

Roll No. XXXXXXXXXX be filled in by the candidate

(For All Sessions)

Biology (Objective) Rwp-12-1-23 (Group-I)

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
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2. The number of lumbar vertebrae in human is:

(A) Five	(B) Nine	(C) Two	(D) Seven
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3. Bone forming cells are called:

(A) Osteocytes	(B) Osteoclasts	(C) Chondroblasts	(D) Osteoblasts
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4. Sensation of pain is produced by:

(A) Photoreceptors	(B) Nociceptors	(C) Thermo receptors	(D) Chemo receptors
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5. Which of the following do not help in coordination:

(A) Receptors	(B) Effectors	(C) Neuroglia	(D) Neurons
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6. Parthenocarpy is the development of fruit without:

(A) Fertilization	(B) Pollination	(C) Germination	(D) Hormones
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7. The loss of memory and white hairs comes under:

(A) Meratology	(B) Teratology	(C) Regeneration	(D) Gerontology
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8. Which of the following is not non-sense codon:

(A) UGA	(B) AUG	(C) UAG	(D) UAA
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9. Central dogma is used for _____ in all organisms.

(A) Behavioral expression	(B) Gene depression	(C) Necrosis	(D) Gene expression
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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
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11. Which of the following is not hereditary disease:

(A) Diabetes mellitus	(B) Hemophilia	(C) Malaria	(D) Color blindness
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12. In tissue culture enzymes are used to digest the:

(A) Chloroplast	(B) Cell wall	(C) Vacuole	(D) Cell membrane
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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
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14. In certain areas, such as Ecuador forests coverage has reduced by:

(A) 100%	(B) 50%	(C) 30%	(D) 95%
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15. Which is not abiotic component:

(A) Water	(B) Plant	(C) Light	(D) Air
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16. The zone in lake where light is insufficient to support photosynthesis is called:

(A) Profundal	(B) Littoral	(C) Limnetic	(D) Shallow
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17. Stone monuments like "Taj Mahal" are being eroded due to stone cancer by:

(A) Eutrophication	(B) Radiation	(C) Acid rain	(D) Air
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SECTION-I

Rwp-12-1-23

2. Write short answers of any eight parts from the following: (8x2=16)
- Name plasma proteins synthesized by liver. Also write their functions.
 - Differentiate between peritoneal and hemodialysis.
 - Why leaves are said to be excretophores?
 - What are the skeletal deformities because of genetic causes?
 - Draw the labeled diagram of a sarcomere.
 - How can you differentiate between tetany and tetanus?
 - How vernalization is beneficial for plants?
 - Compare oviparous with viviparous.
 - What type of organisms are present in Limnetic zone of a lake ecosystem?
 - How many deserts are in Pakistan? Write their names and location.
 - Why the trees are called environmental buffers?
 - How is ozone layer being depleted?

3. Write short answers of any eight parts from the following: (8x2=16)
- Why AB Blood group is universal recipient?
 - What is the role of recombination frequency?
 - Why Haemophilia A is more common in males than females?
 - What is the role of thyroxine?
 - Differentiate between Meissner's corpuscles and Pacinian corpuscles.
 - What are the Similarities between nervous and chemical coordination?
 - What are the advantages of transgenic Bacteria?
 - How many possible ways to get the gene of interest?
 - Differentiate between ex-vivo and in-vivo gene therapy.
 - Why is a biosphere absent on moon?
 - What is the importance of food web?
 - How succession act as community relay?

4. Write short answers of any six parts from the following: (6x2=12)
- Why is growth pattern in plants called "open growth"?
 - Why is cleavage pattern in chick called "Discoidal Cleavage"?
 - Mention the types of chromosomes depending upon the location of centromere.
 - Define semi-conservative hypothesis of DNA replication.
 - What is the critical change in gene that leads to sickle cell disease?
 - What is mitotic apparatus?
 - Write any two importances of meiosis.
 - What is theory of special creation?
 - Define gene pool.

SECTION-II

- Note Attempt any three questions. Each question carries equal marks: (8x3=24)
- (a) Describe major homeostatic functions of liver. 4
 - (b) What is cell cycle? Diagrammatically mention its different stages. 4
 - (a) Write some major functions of skeletal system. 4
 - (b) Define Xerosere, describe its various stages. 4
 - (a) How is resting membrane potential replaced by action membrane potential across neurolemma? Explain all the factors in this replacement. 4
 - (b) Discuss the evidences of evolution from comparative embryology and molecular biology. 2+2=4
 - (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
 - (a) Describe the phases of growth in plants. 4
 - (b) Explain the importance of transgenic plants. 4

Biology (Objective)

(Group-II)

Rwp-12-2-23

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) Bear (B) Humming bird (C) Duckbilled Platypus (D) Flying 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 μ m (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) Hershey & 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 CO₂ 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

Biology (Subjective)

(For All Sessions)
(GROUP-II)

Time: 2:40 hours

Rwp-12-2-23

SECTION-I

2. Write short answers of any eight parts from the following: (8x2=16)
- Skin does not come within the definition of excretory organ, comment.
 - Differentiate between Endotherms and ectotherms
 - How is Osmoregulation done in Hypotonic and Hypertonic environment?
 - What is difference between tetanus and muscle tetany?
 - What is the role of ATP in muscle fatigue?
 - How is Turgor pressure generated?
 - Define diplohaplontic life cycle.
 - What is the role of non-disjunction in diploid parthenogenesis?
 - Write the names of four major ecosystems on land in Pakistan.
 - Differentiate between phytoplanktons and zooplanktons.
 - What do you know about hydroelectric power?
 - Mention any four ways in which we can save energy.
3. Write short answers of any eight parts from the following: (8x2=16)
- Why birth control pills contain progesterone?
 - How pancreas help humans as an endocrine gland?
 - Why iodine is added into the table salt?
 - How protanopia, deuteranopia and tritanopia are differentiated?
 - What is pleiotropy? Give two examples.
 - Define epistasis and how it is confused with dominance?
 - How genetic engineers produce a salt tolerant plant Arabidopsis?
 - What are transgenic plants?
 - How cancer is treated through gene therapy?
 - How certain fungi are crucial for higher plants in acidic soils?
 - Describe the role played by bacteria in nitrogen cycle.
 - How food web is more stable than food chain?
4. Write short answers of any six parts from the following: (6x2=12)
- Highlight the role of morphogenetic determinant during development of an individual.
 - What is discoidal cleavage?
 - Differentiate between sense strand and antisense strand of DNA
 - How mRNA in eukaryotic cell remain protected from nucleases and phosphatases?
 - Where codon and anticodon are situated?
 - Differentiate between necrosis and apoptosis.
 - How cytokinesis occurs in plants?
 - What are endangered species? Give two examples from Pakistan.
 - What are Hydrothermal vents?

SECTION-II

- Note** Attempt any three questions. Each question carries equal marks: (8x3=24)
- (a) Describe thermal regulatory strategies in mammals including humans in cold temperature. 4
(b) Define Meiosis? Explain Meiotic -- 1st, with diagram. 4
 - (a) Explain appendicular skeleton of mammals. 4
(b) Describe nitrogen cycle. 4
 - (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
 - (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
 - (a) Highlight the role of external environmental factors in controlling the growth in plants. 4