death of small fishes
6. Which of the following is incorrectly matched?
   (A) ichthyosis ocular ↔ ocular albinism ● (B) Hypophosphatemia ↔ Hemophilia A
   (C) Fragile X-syndrome ↔ Retinitis pigmentosa (D) Iech-Nyhan syndrome ↔ hemophilia-B
7. Which one is the wrong pair among the following?
   (A) sickle cell anemia ↔ β-chain of hemoglobin (B) penicillium ↔ one chromosme ●
   (C) 7 methyle GTP ↔ 5' end of mRNA (D) UGA ↔ trpytophan
8. Assuming a man exhibits the phenotype of an x-linked recessive allele, which of the following is true about him,if he marries a women whose father is normal
   (A) all of his daughters will be carries (B) 50% of his daughters might pass the recessive allele sons ●
   (C) all of his sons exhibit the trait (D) 50% of his sons might pass the recessive allele to daughters
9. About ------% of energy is lost as heat as byproduct of respiration:
   (A) 50 – 60 (B) 60 – 70 (C) 70 – 90 (D) 80 – 90 ●
10. Which of the following is wrong statement?
    (A) adrenalin e releases glucose from liver ● (B) non- adrenaline releases glucose from liver
    (C) sympathetic system is reinforced by epinephrine (D) pupil dilates by parasympathetic system
11. At rest, the binding sites on each action chain are recovered by:
    (A) troponin ● (B) tropomyosin (C) cross bridges (D) myosin
12. The part of brain that controls breating , heart beat rate and blood pressure is:
    (A) midbrain (B) pons (C) medulla ● (D) cerebellum
13. 44-autosome plus 2-X-chromosome in home sapiens means:
    (A) Down's syndrome ● (B) Turner's syndrome (C) jacob syndrome (D) Normal female
14. What is benefit of using a retrovirus as s vector in gene therapy?
    (A) it is not able to enter the cells (B) it incorporates foreign genes into the host chromosome ●
    (C) it eliminates the unnecessary steps (D) both (B) and (C)
15. Indicate true statement:
    (A) First amino acid in Alfa-chain hemoglobin is methionine ●
    (B) inhibitory effect of apical bud is caused due to auxins
    (C) AGA Condon specifies Arginine in mitochondria (D) histones are negatively charged proteins
16. Indicate the false statement:
    (A) a gain is caused by negative physiological changes ●
    (B) inhibitory effect of apical bud is caused due to auxins
    (C) higher supply of oxygen inhibits growth of plants (D) red light favors division of cells in plants
17. Skeletal muscles and cardiac muscles and different because cardiac muscles are:
    (A) multinucleated (B) striated (C) branched ● (D) voluntary

Roll No. _____ (To be filled in by the candidate)

Biology **224-1st Annual - (Inter Part-II)** **Time Allowed : 2.40 Hours**

PAPER – II (Essay Type) **Group - I** **Maximum Marks : 68**

SECTION - I

2. Write short answers to any eight (8) questions: **8×2 = 16**

(i) Write down different methods to remove kidney stones
(ii) What is blubber? in which type of animals, it is found?
(iii) Why some fishes retain trimethylamine oxide in their bodies?
(iv) Describes various types of sclerenchyma cells.
(v) What is the main disadvantage of exoskeleton? How insects deal with problem?
(vi) Write down characteristics of cardiac muscles.
(vii) What are day natural plants? Give two examples.
(viii) What is follicle? How it is related to FSH?
(ix) Describes some characteristics of profundal zone.
(x) Elaborate the layering characteristic grassland ecosystem.
(xi) How the use of hydroelectric power is better than use of fossil fuels?
(xii) What do you mean by the term afforestation?

3. Write short answers to any eight (8) questions: **8×2 = 16**

(i) How can you differentiate between reflex action and reflex are?
(ii) What are Pacinian sensory neuron.
(iii) Draw and label sensory neuron.
(iv) Why did Mendel devise a test cross?
(v) Workout all possible types of gametes from the individual having genotype "AaBbCc".
(vi) Why blood group "O" is called as universal donor?
(vii) How can you get a gone of interest?
(viii) What is probe? Give its use.
(ix) Which technique is used to produce a haploid plant in tissue culture?
(x) How nitrification differs from denitrification?
(xi) What are Abiotic components of an ecosystem?
(xii) Differentiate between Autecology and synecology

4. Write short answers to any six (6) questions: **6×2 = 12**

(i) What are intercalary meristems? Give their role.
(ii) How CO_2 affects the growth rate in plants?
(iii) Name the three non-sence codons.
(iv) Give four differences between DNA and RNA
(v) what are point mutations?
(vi) What is metastasis?
(vii) Difine crossing over Give its importance.
(viii) What are vestigial organs? Give two examples.
(ix) Name any four species, declared extinct in Pakistan.

SECTION - II

Note: Attempt any three (3) questions: **8×3 = 24**

5. **(a)** Write down a comprehensive note on excretion in plants.
   (b) Define cell cycle. Discuss interphase in detail.
6. **(a)** What are autonomic movements? Discuss their types
   (b) Explain predation and parasitism in detail.
7. **(a)** In what way the feedback mechanism takes place to regulate the Hormonal production?
   (b) Describes the phenomena of Green House effect, its cause and impacts.
8. **(a)** Explain the male reproductive system in human.
   (b) Describe the mechanism of incomplete dominance with an example.
9. **(a)** How embryonic induction was proved by Hans spemann and Hidle mangold?
   (b) Write down a note on gene sequencing.

319-(IV)-1stA 424-25000

Roll No. _____ (To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2022 – 2024)

BIOLOGY 224-1st Annual-(INTER PART – II) Time Allowed : 20 Minutes

Q.PAPER – II (Objective Type) GROUP – I Maximum Marks : 17

PAPER CODE = 8463

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book Cutting or filling two or more circles will result in zero mark in that question.

1-1	Nervous system of hydra lacks : (A) Tentacle receptors (B) Superficial nerve net (C) Ganglia (D) Motor neurons
2	A set of three nucleotides on tRNA specifying a particular amino acid is called : (A) Code (B) Genetic code (C) Codon (D) Anticodon
3	The oldest homologous structures are : (A) Gills (B) Lungs (C) Human ear muscles (D) Eyes
4	Which one of the following is not a nutritional disorder (A) Kwashiorkor (B) Goitre (C) Scurvy (D) Osteoarthritis
5	The removal of salts and water by sweating is meant for : (A) Excretion (B) Osmoregulation (C) Thermoregulation (D) Both A and C
6	Ex-vivo gene therapy is used to treat children having : (A) SCID (B) AIDS (C) Cystic fibrosis (D) Both A and B
7	What is not true about sclerenchyma : (A) Lignin (B) Branched pits (C) Non-living (D) Elastic

(Turn Over)

1-8	A normal man whose father is albino, has married an albino woman. Which disorder other than albinism can occur in his children : (A) Protanopia (B) Leukemia (C) Deuteranopia (D) Both B and C
9	Grassland in tropical climate is called : (A) Prairies (B) Savanna (C) Pampas (D) Taiga
10	Root primordium develops root cambium, also called as : (A) Pericycle (B) Pith (C) Cortex (D) Both A and C
11	What is involved in ecdysis : (A) Nervous system (B) Ecdysone (C) Enzyme (D) All of these
12	In a nucleotide, Uracil is attached to pentose sugar at carbon No : (A) 3 (B) 2 (C) 1 (D) 5
13	Climacteric is associated with production of : (A) Ethene (B) Auxins (C) Cytokinin (D) Both A and C
14	Number of chromosomes in Turner's syndrome individual's cell is : (A) 45 + X (B) 44 + Y (C) 44 + X (D) 46 + X
15	Indicate the incorrect matching among the following : (A) Amygdala ↔ rage (B) Pons ↔ hunger (C) NAA ↔ fruit set (D) Auxins ↔ geotropism
16	A patient that lacks a gene coding for trans-membrane carrier of chloride ions, suffers from : (A) SCID (B) Cystic fibrosis (C) Cancer (D) Hodgkin's lymphoma
17	Which of the following is a macronutrient : (A) Iron (B) Iodine (C) Molybdenum (D) Phosphorus

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2022 – 2024)

BIOLOGY 224-1st Annual-(INTER PART – II) Time Allowed : 2.40 hours

PAPER – II (Essay Type) GROUP – I Maximum Marks : 68

SECTION – I

2. Write short answers to any EIGHT (8) questions : 16

(i) " Nature of excretory products is related to habitats". Justify the statement.

(ii) How are plants adapted to low temperature?

(iii) Why the trees are called environmental buffers?

(iv) Elaborate the role of corpus luteum in menstrual cycle.

(v) What do you know about " Rigor Mortis"?

(vi) What are the affects of antidiuretic hormone?

(vii) Differentiate tetany and tetanus.

(viii) Draw the labelled diagram of a sarcomere.

(ix) Where Thal and Thar are situated?

(x) Enlist ecosystems in Pakistan.

(xi) How can we save energy?

(xii) What is menopause? At what age it starts?

3. Write short answers to any EIGHT (8) questions : 16

(i) What are Meissners corpuscles?

(ii) Define Neurotransmitters? Also give examples.

(iii) Write down importance of midbrain.

(iv) Distinguish between homozygote and heterozygote.

(v) Why sex influenced traits are common in one sex?

(vi) Why urine is preferable vehicle for biotechnology product?

(vii) Define pleiotropy with examples.

(viii) Write down goals of human genome project.

(ix) What problem is related to Denitrification?

(x) Distinguish between Habitat and Niche?

(xi) Give sketch of a food web.

(xii) List the different ways to get gene of interest.

(Turn Over)

4. Write short answers to any SIX (6) questions : 12

(i) How temperature affects growth of plant?

(ii) Differentiate apical dominance and compensatory effect.

(iii) How does DNA fibre coil tightly?

(iv) What are the genetic basis of sickle cell anaemia?

(v) How recombination of genes arise during meiosis?

(vi) Define genetic code. Give an example.

(vii) What is apoptosis?

(viii) Biogeography is an evidence of evolution. How?

(ix) What are hydrothermal vents?

SECTION – II

Note : Attempt any THREE questions.

5. (a) Write down the classification scheme of animals on the basis of thermal characteristics of their environment. 4

   (b) What is non-disjunction? Write its genetic consequence with the example of Down's Syndrome. 4

6. (a) What are joints? Discuss different types of joints. 4

   (b) Write a detailed note on nitrogen cycle. 4

7. (a) Give detail of major factors which are involved in resting membrane potential. 4

   (b) Explain endosymbiont hypothesis for origin of eukaryotes. 4

8. (a) Describe human menstrual cycle. 4

   (b) State law of independent assortment, prove it with one example. 4

9. (a) What is growth? Describe different phases of growth in plants. 4

   (b) Write a comprehensive note on gene sequencing. 4

Roll No. _____ (To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2022 – 2024)

BIOLOGY 224-1st Annual-(INTER PART – II) Time Allowed : 20 Minutes

Q.PAPER – II (Objective Type) GROUP – II Maximum Marks : 17

PAPER CODE = 8464

Note : Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

1-1	The hormone that keeps the flower fresh :			
	(A) Auxins	(B) Ethene	(C) Gibberellins	(D) Cytokinins ●
2	The strand which leads towards the replication fork is :			
	(A) Lagging ●	(B) Leading	(C) Master	(D) Plandromic
3	How many base pairs are present in human genome :			
	(A) 05 billions	(B) 03 billions ●	(C) 07 billions	(D) 09 billions
4	Coal, oil and natural gas are examples of which resource :			
	(A) Renewable	(B) Non-renewable ●	(C) Exhaustible	(D) Both B and C
5	Liver helps to synthesize :			
	(A) Bile ●	(B) Citric acid	(C) Lactic acid	(D) Pesticide
6	Genes for albinism are located on :			
	(A) X chromosome	(B) Y chromosome	(C) 11 chromosome ●	(D) 9 chromosome
7	The muscles which have intercalated discs :			
	(A) Smooth	(B) Cardiac ●	(C) Skeletal	(D) Striped

(Turn Over)

1-8	Principle of population was published by :			
	(A) Cuvier	(B) Darwin	(C) Wallace ●	(D) Malthus
9	The grass-land having no woody plants known as :			
	(A) Alpine	(B) Savanna	(C) Coniferous	(D) Prairies ●
10	Gray crescent is present in :			
	(A) Nucleus	(B) Cytoplasm ●	(C) Ribosomes	(D) Cell membrane
11	In plants which are involved in testa formation :			
	(A) Trachea	(B) Tracheids	(C) Sclereids ●	(D) Collenchyma
12	The genetic code for methionine is :			
	(A) UAA	(B) GGC	(C) UAC	(D) AUG ●
13	The endosperm of angiosperm is :			
	(A) Triploid ●	(B) Haploid	(C) Diploid	(D) Polyploid
14	The chromosomes become visible, short and thick during :			
	(A) Diakinesis	(B) Diplotene	(C) Leptotene ●	(D) Anaphase
15	MSH is secreted from the :			
	(A) Median lobe of pituitary gland ●	(B) Posterior lobe of pituitary gland		
	(C) Adrenal gland	(D) Anterior lobe of pituitary gland		
16	The enzyme luciferase is produced in an insect called :			
	(A) Firefly ●	(B) Housefly	(C) Butterfly	(D) Tsetse fly
17	In Sindh the desert ecosystem is called :			
	(A) Thar	(B) Thal	(C) Rohi	(D) Cholistan

Roll No _____ (To be filled in by the candidate)

(Academic Sessions 2020 – 2022 to 2022 – 2024)

BIOLOGY 224-1st Annual-(INTER PART – II) Time Allowed : 2.40 hours

PAPER – II (Essay Type) GROUP – II Maximum Marks : 68

SECTION – I

2. Write short answers to any EIGHT (8) questions : 16

(i) What do hypotonic and hypertonic environment mean for a cell?
(ii) How cartilaginous fishes show osmoregulatory activity to maintain internal osmotic state with two ways?
(iii) What are xerophytes, write its one adaptation and one example.
(iv) Distinguish between the origin and insertion of muscle.
(v) List the main parts of axial skeleton.
(vi) Why ecdysis is necessary in arthropods? Justify.
(vii) Name the causative agent of gonorrhea, also write its two symptoms.
(viii) Write the role of oxytocin during birth process.
(ix) Define desertification, give its one reason and one effect.
(x) Give location and rain fall of temperate deciduous forest in Pakistan.
(xi) Name one pathogenic and one nutritional deficiency disease.
(xii) Write the source and harmful effects of chlorofluorocarbon.

3. Write short answers to any EIGHT (8) questions : 16

(i) Justify, calcitonin is antagonistic to parathormone.
(ii) Why nitrogen and magnesium deficiency leads to chlorosis?
(iii) Describe two main functions of spinal cord.
(iv) What are true breeding traits?
(v) Is SRY gene important in females?
(vi) How epistasis is different from dominance?
(vii) Define anther culture. Write down its one significance.
(viii) How plants are made salt tolerant?
(ix) Enlist some possible ways to get a gene.
(x) Give name of phases of primary succession.
(xi) Why over grazing is harmful for a grassland?
(xii) Define ecological niche, who proposed this term?

4. Write short answers to any SIX (6) questions : 12

(i) How can aging be slowed down?
(ii) How does temperature affect plant growth?
(iii) What is the reason behind the development of sickle cell anemia?
(iv) Define point mutation. Give an example.
(v) Briefly describe the semi-conservative hypothesis of DNA replication.
(vi) What is metastasis?
(vii) How does cytokinesis occur in plant cell?
(viii) How are evolutionary relationships among species reflected regarding DNA and proteins?
(ix) What is endosymbiont hypothesis? Give an example.

SECTION – II

Note : Attempt any THREE questions.

5. (a) Explain the excretory products of different animals. 4
   (b) What are meiotic errors? Explain Mongolism and Klinefelter's Syndrome. 4
6. (a) Define joints. How are they classified? Explain different types of joints. 4
   (b) Describe predation and parasitism and their significance. 4
7. (a) Briefly explain synapse. 4
   (b) Discuss endangered species in detail. 4
8. (a) Define photoperiodism. Explain types of plants on its bases. 4
   (b) Briefly explain the problem erythroblastosis foetalis faced by certain parents. 4
9. (a) What are meristems? Explain their types highlighting their location in plant body and their roles. 4
   (b) Write down the steps of DNA finger printing. (Analyzing DNA) 4

Biology	(D)	L.K.No. 1467	Paper Code No. 8467
Paper II	(Objective Type)	Inter (Ist – A – Exam – 2024)	
Time :	20 Minutes	Inter (Part - II)	pakcity.org
Marks :	17	Session (2020 – 22) to (2022 – 24)	

Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	One gram of Ammonia require how much water for its removal : (A) 300 ml (B) 400 ml (C) 500 ml (D) 600 ml
(2)	Nociceptor produce the Sensation of ___ : (A) Pressure (B) Touch (C) Smell (D) Pain
(3)	Number of Pelvic Vertebrae are : (A) 9 (B) 12 (C) 7 (D) 5
(4)	The Living cell of Cartilage are called : (A) Cnidocytes (B) Chondrocytes (C) Osteocytes (D) Melanocytes
(5)	Hind Brain Contains Medulla , Pons and ___ : (A) Thalamus (B) Cerebellum (C) Hypothalamus (D) Cerebrum
(6)	Genetic Code for Methionine is : (A) AUG (B) UAA (C) UAG (D) UGA
(7)	Diploid Parthenogenesis occurs in : (A) Aphid (B) Honey Bee (C) Wasp (D) Hydra
(8)	Study of Aging is called : (A) Paelontology (B) Serology (C) Teratology (D) Gerontology
(9)	How many different kinds of t.RNA are in Human Cell : (A) 54 (B) 45 (C) 20 (D) 50
(10)	The Enzyme which joins two pieces of DNA : (A) Helicase (B) DNA Ligase (C) Gyrase (D) Primase
(11)	Cross which is used to find out the Homozygous or Heterozygous nature of Genotype is called : (A) Reciprocal Cross (B) Multiple Cross (C) Test Cross (D) Dihybrid Cross
(12)	Mitotic Apparatus is organized during which phase of Mitosis : (A) Prophase (B) Metaphase (C) Anaphase (D) Telophase
(13)	Antibody used for treatment of Genital Herpes is obtained from : (A) Rice (B) Wheat (C) Soyabean (D) Corn
(14)	Northern Coniferous Forests are also called : (A) Savanna (B) Prairies (C) Taiga (D) Tundra
(15)	Which one of following act as Environmental Buffer : (A) Forests (B) Desert (C) Oceans (D) Lakes
(16)	Endosymbiont Hypothesis was proposed by : (A) Lynn Margulis (B) Wallace (C) Lyell (D) Darwin
(17)	All Food Chains and Food Webs begin with : (A) Decomposer Level (B) Primary Consumer Level (C) Secondary Consumer Level (D) Producer Level

Roll No.	1467 - 25000	Inter (Part – II)	Session (2020 – 22) to (2022 – 24)
Biology (Subjective)	Inter (Ist – A – Exam – 2024)		Time 2 : 40 Hours Marks : 68

Note: It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

22 x 2 = 44

Q.No.2	(i)	What is Anhydrobiosis ?
	(ii)	Draw a labelled diagram of Flame Cell.
	(iii)	How Kidney Stones are formed in man?
	(iv)	Write names of the Bones of Pelvic Girdle.
	(v)	Define Rickets. Give its cause.
	(vi)	How do Amoeba move?
	(vii)	Define Seed Dormancy . How it is beneficial for Plants?
	(viii)	Mention technique to produce Test Tube Babies.
	(ix)	Enlist dominant plants of Coniferous Alpine and Boreal Forests.
	(x)	How Humans affect Tundra Ecosystem ?
	(xi)	How balance in the Nutrient cycle can be upset?
	(xii)	Acid Rain is Harmful . How?
Q.No.3	(i)	Differentiate between Monohybrids and Dihybrids .
	(ii)	How pattern of Inheritance of X – Linked Dominant Traits is different from that of X – Linked Recessive Traits ?
	(iii)	What are Linked Genes ? Do they obey Law of Independent Assortment ?
	(iv)	Why synthetic Auxins are economical than IAA ? Write Commercial uses of 2 , 4 – D.
	(v)	Compare Somatic and Autonomic Nervous System.
	(vi)	What are Pacinian Corpuscles ? Write their role as Receptors .
	(vii)	Define Genomic Library . How can we search a particular Gene from a Genomic Library ?
	(viii)	What are Plasmids ? Compare pSC 101 and pBR 322 .
	(ix)	Why patients of SCID are subjected to life threatening infections and how they can be treated via Gene Therapy?
	(x)	Differentiate between Population and Community .
	(xi)	How can Grazing turn a Pastureland into a Barren Area?
	(xii)	What is meant by Denitrification?
Q.No.4	(i)	Differentiate between Growth and Development .
	(ii)	Define Apical Dominance. How it affects the Morphology of Plants?
	(iii)	What is Karyotype ?
	(iv)	Do you know how much information one Human Chromosome contains ? Comment.
	(v)	What is Phosphodiester Bond ? Give its role in DNA synthesis .
	(vi)	What is Interphase ? Give its Phases.
	(vii)	Define and draw Mitotic Apparatus .
	(viii)	Give the role of Ozone in initiation of life on Earth.
	(ix)	Differentiate between Darwinism and Neo-Darwinism.

Part - II

(3 x 8 = 24)

Q.No.5	(a)	What is Dialysis ? Describe its types.	(4)
	(b)	Describe the importance of Meiosis and Mitosis.	(4)
Q.No.6	(a)	Define Secondary Growth . Explain .	(4)
	(b)	Discuss Four Stages of Xerosere .	(4)
Q.No.7	(a)	Why Feedback Mechanism is important for a human body ? Explain it with an example.	(4)
	(b)	State Hardy – Weinberg Theorem . Discuss any two factors affecting Gene Frequency.	(4)
Q.No.8	(a)	Argue that Oogenesis and Spermatogenesis are fundamentally Meiotic Processes but have extraordinary differences.	(4)
	(b)	What is Incomplete Dominance ? Explain it with an example.	(4)
Q.No.9	(a)	What are Transgenic Plants ? Write at least four examples.	(4)
	(b)	Explain the experiment of Haemmerling on importance of Nucleus in development.	(4)

Sahiwal Board-2024

★★ **Biology** **H.S.S.C (12th)1st Annual 2024** Roll No._____(To be written by the candidate)

Paper : II Objective (ii) | Paper Code | 8 | 4 | 6 | 3 | Marks:17 Time : 20 Minutes

Note: - You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number in your answer book. Use marker or pen to fill the circles. Cutting or filling up two or more circles will result no mark.

SECTION-A

Q.1	Questions	A	B	C	D
1.	In a nucleotide, a nitrogenous base is attached to carbon number:	5	4 ●	3	1
2.	A set of three nucleotides on mRNA specifying a particular amino acid is called:	Code	Genetic code	Codon ●	Anticodon
3.	Brothers having same parents are not similar due to:	Mitosis	Synopsis	Apoptosis	Crossing over ●
4.	On looking at a pure white cat, a student of genetics said, "Alas, the cat is deaf!". Guess the genotype of cat.	W/W ●	W/w	w/w	Both A & B
5.	Indicate the salt tolerant plant among the given:	Acacia ●	Mango	Arabidopsis	Shisham
6.	In which disease a patient lacks a gene coding for trans-membrane carrier of chloride ions?	SCID	Cystic fibrosis ●	Cancer	Hodgkin's lymphoma
7.	Which protein is similar in all aerobic organisms?	Cytochrome b	Haemoglobin	Cytochrome c ●	Both A & C
8.	The term niche was coined by:	Joseph Grinnell ●	Charles Elton	Tansley	Hult
9.	Select the inappropriate matching.	Khanpur ↔ Cholistan	Yazman ↔ Thar ●	Mianwali ↔ Thal	Gilgit ↔ Grassland
10.	*Homo sapiens* have been on the earth for about:	10,000 years	20,000 years	40,000 years ●	60,000 years
11.	Which of the given retards cell elongation in plants?	Red light	Blue light	Ultraviolet rays ●	Both A & C
12.	An individual produced by parthenogenesis is:	Male ●	Female	Male or female	Hermaphrodite
13.	Transient alteration in brain due to excessive rapid electrical discharges in the grey matter are diagnosed as:	Epilepsy ●	Parkinsonism	Alzheimer's disease	Goiter
14.	Hormone that stimulates conversion of glucose into lipids and proteins is:	Cortisol ●	Insulin	Aldosterone	Glucagon
15.	What is not true about sclerenchyma?	Lignin	Branched pits	Protoplast ●	Thick cell wall
16.	Nastic movements are due to balance or ratio between:	Abscisic acid and gibberellin	Abscisic acid and cytokinin	Abscisic acid and auxins ●	Both A & C
17.	Production of heat or high temperature during fever is called:	Pyrogen	Pyrexia ●	Antitoxin	Both A & C

Biology **H.S.S.C (12th)1st Annual 2024** Roll No._____(To be written by the candidate,

Paper : II **Subjective** Marks : 68 Time : 2:40 Hours

SECTION-B **Note:- Section B is compulsory.**

2. Write short answers to any EIGHT parts. (8 x 2 = 16)

i. How do fresh water organisms maintain osmoregulation?
ii. Human nephrons have association of three types of capillary beds. Give their names and location in the kidney.
iii. Why leaves are said to be excretophores?
iv. What do you know about skeletal deformities because of genetic causes? Discuss any two of them.
v. What kind of cells are responsible for bone formation?
vi. Name unpaired bones of cranium.
vii. How would you differentiate between oviparous and viviparous condition?
viii. What is the importance of pollen tube in spermatophytes?
ix. What is profundal zone? What is its source of nutrition?
x. Give two adaptations in plants and animals for terrestrial ecosystem.
xi. How chlorine is responsible for ozone depletion?
xii. What is acid rain? Write its any two effects.

3. Write short answers to any EIGHT parts. (8 x 2 = 16)

i. Define Biological Rhythms. Write names of its types.
ii. Write functions of cerebellum.
iii. How would you define innate behaviour? Give example.
iv. What do you remember about law of independent assortment?
v. Why blood group O is called universal donor?
vi. What do you understand by sex limited trait? Give example.
vii. Write names of things which are required to produce recombinant DNA.
viii. What is restriction fragment length polymorphism? How is it detected?
ix. How would you define Transgenic Organisms?
x. How does a predator affect prey and vice versa?
xi. What does happen in denitrification?
xii. How would you compare autecology and synecology?

4. Write short answers to any SIX parts. (6 x 2 = 12)

i. Define lateral meristem. Give example.
ii. How coelom is formed in chick embryo?
iii. What is nucleosome?
iv. Differentiate between leading strand and lagging strand of DNA.
v. How does phenylketonuria affect body?
vi. Define cell cycle. Give its sketch also.
vii. What is malignant tumour?
viii. Comparative embryology is an evidence of evolution. Justify.
ix. Define Hardy-Weinberg Theorem.

SECTION-C **Note:- Attempt any THREE questions. Each question carries EIGHT (4+4=8) marks.** (8x3=24)

5. (a) How are excretory products made concentrated in the human kidney?
(b) Write down four differences between mitosis and meiosis.

6. (a) How are broken bones repaired? Explain. (b) What is succession? Explain it with an example of xerosere.

7. (a) Discuss the main events involved in initiation of nerve impulse. (b) Write down any four factors which may affect gene frequency.

8. (a) Describe the role of phytochrome in photoperiodism.
(b) In monohybrid cross, we get 3:1 phenotype and 1:2:1 genotype ratio. Prove it with one example.

9. (a) Write a note on embryonic induction. (b) What is polymerase chain reaction? How does it work? Give its applications also.

313-424-1A-18000

BIOLOGY
GROUP : SECOND

12th Class 1st Annual 2024
DG Khan Board-2024-G-2

TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question.

QUESTION NO. 1

1	Commonly used restriction enzyme is (A) PBR 322 (B) PSC 101 (C) Plasmid (D) ECoR1 ●
2	Eukaryotes are thought to have first appeared about (A) 3.5 Billions (B) 1.5 Billions ● (C) 2.5 Billions (D) 4.5 Billions
3	The change in frequency of allele at locus that occur by chance is (A) Gene pool (B) Genome (C) Migration (D) Genetic drift ●
4	Pick the biotic component from the following (A) Animals ● (B) Soil (C) Water (D) Atmosphere
5	Stone monuments are being eroded due to stone cancer by (A) Green House effect (B) Ozone depletion (C) Acid rain ● (D) Global warming
6	Incidence of uric acid kidney stone is (A) 5 % (B) 10 % ● (C) 15 % (D) 70 %
7	Which is stimulus for thigmotropism (A) Touch ● (B) Light (C) Water (D) Chemical
8	Clavicle connects scapula with (A) Skull (B) Femur (C) Tibia (D) Sternum ●
9	Hormone which promotes bolting of some rosset plants is known as (A) Ethene (B) Auxin (C) Cytokinin (D) Gibberellin ●
10	The 2nd largest part of brain is (A) Thallamus (B) Hypothalamus (C) Cerebellum ● (D) Cerebrum
11	In honey bee , males are haploid and produce sperms by (A) Mitosis ● (B) Meiosis (C) Binary fission (D) Multiple fission
12	Cleavage results in the formation of rounded closely packed mass blastomeres (A) Gastrula (B) Blastula (C) Morulla ● (D) Neurula
13	How many different kinds of t.RNA in human cell (A) 54 (B) 45 (C) 25 ● (D) 20
14	The sequence of nucleotide that determine the amino acid sequence of a protein is (A) Gene ● (B) Allele (C) Multiple allele (D) Chromosome
15	Full cell cycle in yeast cell has length (A) 30 minutes (B) 60 minutes (C) 90 minutes ● (D) 120 minutes
16	A pure breeding tall pea plant was crossed to short plant. What will be the frequency of short plants in F1 (A) 0.25 (B) 0 ● (C) 0.5 (D) 1
17	Antibody made by soyabeen can be used as treatment for (A) Genital Herpes (B) AIDS ● (C) Hepatitis (D) Herpes simplex

SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) of the following 16

i	Describe some adaptations made by plants living in extreme dry conditions
ii	How kidney helps to conserve water when body is facing dehydration ?
iii	What are heterotherms ? Give two examples
iv	Why ecdysis is necessary for most insects ?
v	Describe the role of Ca^{+2} and ATP in muscle contraction
vi	How snakes move from one place to another without legs ?
vii	Compare parthenocarpy with apomixes
viii	What is oestrous cycle ? Is it also present in humans ?
ix	What do you mean by " Taiga " ? Give its conditions
x	What are the main factors that determine productivity of an ecosystem ?
xi	How global worming may effect human life on earth ?
xii	Differentiate between renewable and non-renewable resources

QUESTION NO. 3 Write short answers any Eight (8) of the following 16

i	How are synthetic auxins applied in agriculture ?
ii	How does sodium potassium pump work in transmission of nerve impulse ?
iii	Why insight learning is considered highest form of learning ?
iv	What do you know about nullogamete ?
v	Why AB blood group is known as universal recipient ?
vi	A man is 45 years old and bald. His wife also has pattern baldness. What is the risk that their son will lose his hair ?
vii	How do we obtain gene of interest ?
viii	What is gene pharming ?
ix	What do you know about Taq polymerase ?
x	Define commensalism. Give example
xi	What do you know about Autecology ?
xii	Define Food Chain. Give an example

QUESTION NO. 4 Write short answers any Six (6) of the following 12

i	Narrate the characteristics of dividing cells in plants
ii	Give the effects of temperature on growth of plants
iii	Draw a structure showing phosphodiester linkage
iv	A human chromosome has a bulk of information. How ?
v	How euchromatin and heterochromatin are different ?
vi	What is the role of Actin and myosin in cell division ?
vii	Write the characteristics of cancer cells
viii	Give the contribution of Lamarck in evolution
ix	Define gene pool and fixed allele

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5.(A)	Describe the major homeostatic functions of the liver
(B)	Define mitosis. Write its importance
Q.6.(A)	Describe vertebral column and rib cage
(B)	Explain Nitrogen cycle with the help of sketch
Q.7.(A)	Write a note on structure and function of fore brain
(B)	The fossil record and comparative embryology are strong evidence of evolution. Justify
Q.8.(A)	What is incomplete dominance ? Explain with the example of 4 O'clock plant
(B)	Elaborate various components of female reproductive system
Q.9.(A)	What is regeneration ? Why it is more common in some animals and not in others ?
(B)	What is gene therapy ? Discuss its importance with two examples

BIOLOGY
GROUP : FIRST

12th Class 1st Annual 2024

TIME: 20 MINUTES
MARKS: 17

OBJECTIVE

DG Khan Board-2024-G-1

NOTE: You have four choices for each objective type question as A , B , C and D . The choice which you think is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question.

QUESTION NO. 1

1	Antibody used for treatment of cancer is obtained from (A) Soyabean (B) Maiz (C) Corn (D) Arabidopsis ●
2	The compound which made environment of earth from reducing to oxidizing is (A) Carbon dioxide (B) Nitrogen dioxide (C) Oxygen ● (D) Ozone
3	The profession of a species in an ecosystem is called (A) Habit (B) Habitat (C) Niche ● (D) Trophic level
4	Thar is desert ecosystem of (A) Punjab (B) Sindh ● (C) Balochistan (D) Khyber Pakhtoon Khawah
5	In sea , tides are generated due to pull of (A) Earth (B) Sun (C) Moon ● (D) Supiter
6	Large leaves are found in (A) Xerophytes (B) Mesophytes (C) Hydrophytes ● (D) Sciophytes
7	Opening of buds is due to (A) Photonasty ● (B) Epinasty (C) Hyponasty (D) Thermonasty
8	The structures help to maintain minerals in the blood (A) Bone ● (B) Muscle (C) Skin (D) Gland
9	Neurons responsible to carry nerve impulse from central nervous system to effector are (A) Sensory neuron (B) Associative neuron (C) Intermediate neuron (D) Motor neuron ●
10	Certain human male fail to develop secondary sexual characters due to absence of (A) Progesteron (B) Oxytocin (C) Testosteron ● (D) Luteonizing hormone
11	Eggs with diploid number of chromosomes are produced as a result of (A) Normal mitosis (B) Normal meiosis (C) Modified mitosis (D) Modified meiosis ●
12	Apical dominance is caused by (A) Auxin ● (B) Cytokinin (C) Gibberellin (D) Ethene
13	Complete set of chromosomes in an organism is called (A) Genome ● (B) Genotype (C) Phenotype (D) Karyotype
14	In a nucleotide , Nitrogen base is attached to carbon number ..... of pentose sugar (A) 1 ● (B) 2 (C) 3 (D) 4
15	An example of cell that enters G0 – phase permanently during cell cycle is (A) Gland cell (B) Skin cell (C) Nerve cell ● (D) Bone cell
16	Gene I for blood group is found on chromosome number (A) 6 (B) 7 (C) 8 (D) 9 ●
17	An example of restriction endonuclease is (A) Taq polymerase (B) ECoR1 ● (C) Gyrase (D) Ligase

SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) of the following 16

i	Differentiate between hypotonic and hypertonic environment
ii	Briefly write about pyrexia
iii	How does high temperature affect plant metabolism ? Write the way plants manage with high temperature.
iv	Compare epinasty and hyponasty
v	Why does human body become stiff after death ? Name that particular condition
vi	How would you justify that amount of work a muscle does is reflected in changes in the muscle itself ?
vii	How are identical twins formed ?
viii	Differentiate between long day and short day plants
ix	What are natural grass lands in the world are used for and how human activities are deteriorating these biomes ?
x	What are taiga ? What kinds of environmental conditions are found there ?
xi	Define the term Demography
xii	Differentiate between reforestation and afforestation

QUESTION NO. 3 Write short answers any Eight (8) of the following 16

i	Give names of two synthetic auxins with their effects
ii	What are mechanoreceptors ? Give their role
iii	What is role of limbic system in brain ?
iv	Does jumping genes act as source of mutation ?
v	Suggest how type A and AB parents could produce a child with blood group O
vi	Define over dominance with an example
vii	Define palindromic sequences
viii	What is PCR ? Give its function
ix	What is anther culture technique ? Give its role
x	What is biome ? Give names of two biomes
xi	Give importance of producers in ecosystem
xii	How food chain is different from food web ?

QUESTION NO. 4 Write short answers any Six (6) of the following 12

i	What is intercalary meristem ? Describe its role
ii	Enlist some symptoms of aging
iii	Describe the importance of promoter region during transcription
iv	What are chromosomal aberrations ?
v	Describe chemical composition of chromosome
vi	Compare apoptosis with necrosis
vii	How a cancerous cell differs from a normal cell ?
viii	Differentiate between endangered and extinct species with examples
ix	What is membrane invagination hypothesis ?

SECTION-II

Note: Attempt any Three questions from this section 8 x 3 = 24

Q.5.(A)	What is kidney stone ? Describe its cure
(B)	Define interphase , Explain its various sub-phases
Q.6.(A)	What is bone fracture ? Describe the mechanism of their repair
(B)	Define biogeochemical cycle. Discuss nitrogen cycle with labeled diagram
Q.7.(A)	Write a detailed note on secretions of Adrenal glands
(B)	What are endangered species ? What measures could be adopted for their preservation
Q.8.(A)	Explain the human male reproductive system in detail
(B)	Discuss genetic basis of ABO system in humans. Also give their importance in blood transfusion
Q.9.(A)	Explain the role of nucleus in development with reference to Acetabularia
(B)	What is genomic library ? How would you locate a gene of interest in the library

Faisalabad Board-2024-G-1

Roll No: _____

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_2	Evolution of O_2 ●	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^{322} 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 ●

Intermediate Part Second

Roll No. ________

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-slip 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. 01,01
   - (xi) Write role of root nodules in plants.
   - (xii) What do you understand by ammonification?

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.

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

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

Paper Code Number: 4466	2024 (1st-A) INTERMEDIATE PART-II (12th Class)	Roll No: pakcity.org

BIOLOGY PAPER-II GROUP-II

TIME ALLOWED: 20 Minutes	OBJECTIVE	MAXIMUM 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 that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	Which one of these syndromes is rare X-linked recessive trait?	Color blindness	Testicular feminization	Hemophilia ●	Hypophosphatemic rickets
2	Bacterial cells take up recombinant DNA when treated with:	$CaCl_2$ ●	DNA ligase	RNA polymerase	Bacteriophage
3	Luciferase enzyme is found only in:	Fruit fly	Dragon fly	Fire fly ●	Butterfly
4	The main cause of extinction of species is:	Pollution	Habitat destruction ●	Global warming	Parasitism
5	The relationship between insects and flowering plants is an example of:	Mutualism ●	Parasitism	Commensalisms	Predation
6	Which zone is rich in life in aquatic ecosystem?	Profundal zone	Limnetic zone	Littoral zone ●	All of these
7	Stone cancer is a result of _____ pollution.	Water ●	Soil	Sound	Air
8	Which one of these requires least amount of water for its elimination from body?	Creatinine	Uric acid ●	Ammonia	Urea
9	There are _____ muscles present in human body.	650 ●	630	680	206
10	The action of venus flytrap is called:	Nytinasty	Photonasty ●	Thermonasty	Haptonasty
11	Nociceptors in our body are related with:	Vibration	Touch	Pain ●	Light
12	Which one of these hormones promotes flowering in pineapple?	Auxins	Ethene ●	Abscisic acid	Cytokinins
13	Which of these is present between uterus and vagina?	Urinogenital duct	Oviduct	Cervix ●	Fallopian tube
14	During chick development, nervous system arises from:	Ectoderm ●	Mesoderm	Endoderm	Coelom
15	In sickle cell anemia, valine is present in hemoglobin in place of:	Praline	Glutamine	Glutamic acid ●	Isoleucine
16	X-Ray diffraction analysis of DNA was performed by:	Erwin Chargaff	Rosalind Franklin ●	Watson and Crick	Frederick Miescher
17	In yeast, cell cycle is completed in:	9 hours	10 hours	4.5 hours	1.5 hours ●

pakcity.org	2024 (1st-A) INTERMEDIATE PART-II (12th Class)	Roll No: _____
BIOLOGY PAPER-II GROUP-II		
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i)	How does aldosterone play its role in concentration of urine?
(ii)	What is special or unique feature of Malpighian tubules in insects?
(iii)	Why does temperature of body increase during fever?
(iv)	What is "All or None" response in muscle contraction?
(v)	How does exercise affect a muscle?
(vi)	How is pulvinus involved in sleep movements?
(vii)	How are identical twins produced?
(viii)	What do you know about the term oviparity?
(ix)	Write down any two properties of hydrospheric ecosystem.
(x)	Differentiate between Prairies and Savanna grasslands.
(xi)	How are solid wastes useful in overcoming energy crisis?
(xii)	Mention causes of Beriberi and Haemophilia.

3. Attempt any eight parts. **8 × 2 = 16**

(i)	Define Habituation. Give two examples.
(ii)	Write the role of a hormone in regulation of bile and pancreatic juice secretion.
(iii)	Give the functions of sympathetic nervous system.
(iv)	What are compound sex chromosomes? Write one example.
(v)	Differentiate the sex-determination pattern in humans and birds.
(vi)	What are Pseudoautosomal genes? Give one example.
(vii)	What are Transgenic bacteria? Give their role in cleaning up beaches.
(viii)	How Transgenic bacteria are better than Transgenic animals?
(ix)	What is meristem culture? Write its one advantage.
(x)	Draw a flow sheet of an energy pyramid showing transfer of energy from producers to tertiary consumers.
(xi)	Differentiate between Primary and Secondary Succession.
(xii)	Define the terms habitat and niche.

4. Attempt any six parts. **6 × 2 = 12**

(i)	Highlight the role of morphogenetic determinants during development of an individual.
(ii)	What do you know about discoidal cleavage?
(iii)	"Genetic code is universal but not quite universal". Justify this statement.
(iv)	How is lagging strand synthesized in the replication process?
(v)	What is point mutation? Give one example.
(vi)	Why interphase is called resting phase?
(vii)	How is Phragmoplast formed? Give its importance for future daughter cells.
(viii)	What are Hydrothermal vents?
(ix)	Differentiate between Divergent and Convergent evolution.

SECTION-II

NOTE: Attempt any three questions. **3 × 8 = 24**

5.(a)	Explain thermoregulatory strategies in mammals.	4
(b)	Describe Necrosis and Apoptosis.	4
6.(a)	Explain process of repair of broken bones.	4
(b)	Write a note on Xerosere.	4
7.(a)	What is a Nerve Impulse? Discuss the major factors involved in Resting Membrane Potential.	4
(b)	Discuss major points of Darwin's theory of natural selection.	4
8.(a)	Enlist the names of different types of asexual reproduction in animals. Explain Parthenogenesis and its types.	4
(b)	Write a note on Erythroblastosis foetalis.	4
9.(a)	Discuss the role of nucleus in development by giving the example of Acetabularia?	4
(b)	Write a detailed note on Gene sequencing.	4

28-2024(1st-A)-15000 (MULTAN)

Paper Code Number: 4461	2024 (1st-A) INTERMEDIATE PART-II (12th Class)	Roll No: pakcity.org

BIOLOGY PAPER-II GROUP-I

TIME ALLOWED: 20 Minutes	OBJECTIVE	MAXIMUM 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 that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	Which of the given is recovered in the collecting duct of the nephron?	Glucose	Water ●	$NaC\ell$	Potassium ions
2	The type of muscle having regular striations multinucleate and voluntary is:	Skeletal muscle ●	Smooth muscle	Cardiac muscle	All types of muscles
3	Cyclic activity of cross bridges is regulated by:	Calcium ions ●	Troponin	ATP	Actin
4	Given are the principle action of insulin except:	Increasing glycogen synthesis ●	Increasing cell utilization of glucose	Inhibits hydrolysis of glycogen	Promotes hydrolysis of glycogen ●
5	Cell bodies of sensory neurons constitute:	Dorsal root ganglion	Gray matter	Ventral root ganglion	Posterior root ganglion
6	Mature sperms are formed from spermatids through:	Meiosis-I	Meiosis-II	Differentiation ●	Mitosis
7	The head can be regenerated in:	Earthworm	Frog	Leech	Grasshopper ●
8	Which of the given is a stop codon?	UUG	UGA ●	UCU	CCA
9	To code 50 amino acids in a polypeptide chain, what will be the minimum number of nucleotides in its gene?	50	150 ●	100	51
10	Which of the given is trisomy syndrome?	Down's ●	Edward	Patau	All of these
11	Different alleles of a gene that are both expressed in heterozygous condition are called:	Complete dominance	Incomplete dominance	Codominant ●	Over dominance
12	Which of the given is incorrectly matched?	Protoplast – plant cell engineering	RFLPs – DNA finger printing	DNA polymerase – PCR	DNA Ligase – Mapping humans chromosomes ●
13	Taq polymerase is used in PCR because of its:	Low thermal stability	High thermal stability ●	High fidelity	High speed
14	Lyell published the principles of:	Geology	Population ●	Genetics	Ecology
15	Diseases in living organisms which are caused by parasites are termed as:	Mutualism	Commensalism	Infestations ●	Succession
16	Coniferous forest located at high latitude are called:	Alpine	Boreal ●	Taiga	Prairies
17	The decline in thickness of ozone layer is caused by increasing level of:	Hydrocarbon	Nitro carbon	Chlorine	Chlorofluorocarbon ●

pakcity.org

2024 (1st-A)
INTERMEDIATE PART-II (12th Class)

Roll No: MTN-1-24

BIOLOGY PAPER-II GROUP-I

TIME ALLOWED: 2.40 Hours | **SUBJECTIVE** | **MAXIMUM MARKS: 68**

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i)	How metanephridium is better than protonephridium?	1+1
(ii)	Categorise the plants distribution on the basis of osmoregulation.	2
(iii)	How can you describe blubber?	2
(iv)	Compare Epinasty with Hyponasty?	1+1
(v)	How would you define sliding filament model?	2
(vi)	How does jet propulsion mechanism work?	2
(vii)	What are advantages of Sexual Reproduction?	1+1
(viii)	How menstrual cycle is defined?	2
(ix)	Mention role of light in Limnetic zone.	2
(x)	Compare Coniferous alpine and Boreal forests.	1+1
(xi)	Define Greenhouse effect.	2
(xii)	Write any two sources of water pollution.	2

3. Attempt any eight parts. **8 × 2 = 16**

(i)	What are the elements of nervous system?
(ii)	Which factors control secretion of Antidiuretic hormone or Vasopressin?
(iii)	Define Habituation. Give example.
(iv)	Differentiate between Homozygote and Heterozygote.
(v)	What are multiple Alleles? Give example.
(vi)	How does sex determination occur in birds?
(vii)	How can gene of interest be obtained?
(viii)	What are the applications of PCR amplification and analysis?
(ix)	Mention forensic application of DNA analysis.
(x)	What is Biosphere?
(xi)	Define Food web. Give its importance.
(xii)	Write a note on Limnetic zone.

4. Attempt any six parts. **6 × 2 = 12**

(i)	How do environmental factors contribute to abnormal development?
(ii)	Why growth pattern in plants is called an open growth?
(iii)	What are Fixed alleles?
(iv)	How can you differentiate between Homologous and Analogous organs?
(v)	Why do DNA replication always proceeds 5′ → 3′ directions?
(vi)	What is a Point Mutation? Give one example.
(vii)	How do different chromosomes differ from each other?
(viii)	How are cancerous cells distinguished from normal cells?
(ix)	Is interphase a resting phase? Why?

SECTION-II

NOTE: Attempt any three questions. **3 × 8 = 24**

5.(a)	Explain different methods of excretion in plants.	4
(b)	What is Meiosis? Discuss prophase-I of meiosis in detail.	4
6.(a)	Define Joints. How they are classified? Explain.	4
(b)	Define Succession? Explain Xerosere in detail.	4
7.(a)	What is Synapse? How impulse can pass through synapse? Discuss it with suitable diagram.	4
(b)	Define Endangered species. Explain three measures to save endangered species.	4
8.(a)	What are autosomes and sex-chromosomes? Explain sex-determination in humans.	4
(b)	Discuss the role of phytochromes in photoperiodism.	4
9.(a)	Explain embryonic induction in detail.	4
(b)	What are transgenic bacteria? Write down their practical use in various fields.	4

27-2024(1st-A)-15000 (MULTAN)

☆ Roll No _____

H.S.S.C (Part-II) A/2024
(For All Sessions)

Paper Code	8	4	6	1

Biology (Objective)

Group - I

Time:20 Minutes **Marks : 17**

Note: Write answers to the questions on the objective answer sheet provided. Four possible answers are given. Which answer you consider correct fill the corresponding circle A,B,C or D in front of each question with marker or ink on the answer sheet provided.

1.1 The excretory product that requires minimum water for its elimination as compared to others is:
(A) Urea (B) Ammonia (C) Uric acid (D) Creatinin

2. Which of the following is bone of axial skeleton:
(A) Ribs (B) Shoulder girdle (C) Pelvis (D) Femur

3. Cardiac muscles are :
(A) Voluntary (B) Involuntary (C) Both (A) and (B) (D) None of these

4. Which one is not related to others is:
(A) Cretinism (B) Myxoedema (C) Exophthalmic goiter (D) Diabetes mellitus

5. Gastrin is the hormone produced by:
(A) Gut (B) Liver (C) Pancreas (D) Oral cavity

6. Reproduction is very important for the survival of:
(A) Species (B) Population (C) Individual (D) Both (A) and (B)

7. For maximum growth of plants, the optimum temperature is:
(A) 15 - 20 °C (B) 20 - 25 °C (C) 25 - 30 °C (D) 30 - 35 °C

8. Enzyme are responsible for assembly of:
(A) Nucleic acid (B) Protein (C) Carbohydrate (D) All (A),(B) and (C)

9. In Bacteria, the newly synthesized mRNA is released in:
(A) Cytoplasm (B) Nucleus (C) Mitochondria (D) Chloroplast

10. In Klinefelter's syndrome:
(A) One x. chromosome is missing (B) Additional sex-chromosome is present
(C) One autosome is missing (D) None of these

11. When a haemophilic carrier women marries a normal man, who among her offspring may be affected:
(A) All her children (B) All her daughters (C) Half of her daughters (D) Half of her sons

12. A team of Japanese scientists is attempting to introduce the C_4 photosynthetic cycle into:
(A) Rice (B) Wheat (C) Corn (D) Oat

13. It makes bacterial cell more permeable to take up recombinant plasmid:
(A) Sodium chloride (B) Potassium chloride (C) Calcium chloride (D) Cesium chloride

14. Who published an essay on "The principle of population" ?
(A) Darwin (B) Lyell (C) Malthus (D) Mendel

15. Bacteria and Fungi are examples of:
(A) Decomposer (B) Producer (C) Consumer (D) Grazer

16. The light in which zone is insufficient to support photosynthesis:
(A) Littoral (B) Limnetic (C) Profundal (D) All of these

17. Total area of world under cultivation is:
(A) 9 % (B) 10 % (C) 11 % (D) 12 %

Roll No _____

H.S.S.C. (Part-II) A / 2024
(For All Sessions)

Biology (Subjective)

Group - I

Time: 2:40 Hours

Marks : 68

Section - I

2. **Write short answers of any eight parts of the question.** [2x8=16]

(i) Why color of plant leaves turns yellow in autumn?
(ii) How plants protect their enzyme from denaturation at high temperature?
(iii) Compare hydrophytes with xerophytes.
(iv) Out of 12 pairs of ribs, why only two pairs of ribs are called free floating ribs?
(v) Describe internal structure of cilium.
(vi) How low Ca^{+2} in blood affects bones in growing children?
(vii) Differentiate between chemotactic and chemotropic movements.
(viii) Name the cells found outside seminiferous tubules. Give one main function of those cells.
(ix) Why is there no productivity in profundal zone in aquatic ecosystem?
(x) What is Tundra? Does this ecosystem exist in Pakistan?
(xi) How combusion of fossil fuels is related to stone cancer?
(xii) Write down the two impacts of ozone layer depletion on human life

3. **Write short answers of any eight parts of the question.** [2x8=16]

(i) How do plants respond to various stimuli under stress?
(ii) Define Threshold frequency to initiate nerve impulse.
(iii) What do you know about commercial applications of Gibberellins? (at least two).
(iv) Why is blood group "O" considered universal donor?
(v) What do you know about XX - XY mechanism of sex determination?
(vi) Define product rule. Give an example.
(vii) How cancer patients are being treated by gene therapy?
(viii) Give two practical uses of DNA finger printing technology.
(ix) What are restriction endonucleases? Give example.
(x) How does length of food chain affect an ecosystem?
(xi) What is pyramid of energy?
(xii) Define Autecology. Give example.

4. **Write short answers of any six parts of the question.** [2x6=12]

(i) The plant cell size increase in number of cells and flowering are affected by light. How?
(ii) Differentiate between Gastrula and Neurula.
(iii) Compare the homologous and analogous organs.
(iv) How a particular amino acid is brought at a specific ribosomal site? Give the role of enzyme also.
(v) What is point mutation? Write one example.
(vi) Draw the structural formulae of Adenine and Guanine.
(vii) Why Anaphase is considered critical phase?
(viii) How cancer cells are different from normal cells?
(ix) Write any two points of Lamarckism.

Section - II

Note: **Attempt any three questions from the following:** (8x3=24)

5. (a) What is Renal failure? Describe its treatment. [4]
   (b) How does cytokinesis occur in animal cells? In which way does it differ from that in plant cell? [4]
6. (a) Discuss genetic and hormonal causes about deformities of skeleton. [2+2]
   (b) Explain Nitrogen cycle with the help of its sketch? [4]
7. (a) Which factors are involved in establishment of resting membrane potential? Explain. [4]
   (b) Define Hardy-Weinberg Theorem. How its equation in used to calculate allele & genotype frequency? [4]
8. (a) Discuss sex determining pattern in grass hopper and birds. [4]
   (b) Describe female reproductive cycle in human. [4]
9. (a) What is growth? Discuss its phases in plants. [4]
   (b) Write a note on transgenic animals. [4]

☆	Roll No _____

H.S.S.C (Part-II) A/2024
(For All Sessions)

Paper Code	8	4	6	2

Biology (Objective)

Group - II Time:20 Minutes Marks : 17

Note: Write answers to the questions on the objective answer sheet provided. Four possible answers are given. Which answer you consider correct fill the corresponding circle A,B,C or D in front of each question with marker or ink on the answer sheet provided.

1.1 Which part of brain acts as homeostatic thermostat in human?

(A) Thalamus (B) Hypothalamus ● (C) Cerebrum (D) Medulla

2. Most of cartilage consists of:

(A) Osteoclasts (B) Osteocytes (C) Chondrocytes ● (D) Cartilocytes

3. Commercial cork is obtained from wood of:

(A) Quercus suber ● (B) Dalbergia sisso (C) Solanum nigrum (D) Cassia fistula

4. Which hormone promotes flowering in pineapple?

(A) Auxins (B) Cytokinins (C) Ethene ● (D) Abscisic acid

5. In an unstimulated neuron, the membrane potential is approximately:

(A) + 50 mV (B) - 50 mV (C) + 70 mV (D) - 70 mV ●

6. Preparation for Lactation is stimulated by:

(A) FSH (B) ICSH (C) LTH ● (D) TSH

7. The cavity formed between somatic and splanchnic mesoderm is called:

(A) Archenteron (B) Coelom ● (C) Neurocoel (D) Blastocoel

8. In eukaryotic cells, RNA polymerase - II makes:

(A) m-RNA ● (B) r-RNA (C) t-RNA (D) c-DNA

9. A typical chromosome may contain ---------- nucleotides.

(A) 4 Billion (B) 140 Billion (C) 100 Million (D) 140 Million ●

10. During cell cycle, chromosomal contents are doubled in:

(A) G_1 phase (B) G_o phase (C) S-phase ● (D) G_2-phase

11. Secreter gene "SE" is located on chromosome No:

(A) 11 (B) 19 ● (C) 21 (D) 23

12. Bacteria naturally contain restriction endonucleases for their protection against:

(A) Antibiotics (B) Heavy metals (C) Viruses ● (D) Other bacteria

13. In Sanger's method dideoxyribonucleoside triphosphate is used to terminate the synthesis of:

(A) RNA (B) DNA ● (C) Protein (D) Lipids

14. Which scientist proposed endosymbiont hypothesis?

(A) Margulis ● (B) Cuvier (C) Darwin (D) Malthus

15. Bacteria present in root nodules fix nitrogen and convert into:

(A) Nitrites (B) Nitrates ● (C) Amino acids (D) Ammonia

16. The productivity in tropical grasslands is more than :

(A) 1500 g/m^2 (B) 2000 g/m^2 (C) 3000 g/m^2 ● (D) 4000 g/m^2

17. Establishment of forests where no forest existed previously is called:

(A) Deforestation (B) Afforestation ● (C) Reforestation (D) Forestation

Warning:- Please, do not write anything on this question paper except your Roll No.

1224 (Inter Part – II) **(Session 2020-22 to 2022-24)** **Roll No----------**

Biology (Objective) **Paper (II)** **Group I** **Sig. of Student --------**

Time Allowed:- 20 minutes **PAPER CODE 4461** **Maximum Marks:- 17**

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1. Bilirubin is a metabolic waste formed as a result of _____ breakdown.
   (A) Nucliec acids **(B)** Hemoglobin ● **(C)** Purine bases **(D)** Creatinine
2. Tetanus is caused by _____
   (A) Low Blood Ca^{+2} level **(B)** Virus **(C)** Protozoa **(D)** Bacteria ●
3. Slighlly elastic connective tissue that holds the Bones together is called.
   (A) Ligament ● (B) Z-lines (C) Cross bridges (D) Tendon
4. The form of learning that involves diminution in response as a result of repeated stimuli.
   (A) Imprinting (B) Latent learning (C) Insight learning (D) Habituation. ●
5. Plants become etiolated when grown without
   (A) Light ● (B) Water (C) Soil (D) Air
6. Which one of these hormone is not related to ovarian cycle?
   (A) LH (B) Estrogen (C) Oxytocin ● (D) Progesterone
7. During ascidian development, gut is formed by _____ cytoplasm.
   (A) Gray vegetal ● (B) Clear (C) Yellow (D) Gray aquatorial
8. Chromosomes were discovered by _____ in 1882.
   (A) Walther flemming ● (B) W. Sutton (C) Ervin Charagaff (D) Rosalind Franklin
9. In Okazaki fragments range from 1000-2000 nucleotides
   (A) Bacteria ● (B) Viruses (C) Prions (D) Human
10. In human cell cycle, _____ takes the least time to complete.
    (A) M-Phase ● (B) G_2-Phase (C) S-Phase (D) G_1-Phase
11. Red color blindness is also known as
    (A) Tritanopia (B) Protanopia ● (C) Deutranopia (D) Tetranopia
12. Recombinant DNA is introduced into the host cell by means of a
    (A) Bacterium (B) Fungus (C) Vector ● (D) Fruitfly
13. Antithrombin–III is biotechnological product produced in
    (A) Goats ● (B) Cow (C) Mice (D) Bacteria
14. Which one of these is the ultimate source of all changes.
    (A) Migration (B) Non-random mating (C) Mutation ● (D) Genetic drift
15. Third stage of xerosere is known as
    (A) Moss stage ● (B) Shrub stage (C) Crustose lichen stage (D) Herb stage
16. Macaca mulatta is biological name of
    (A) Black bear (B) Tiger (C) Rhesus monkey ● (D) Leopard cat
17. Which one of these is non-renewable source of energy on earth?
    (A) Wind (B) Geothermal (C) Fossil fuels ● (D) Sun

1224 (Inter Part-II) (Session 2020-22 to 2022-24)

Biology (Subjective) (Group I) Paper (II)

Time Allowed: 2.40 hours Section ---------- I Maximum Marks: 68

2. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) On a cool day a human's temperature may be several degrees lower in arms and legs as compared to trunk, why?
(ii) Write structural formula of Urea and Uric Acid. (iii) Is liver a major homeostatic organ? Justify in few lines.
(iv) Why calcium ions are basic requirment for muscle contraction?
(v) How is turgor pressure built in a plant cell?
(vi) What do you understand by antagonistic arrangement of muscles? Give example.
(vii) How is reproduction significant for the survival of a species?
(viii) Suggest a remedy for the parents which are unable to enjoy normal process of fertilization and birth.
(ix) What do you understand by the productivity of an aquatic ecosystem?
(x) What was the reason of desertification in Sahel at southren edge of Sahara desert?
(xi) How can we minimize the effects of energy shortage?
(xii) What do you understand by the term "Global warming"?

3. Answer briefly any Eight parts from the followings:- 8 × 2 = 16

(i) Describe the structure of spinal cord. (ii) Differentiate between somatic and autonomic nervous system.
(iii) Give some differences between etiolation chlorosis.
(iv) What happens when a human is given wrong blood transfusion?
(v) What pattern of sex-determination is found in grasshopper? Elaborate.
(vi) Describe sexual dimorphism in drosophila. (vii) Is it possible to extract metals from low graded ores using Biotecnology? How?
(viii) How a suspected rapist can be identified? (ix) What are molecular scissors? Give examples
(x) What is commensalism? Give example. (xi) What is denitrification? Write its impact.
(xii) Differentiate between habitat and niche.

4. Answer briefly any Six parts from the followings:- 6 × 2 = 12

(i) How is a blastula formed in a developing chick embryo?
(ii) Define Teratology. Enlist any two causes of abnormal development.
(iii) What will happen to replication of DNA, if primase is not present.
(iv) Where codon and anticodon are situated. (v) How is translation terminated?
(vi) How do Karyokinesis and cytokinesis phases of cell division differ?
(vii) Enlist four important functions of Mitosis. (viii) What is genetic drift? How does it affects gene frequency?
(ix) How artificial selection is different from natural selection.

Section ---------- II

Note: Attempt any three questions. (8 × 3 = 24)

5. (a) What are Nephrons? Explain with the help of labelled diagram?
   (b) Explain various stages of Prophase I.
6. (a) Define tropic movements. Explain its different types.
   (b) How energy flows in Food Chain of an ecosystem.
7. (a) What is feed back mechanism? Explain with the help of an example.
   (b) Define and explain Hardy Weinberg theorem.
8. (a) Explain in detail the process of birth in human female.
   (b) What are sex-chromosomes? Discuss the chromosomal patterns of sex determination in animals.
9. (a) Define meristems? Discuss their various types?
   (b) What is gene therapy, Give its types and Explain in which disease ex-vivo-gene therapy is needed?

1238 -- 1224 -- 7500

Warning:- Please, do not write anything on this question paper except your Roll No.

1224 (Inter Part – II) **(Session 2020-22 to 2022-24)** **Roll No----------**

Biology (Objective) (Group 2nd) **Paper (II)** **Sig. of Student ----------**

Time Allowed:- 20 minutes **PAPER CODE 4466** **Maximum Marks:- 17**

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q.1

1. In which zone of Lake ecosystem, light does not peneterate? up to the bottom.
   (A) Littoral Zone (B) Limnetic Zone (C) Both Littoral and Limnetic (D) Profundal Zone
2. The natural heat energy trapped under ground is called
   (A) Geothermal energy (B) Fossil fuels (C) Nuclear energy (D) Tidal Power
3. An animal living in fresh water is more likely to excrete its waste nitrogen in the form of
   (A) Ammonia (B) Urea (C) Uric Acid (D) Creatinine
4. Locomotory structures found in star fish are
   (A) Setae (B) Tube feet (C) Foot (D) Wings
5. Presence of irregular stripes is the character of which type of Muscles?
   (A) Smooth (B) Skeletal (C) Cardiac (D) Both 'B' and 'C'
6. Which growth hormone can be sprayed on the tree crops to regulate fruit drop at the end of the season?
   (A) Auxins (B) Abscisic Acid (C) Ethene (D) Cytokinins
7. An individual has exopthalamic goiter and abnormally high basal metabolic rate, is more likely to be suffering from
   (A) Low thyroxine production (B) Excessive thyroxine (C) Cretinism (D) Myxodema
8. Which harmones are secreted by Mammalian Placenta?
   (A) Estrogen and Prolactin (B) Progesterone and Lactogen (C) Progesterone and oxytocin (D) Estrogen and oxytocin
9. In which phase of Animal development migration and rearrangement of cells occur to form three germ layers.
   (A) Gastrulation (B) Cleavage (C) Organogenesis (D) Growth
10. What is the role of enzyme DNA ligase during DNA replication?
    (A) Synthesis of primer (B) Recognition of the primer (C) Attachment of okazaki fragments (D) Proof reading
11. Enzyme Amino acyl tRNA synthetase has an important role during Translation.
    (A) Binding of a specific amino acid to a particular tRNA (B) Formation of initiation complex (C) Elongation of polypeptide chain (D) Termination of translation
12. Which phase of mitosis ensures equal distribution of chromosomes in the daughter cells?
    (A) Prophase (B) Metaphase (C) Anaphase (D) Telaphase
13. A colour blind man is married to normal female, what is the risk of colour blind child in this family?
    (A) 50% (B) 25% (C) Zero% (D) 100%
14. During DNA finger printing, unique collection of various sized DNA fragments, can be obtained by
    (A) Treating genome with restriction enzymes (B) Gel electrophoresis (C) Treating with Probes (D) Denaturing DNA by heat
15. In Recombinant DNA technology, Bacterial cells can be made more permeable for recombinant plasmids after treating with
    (A) Sodium chloride (B) Calcium chloride (C) Potassium Chloride (D) Magnesium Chloride
16. One of the following is not related to Darwinism.
    (A) Inheritance of acquired characters (B) Over production (C) Struggle for survival (D) Survival of fittest
17. The relationship between insects and flowering plants, is an example of
    (A) Commensalism (B) Parasitism (C) Mutualism (D) Predation

Warning:- Please, do not write anything on this question paper except your Roll No.

1224(Inter Part-II) **(Session 2020-22 to 2022-24)**

Biology (Subjective) **(Group 2nd)** **Paper (II)**

Time Allowed: 2.40 hours **Maximum Marks: 68**

Section ---------- I

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) How plants of cold regions repond to freezing temperatures? **(ii)** What is shivering thermogenesis?
(iii) Differentiate vasodilation from vasoconstriction. **(iv)** What are unguligrade animals?
(v) How locomotion occurs in snail? **(vi)** Define muscle fatigue.
(vii) Give importance of seed dormancy. **(viii)** What are viviparous mammals? Give one example.
(ix) What are acid rains? Give two disadvantages of acid rains. **(x)** What is algal bloom?
(xi) Write down the importance of grassland ecosystem.
(xii) Where Tundra ecosystem exists in Pakistan?

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) Differentiate between etiolation and chlorosis?
(ii) Write the distribution of pain and cold receptors on animal body?
(iii) Give the two commercial uses of Gibberellins? **(iv)** What is test cross? Also write its significance?
(v) Define pleiotropy? Give its two examples? **(vi)** Differentiate between gene linkage and linkage group?
(vii) Write two uses of PCR amplification and Ananlysis?
(viii) What are restriction endonucleases? Give their function?
(ix) Give the biotechnological uses of bacteria in mining? **(x)** Define climax community with example?
(xi) Differentiate between ectoparasite and endoparasite. **(xii)** Discuss the role of decomposers in ecosystem?

4. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) Define growth and embryonic development.
(ii) Write the role of clear and yellow cytoplasm in development.
(iii) What are okazaki fragments? In which strand they are formed?
(iv) Name the single ring nitrogen bases, also draw it.
(v) Name transforming principle, also define term transformation.
(vi) Name Trisomic Sexual non-disjunction in your Text book, Give two symptoms.
(vii) Why and how chromosome number is halved by Meiosis. **(viii)** What are Analogous organs, Give one example?
(ix) Write two preventive measures to save endangered species.

Section ---------- II

Note: Attempt any three questions. **(8 × 3 = 24)**

5.(a) Describe the structure of nephron with labeled diagram.
(b) Write a detailed note on cancer.
6.(a) How does healing process proceed when a bone is broken in an accident?
(b) Define succession. Explain all stages of Xerosere.
7.(a) Explain factors which affect gene frequency.
(b) Describe the endocrine and neural functions of hypothalamus. (two each)
8.(a) What structure are associated with human female reproductive system. Also write their function.
(b) State Law of Segregation prove it with one suitable example.
9.(a) How would you describe the process of growth correlations in plants?
(b) What is the methodology used for expression of Recombinant DNA?

1240 -- 1224 -- 7500