☆ 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

☆ HSSC-(P-II)-A/2023 | Paper Code | 8 | 4 | 6 | 1 |

Roll No ____ be filled in by the candidate

(For All Sessions)
(Group-I)

Biology (Objective)

Time: 20 Minutes Marks : 17

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

1.1. The only excretory structures in animal kingdom that are associated with digestive tract are called:

(A) Kidneys (B) Flame cells (C) Malpighian Tubules (D) Metnephridia

2. The number of lumbes vertebrae in human is:

(A) Five (B) Nine (C) Two (D) Seven

3. Bone forming cells are called:

(A) Osteocytes (B) Osteoclasts (C) Chondroblasts (D) Osteoblasts

4. Sensation of pain is produced by:

(A) Photoreceptors (B) Nociceptors (C) Thermo receptors (D) Chemo receptors

5. Which of the following do not help in coordination:

(A) Receptors (B) Effectors (C) Neuroglia (D) Neurons

6. Pasthenocarpy is the development of fruit without:

(A) Fertilization (B) Pollination (C) Germination (D) Hormones

7. The loss of memory and white hairs comes under:

(A) Merntology (B) Teratology (C) Regeneration (D) Gerontology

8. Which of the following is not non-sense codon:

(A) UGA (B) AUG (C) UAG (D) UAA

9. Centeal dogma is used for ____ in all organisms:

(A) Behavioral expression (B) Gene depression (C) Necrosis (D) Gene expression

10. Short stature, webbed neck and without ovaries are related to:

(A) 44 autosomes +X (B) 2n+1 (C) 44 autosomes + XXY (D) 23+XY

11. Which of the following is not hereditary disease:

(A) Diabetes mellitus (B) Hemophilia (C) Malaria (D) Color blindness

12. In tissue culture enzymes are used to digest the:

(A) Chloroplast (B) Cell wall (C) Vacuole (D) Cell membrane

13. For the entry of DNA, high voltage electric pulses are applied for making pores in:

(A) Plasma membrane (B) DNA (C) Cytoplasm (D) Cell wall

14. In certain areas, such as Ecuador forests coverage has reduced by:

(A) 100% (B) 50% (C) 30% (D) 95%

15. Which is not abiotic component:

(A) Water (B) Plant (C) Light (D) Air

16. The zone in lake where light is insufficient to support photosynthesis is called:

(A) Profundal (B) Littoral (C) Limnetic (D) Shallow

17. Stone monuments like "Taj Mahal" are being eroded due to stone cancer by:

(A) Eutrophication (B) Radiation (C) Acid rain (D) Air

SECTION-I

2. **Write short answers of any eight parts from the following:** (8x2=16)

i. Name plasma proteins synthesized by liver. Also write their functions.
ii. Differentiate between peritoneal and hemodialysis.
iii. Why leaves are said to be excretophores?
iv. What are the skeletal deformities because of genetic causes?
v. Draw the labeled diagram of a sarcomere.
vi. How can you differentiate between tetany and tetanus?
vii. How vernalization is beneficial for plants?
viii. Compare oviparous with viviparous.
ix. What type of organisms are present in Limenitic zone of a lake ecosystem?
x. How many deserts are in Pakistan? Write their names and location.
xi. Why the tress are called environmental buffers?
xii. How is ozone layer being depleted?

3. **Write short answers of any eight parts from the following:** (8x2=16)

i. Why AB Blood group is universal recipient?
ii. What is the role of recombination frequency?
iii. Why Heaemophilia A is more common in males than females?
iv. What is the role of thyroxine?
v. Differentiate between Meissner's corpuscles and Pacinian corpuscles.
vi. What are the Similarities between nervous and chemical coordination?
vii. What are the advantages of transgenic Bacteria?
viii. How many possible ways to get the gene of interest?
ix. Differentiate between ex-vivo and in-vivo gene therapy.
x. Why is a biosphere absent on moon?
xi. What is the importance of food web?
xii. How succession act as community relay?

4. **Write short answers of any six parts from the following:** (6x2=12)

i. Why is growth pattern in plants called "open growth"?
ii. Why is cleavage pattern in chick called "Discoidal Cleavage"?
iii. Mention the types of chromosomes depending upon the location of centromere.
iv. Define semi-conservative hypothesis of DNA replication.
v. What is the critical change in gene that leads to sickle cell disease?
vi. What is mitotic apparatus?
vii. Write any two importances of meiosis.
viii. What is theory of special creation?
ix. Define gene pool.

SECTION-II

Note **Attempt any three questions. Each question carries equal marks:** (8x3=24)

5. (a) Describe major homeostatic functions of liver. 4
(b) What is cell cycle? Diagrammatically mention its different stages. 4

6. (a) Write some major functions of skeletal system. 4
(b) Define Xerosere, describe its various stages. 4

7. (a) How is resting membrane potential replaced by action membrane potential across neurolema? Explain all the factors in this replacement. 4
(b) Discuss the evidences of evolution from comparative embryology and molecular biology. 2+2=4

8. (a) Explain different physiological and structural changes occurring during the process of birth in human being females. 4
(b) Define probability. Derive 9:3:3:1 ratio of independent assortment through product rule. 4

9. (a) Describe the phases of growth in plants. 4
(b) Explain the importance of transgenic plants

No. ... to be filled in by the candidate

(For All Sessions)

(Group-II)

Biology (Objective)

Time: 20 Minutes Marks : 17

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

1.1. Which of the following is not a heterotherm?

(A) Bat (B) Humming bird (C) Duckbilled Platypus (D) lying bird

2. The inactive, non conducting wood is called:

(A) Heartwood (B) Sapwood (C) Secondary Phloem (D) Primary Xylem

3. Total number of facial bones is:

(A) 22 (B) 14 (C) 12 (D) 16

4. Which of the following is wrong statement?

(A) Adrenaline releases glucose from liver glycogen (B) Non-adrenaline releases glucose from liver glycogen (C) Sympathetic system is reinforced by epinephrine and nor-epinephrine (D) Pupil dilates by parasympathetic system

5. Etiolated plants possess:

(A) No chlorophyll (B) Chlorosis (C) Insufficient chlorophyll (D) Higher chlorophyll

6. Fruit set means:

(A) Retention of seed (B) Retention of fruit (C) Retention of ovary (D) Pregnancy

7. Which of the following is responsible for secondary growth in plants?

(A) Lateral meristem (B) Vascular cambium (C) Cork cambium (D) All A, B & C

8. Helix of DNA has diameter:

(A) 2 nm (B) 2 μm (C) 2.3 nm (D) 3.4 nm

9. The semi conservative replication model predicted by Watson and Crick was confirmed by:

(A) Meselson & Stahl (B) Hershay & Chase (C) Vernon Ingram (D) Fredrick Sanger

10. Crossing over take place during:

(A) Zygotene (B) Pachytene (C) Diplotene (D) Diakinesis

11. Which chromosome carries gene for leukemia?

(A) Chromosome 9 (B) X-chromosome (C) Chromosome 19 (D) Chromosome 11

12. Which of the following bio-technology product has been produced in mammalian milk?

(A) Hemophilia factor VIII (B) Insulin (C) Anti-Thrombin III (D) Human growth hormone

13. The gene for Retinitis pigmentosa is present on:

(A) X-chromosome (B) Y-chromosome (C) Chromosome 7 (D) Chromosome 11

14. Alzheimer is a / an:

(A) Nutritional disease (B) Hormonal disease (C) Mental disorder (D) Physical disease

15. The first photosynthetic organism probably used _____ for reducing CO_2 to sugars.

(A) Pentose sugars (B) Hydrogen sulfide (C) Hydrogen carbide (D) Both A & B

16. Solar energy used for evaporation of water and heating up soil is about:

(A) 90% (B) 1% (C) 99% (D) 95%

17. Which of the following statement is false:

(A) 11% of the total area of the world is under cultivation (B) 2% of water is in the form of frozen ice (C) An area having less than 10 to 20 inches rains is called desert (D) Early man was first a secondary consumer

SECTION-I

2. **Write short answers of any eight parts from the following:** (8x2=16)

i. Skin does not come within the definition of excretory organ, comment.
ii. Differentiate between Endotherms and ectotherms.
iii. How is Osmoregulation done in Hypotonic and Hypertonic environment?
iv. What is difference between tetanus and muscle tetany?
v. What is the role of ATP in muscle fatigue?
vi. How is Turgor pressure generated?
vii. Define diplohaplontic life cycle.
viii. What is the role of non-disjunction in diploid parthenogenesis?
ix. Write the names of four major ecosystems on land in Pakistan.
x. Differentiate between phytoplanktons and zooplanktons.
xi. What do you know about hydroelectric power?
xii. Mention any four ways in which we can save energy

3. **Write short answers of any eight parts from the following:** (8x2=16)

i. Why birth control pills contain progesterone?
ii. How pancreas help humans as an endocrine gland?
iii. Why iodine is added into the table salt?
iv. How protanopia, deuteranopia and tritanopia area differentiated?
v. What is pleiotropy? Give two examples.
vi. Define epistasis and how it is confused with dominance?
vii. How genetic engineers produce a salt tolerant plant Arabidopsis?
viii. What are transgenic plants?
ix. How cancer is treated through gene therapy?
x. How certain fungi area crucial for higher plants in acidic soils?
xi. Describe the role played by bacteria in nitrogen cycle.
xii. How food web is more stable than food chain?

4. **Write short answers of any six parts from the following:** (6x2=12)

i. Highlight the role of morphogenetic determinant during development of an individual.
ii. What is discoidal cleavage?
iii. Differentiate between sense strand and antisense strand of DNA
iv. How mRNA in eukaryotic cell remain protected from nucleases and phosphateses?
v. Where codon and anticodon are situated?
vi. Differentiate between necrosis and apoptosis.
vii. How cytokinesis occurs in plants?
viii. What are endangered species? Give two examples from Pakistan.
ix. What are Hydrothermal vents?

SECTION-II

Note **Attempt any three questions. Each question carries equal marks:** (8x3=24)

5. (a) Describe thermal regulatory strategies in mammals including humans in cold temperature. 4
(b) Define Meiosis? Explain Meiotic – 1st, with diagram. 4
6. (a) Explain appendicular skeleton of mammals. 4
(b) Describe nitrogen cycle. 4
7. (a) Describe how a controlling mechanism is itself controlled by products of a reaction by giving an example? 4
(b) Describe different factors which effect the gene frequency of a population. 4
8. (a) What are placenta, write the functions of placenta during pregnancy. 4
(b) Define Mendel's law of segregation. Explain it with an example. 4
9. (a) Highlight the role of external environmental factors in controlling the growth in plants. 4

☆☆☆☆

Inter (Part-II)-A-2022

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

(For all sessions)

Paper Code	8	4	6	7

Biology (Objective Type)

Time: 20 Minutes **Marks: 17**

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

1.1. The vernolic acid and ricinolic acid can be used as hardness in:
(A) paints (B) plastics (C) Paints and plastics (D) Rubber

2. Darwin's "Origin of species" was published in:
(A) 1840 (B) 1859 (C) 1865 (D) 1890

3. Study of relationship of different communities to environment is called:
(A) Synecology (B) Autecology (C) Embryology (D) Zoology

4. Which one is not a desert?
(A) Thal (B) Thar (C) Sahara (D) Taiga

5. The steady internal state of homeostasis is known as:
(A) Disorder (B) Disease (C) Normal health (D) Abnormal health

6. Pressure filtration is associated with the:
(A) Glomerular Part (B) Collecting tubule
(C) Distal convulated tabule (D) Collecting duct

7. The diameter of thick filament in muscle is:
(A) 7-8 nm (B) 4 nm (C) 16 nm (D) 10 nm

8. At the place of attachment of leaf with the shoot a swollen part is called:
(A) Pitch (B) Pit (C) Cortex (D) Pulvinus

9. Intelligence is under the control of:
(A) Cerebrum (B) Cerebellum (C) Thalamus (D) Hypothalamus

10. Diploid parthenogenesis may occur in:
(A) Bees (B) Aphid (C) Wasp (D) Honey Bee

11. The hypoblast is mainly presumptive:
(A) Endoderm (B) Epiderm (C) Mesoder (D) Blastoderm

12. It is one of the prominent structure in the chick embryo of 18 hours:
(A) Primitive streak (B) Neurocoel
(C) Notochord (D) Coelom

13. Initiation codes for every protein coding gene is AUG which encodes for:
(A) Leucine (B) Serine (C) Alanine (D) Methionine

14. The term Bivalent means:
(A) One chromosome (B) Two chromosomes (C) Two chromatids (D) Four Chromosomes

15. Mongolism is phenotypically:
(A) Male (B) Female (C) Male or Female (D) None

16. How many possible alleles of ABO blood group are present in an individual?
(A) 1 (B) 2 (C) 3 (D) 300

17. Dopamine praducing cells can be grafted in the brain in order to curve:
(A) Haemophilia (B) Epilepsy (C) Parkinson's disease (D) Alzheimer's

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

Biology (Essay Type)

Time: 2:40 Hours

Marks: 6

Section - I

2. Write short answers of any eight parts from the following. 2x8=16

i. Why do marine fishes retain trimethylamine oxide in their body?
ii. Give the significance of tubular secretion in filterate.
iii. How do aldosterone and ADH help in concentration of urine?
iv. Differentiate betweeen heart wood and sap wood:
v. What is Nutation?
vi. Name the bones of pectoral girdle.
vii. Give the role of foetus during the timing of delivery.
viii. What is the cause and symptoms of Syphilis?
ix. Differentiate between climate and weather:
x. What is Taiga? Give conditions in Taiga.
xi. Define soil. Give its composition.
xii. What are the effects of global warming?

3. Write short answers of any eight parts from the following. 2x8=16

i. Discuss the effect of age and emotions on epilepsy.
ii. Why the Hypothalamus is a main Coordination center?
iii. What type of behaviour is Kinesis?
iv. What is Product Rule?
v. Discuss Dominance relation. Give one example.
vi. What is Rh-factor?
vii. What is Gene Pharming?
viii. What is cystic fibrosis?
ix. Discuss importance of Tissue-culture.
x. What are decomposers?
xi. What is Food Chain?
xii. What type of trophic level exists in Food Chain?

4. Write short answers of any six parts from the following. 2x6=1

i. How increase in length of plant body occurs? Discuss it.
ii. Can aging be slowed down in human? Comment on it.
iii. Differentiate between Template and coding strands of DNA during transcription.
iv. Give role of promoter in transcription.
v. Why DNA replication cannot complete without DNA Helicase
vi. Distinguish Convergent Evolution from Divergent Evolution.
vii. Differentiate between Endangered species and Extinct species. Give examples.
viii. Differentiate between Karyokinesis and cytokinesis.
ix. What is crossing over? Give its significance.

Section - II

NOTE: Answer any three questions from the following. 8x3=24

5. (a) How osmoregulation takes place in terristrial environment? 4
   (b) Write a note on synecology and autecology. 4
6. (a) Demonstrate the antagonistic working of hinge joint of elbow. 4
   (b) Describe the process of transcription emphasizing initiation, elongation and termination steps. (Post transcriptional modificatios are not required) 4
7. (a) Describe the mechanism of synaptic transmission. 4
   (b) How acid rain is produced? What are the causes and effects of acid rain? 4
8. (a) Describe huaman menstrual cycle's primary steps. 4
   (b) Write a note on Sex determination in plants 4
9. (a) Define regeneration with two examples. Discuss the mechanism of regeneration in planaria and salamender: 4
   (b) Do the anatomical similarities between species bring any evidence in the support of evolution? If yes, explain. 4

Roll No._____ (To be filled in by candidate) (For all sessions) Paper Code | 6 | 4 | 6 | 7 |

Biology (Objective Type)

Time: 20 Minutes **Marks: 17**

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

1.1. Fruit development without fertilization is called:
(A) Vernalization (B) Parthenogenesis (C) Parthenocarpy (D) Dormancy

2. Which colour cytoplasm of an ascidian fertilized egg gives rise gut____.
(A) Clear cytoplasm (B) Yellow cytoplasm
(C) Grey equatorial cytoplasm (D) Grey vegetal cytoplasm

3. The ability to regain the lost or injured part of the body is called:
(A) Aging (B) Regeneration (C) Generation (D) Degeneration

4. Which of the following is initiation codon?
(A) AUG (B) UAA (C) UGG (D) UGA

5. The division of nucleus during cell division is called:
(A) cytokinesis (B) Karyokinesis (C) Parthenogenesis (D) Karyotype

6. The crossing over occur in_____stage:
(A) Leptotene (B) Zygotene (C) Pachytene (D) Diplotene

7. A gamete without any sex chromosome is:
(A) Heterogamete (B) Homogamete (C) Nullogamete (D) Isogamete

8. The plasmid psc_{101} has antibiotic resistance gene for:
(A) Tetracycline (B) Ampicillin (C) Penicillin (D) Terramycin

9. Archaeobacteria can tolerate temperature upto:
(A) 118°C (B) 119°C (C) 120°C (D) 121°C

10. The organism,which inhibit the root nodules of legume plants are:
(A) Fungi (B) Algae (C) Bacteria (D) Cynobacteria

11. The grass land in tropical climate having woody trees are called:
(A) Prairies (B) Savanna (C) Tundra (D) Alpine

12. Establishment of new forests where no forest existed is known as:
(A) Afforestation (B) Reforestation (C) Forestation (D) Deforestation

13. The active up take of sodium in ascending limb of loop of Henle is promoted by_____hormone:
(A) Aldosterone (B) ADH (C) Testosterone (D) Progesterone

14. Which one of the following is an ectotherm:
(A) Bird (B) Huming bird (C) Amphibian (D) Bat

15. The active conducting portion of wood in older trees is:
(A) Sap wood (B) Heart wood (C) Bark (D) Callus

16. Arthritis is an inflammatory or degenerative disease that damage:
(A) Muscles (B) Brain (C) Joints (D) Kidney

17. The part of brain,which play role in the formation of long term memory is:
(A) Thalamus (B) Hippocampus (C) Amygdala (D) Pons

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

Biology (Essay Type)

Time: 2:40 Hours | Section-I | Marks: 68

2. Write short answers of any eight parts from the following. 2x8=16

i. What is peritonial dialysis?
ii. What is panting?
iii. Differentiate between Poikilotherms and Homeotherms.
iv. What is Ecdysis?
v. Differentiate between Hyaline cartilage and Elastic cartilage.
vi. What is Sciatica?
vii. What is diploid parthenogenesis?
viii. What are fraternal twins?
ix. Write the plants in temperate deciduous Forests.
x. Write a note on profundal zone.
xi. Write a note on Tidal power.
xii. What is reforestation?

3. Write short answers of any eight parts from the following. 2x8=16

i. Define gene linkage.How does gene linkage affect variations among offsprings?
ii. How are transgenic bacteria used to improve plant health?Give two examples.
iii. What are different types of hormones on the basis of chemical nature?
iv. Define food web.How do pathways of food web help to maintain stability of ecosystem?
v. Enlist antibodies found in A,AB,B and O blood groups.
vi. How plant growth is affected by ethene?
vii. Differentiate between Phenotype and genotype with examples.
viii. Write the structural components of limbic system.
ix. Define DNA finger printing.Write its significance.
x. Define habitat and niche.
xi. What is the significance of Transgenic Corn and Soybean?
xii. Define mutualism.Give two examples.

4. Write short answers of any six parts from the following. 2x6=12

i. What are Okazaki fragments?Give their lengths.
ii. What is primitive streak?How is it formed?
iii. Define Transcription and Anticodon.
iv. What is meant by Nucleosome and gene?
v. State Regeneration and dedifferentiation.
vi. Define Interphase.Name its subphases.
viii. Characterize pachytene in Meiosis I.
vii. What are vestigial organs?Give examples as well.
ix. Define genetic drift and hydrothermal vents.

Section - II

8x3=24

NOTE: Answer any three questions from the following.

5. (a) How does osmoregulation take place in terrestrial animals? 4
   (b) What are different components of ecosystem? 4
6. (a) Discuss sliding filament model of Muscle contraction. 4
   (b) Describe the process of transcription. 4
7. (a) Explain Feedback mechanism. 4
   (b) Write a note on importance of forests. 4
8. (a) Describe the types of parthenogenesis in animals. 4
   (b) What is dominance?Explain complete and incomplete dominance with examples. 4
9. (a) Describe in your own words the Growth Correlations in plants. 4
   (b) Describe evidence of evolution from the Comparative Anatomy of animals. 4

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

(For all sessions)

Paper Code	8	4	6	1

Biology (Objective Type)

Time: 20 Minutes **Marks: 17**

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

1.1. The leaves with very small surface area, are found in:
(A) Hydrophytes (B) Mesophytes (C) Xerophytes (D) Sciophytes

2. The compound which take part in urea cycle is:
(A) Adenine (B) Guanine (C) Citrulline (D) Thymine

3. Osteomalacia includes a number of disorders in which bones receive inadequate:
(A) Water (B) Oxygen (C) Blood (D) Minerals

4. Each A-band has a lighter stripe in its mid section called:
(A) A-Zone (B) H-Zone (C) M-Line (D) Z-Line

5. The receptor cells of planaria are sensitive to:
(A) Light and pressure (B) Light, pressure and touch
(C) Touch pressure and chemicals (D) Light, pressure, touch and chemicals

6. In nature P_{730} to P_{680} Conversion occurs in:
(A) Dark (B) Light (C) Morning (D) Evening

7. Lutenizing hormone in human female induces:
(A) Menstruation (B) Menopause (C) Oogenesis (D) Ovulation

8. The branch of biology which deals with the study of abnormal development is:
(A) Morphology (B) Embryology (C) Tetatology (D) Peratology

9. The genetic code for glycine is:
(A) UAG (B) GAU (C) GUA (D) GGU

10. In turner syndrome the affected person have set of chromosomes:
(A) XO (B) XXY (C) XYY (D) XXO

11. The leptotene and zygotene lasts for:
(A) few hours (B) few days (C) few weeks (D) few years

12. The maturity on set diabeles of the young is:
(A) An autosomal recessive trait (B) An autosomal dominant trait
(C) A sex linked trait (D) A sex influenced trait

13. The organisms used as biofillers is:
(A) Transgenic plant (B) Transgenic animal (C) Transgenic bacteria (D) Transgenic virus

14. The floral parts of a flowering plant are
(A) Homologous (B) Analogous (C) Similar (D) Different

15. Mutualism is a type of
(A) Symbiosis (B) Commensalism (C) Parasitism (D) Predation

16. The average rainfall in temperate deciduous forest is between:
(A) 700-2500 m.m (B) 700-800 m.m (C) 700-1000 m.m (D) 700-1500 m.m

17. The two main causes of air pollution are industrialization and:
(A) Automobiles (B) Urbanization (C) Deforestation (D) Overgrazing

Inter (Part-II) A-2019

Roll No. _____ (to be filled in by the candidate) **(For all sessions)**

Biology (Essay Type)

Time: 2:40 Hours **Section - I** **Marks: 68**

2. Write short answers of any eight parts from the following. **2x8=16**

i. Differentiate between pyrexia and pyrogens.

ii What are behavioural adoptations to regulate heat exchange between animals and environment?

iii What are excretophores? Give an example

iv. Define turgor pressure. Give its two functions.

v. What are collenchyma cells? Discuss.

vi. Define nastic movement What is Thermonasty?

vii. Differentiate between Menstrual cycle and Oestrous cycle.

viii. What are test tube babies? Discuss.

ix. Differentiate between climate and weather

x. Discuss productivity of aquatic ecosystem.

xi. Differentiate between herbicides and fungicides.

xii. What is the Ozone layer depletion?

3. Write short answers of any eight parts from the following. **2x8=16**

i. Write commercial application of cytokinns.

ii. What are the functions of oxytocin hormons?

iii Give the role of insuline and glucagon.

iv. Define linkage and give its one disadvantage

v. What do you know about gene and locus?

vi Define Law of segregation.

vii Write down the treatment of cancer through gene therapy.

viii What are bioreactors?

ix. Write two uses of PCR.

x What are root nodules? Give their impotance.

xi. Compare population and community and give their example.

xii Define ammonification and assimilation

4. Write short answers of any six parts from the following. **2x6=12**

i. How aging can be slowed down?

ii. What are metabolic defects? Give one example.

iii. Give the role of mRNA and tRNA in translation.

iv. How do histone and DNA interact with each other in nucleosome.

v. Give two limitations of DNA polymerase III in DNA replication

vi. How does cell death help in development of multicellular organism.

vii. What happens during diplotene stage.

viii. Define genetic drift and give its effect.

ix. Write down the measures for the preservation of endangered species.

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. (a) Describe the structure and function of Nephron **4**

(b) Compare food chain with food web. **4**

6. (a) Discuss the machanism of repair of broken bones. **4**

(b) How did meselson and Stahl show that DNA replication is semiconservative **4**

7. (a) Describe any four functions of Gibberellins. **4**

(b) Define pollution. Write a note on Air or Atomospheric pollution. **4**

8. (a) Compare sexual reproduction with asexual reproduction **4**

(b) Describe the process of sex determination in plants and yeast **4**

9. (a) Write a note on the development of chick upto gastrulation stage **4**

(b) Discuss natural selection and artifical selection. **4**

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

Rawalpindi Board-2018

Paper Code	4	4	6	1

Sessions;2015-2017 & 2016-2018

Biology (Objective Type)

Time: 20 Minutes **Marks: 17**

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

1.1. A dilute solution compared to cell concentration is termed as:
(A) Hypertonic (B) Hypotonic (C) Isotonic (D) Paratonic

2. Number of NH_3 molecules required to produce one molecule of urea is:
(A) 1 (B) 2 (C) 3 (D) 4

3. The bone which provides attachment site for muscles is:
(A) Compact bone (B) Spongy bone (C) Cartilage (D) Hip bone

4. Which one is not a joint disease?
(A) Arthritis (B) Sciatica (C) disc slip (D) Spondylosis

5. Vehicle for transport of male gamete in land plants is:
(A) Water (B) Pollen tube (C) Pollen grain (D) Wind

6. Reproduction is necessary for the survival of:
(A) Individual (B) Species (C) Population (D) Community

7. Apoptosis is:
(A) Division of cells (B) Death of cells by tissue demage
(C) Suicide of cells (D) Weakness of cells

8. Cell cycle involves:
(A) growth of cell (B) replication of DNA
(C) Cell division (D) growth of cell , replication of DNA and cell division

9. Resting membrane potential of a neuron is:
(A) -50mV (B) -60mV (C) -70mV (D) -80mV

10. Optimum temperature for growth of plants is:
(A) 30--40°C (B) 25--30°C (C) 10--20°C (D) 5--10°C

11. Particular array of chromosomes that an individual possesses is called:
(A) Holotype (B) Karyotype (C) Neotype (D) Paratype

12. All the genes found in a breeding population constitute:
(A) genotype (B) Genome (C) Gene frequency (D) Gene pool

13. Primer for PCR contains about:
(A) 05 bases (B) 10--20 bases (C) 30 bases (D) 40 bases

14. Archaebacteria can tolerate temperature:
(A) 45°C (B) 85°C (C) 100°C (D) 120°C

15. Biome is a large:
(A) Simple community (B) Complex community (C) Regional community (D) Climax community

16. Desert ecosystem of Mianwali and Bhakkar is called:
(A) Thal (B) Thar (C) Cholistan (D) Sahara

17. Treasure of all type of resources is:
(A) Weather (B) Climate (C) Environment (D) Water

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

Sessions; 2015-2017 & 2016-2018

Biology (Essay Type)

Time: 2:40 Hours **Marks: 68**

Section - I

2. Write short answers of any eight parts from the following. **2x8=16**

i. What is blubber and in which animals is it found?
ii. Differentiate between osmoregulation and thermoregulation.
iii. What is Pyrexia?
iv. How does digitigrade differ from unguligrade?
v. What is ball and socket joint?
vi. Define remodeling.
vii. Give two examples of short day plant.
viii. Write cause and symptoms of syphilis.
ix. Give types of organisms present in profundal zone.
x. Name different zones of fresh water lakes.
xi. What is fossil fuel?
xii. Define demography.

3. Write short answers of any eight parts from the following. **2x8=16**

i. What is reflex action?
ii. Differentiate between thermoreceptors and nociceptors.
iii. Define succession and give one example
iv. Differentiate between genotype and phenotype.
v. What is a test cross? Who devised it?
vi. Differentiate between co-dominance and over-dominance.
vii. What are restriction enzymes? Who first isolated them?
viii. What are transgenic bacteria?
ix. What is gene therapy? How cancer cells are killed by gene therapy?
x. Differentiate between biosphere and Niche.
xi. What are abiotic components of an ecosystem? Give examples.
xii. Differentiate between action membrane potential and resting membrane potential.

4. Write short answers of any six parts from the following. **2x6=12**

i. Write down the role of temperature as an external factor in plant growth.
ii. What role is played by clear cytoplasm and yellow cytoplasm in animal development?
iii. How many chromosomes are found in sugercane and mouse?
iv. Define translation.
v. What is the difference between R, and S, type of bacteria?
vi. What are the events of S-Phase?
vii. Write down the events of metaphase of mitosis.
viii. How does genetic drift effect the gene frequency?
ix. Write the names of four extinct species of animals in Pakistan.

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. (a) Describe food web in detail. Also draw the diagram. **4**
(b) Describe the process of concentration of excretory products in human nephron. **4**
6. (a) Discuss deformities of skeleton due to genetic and hormonal causes. **4**
(b) Describe Frederick Griffith's experiment. **4**
7. (a) What are receptors? Describe its typ **4**
(b) Describe importance of forests. **4**
8. (a) Write a note on sexually transmitted disease. **4**
(b) Define and discuss Test Cross. **4**
9. (a) Describe role of nucleus in development. **4**
(b) Describe non-random rating and selection as factors affecting gene frequency. **4**