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

(Academic Sessions 2019 – 2021 to 2021 – 2023)

BIOLOGY 223-1st Annual-(INTER PART – II) Time Allowed : 20 Minutes

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

PAPER CODE = 8461 LHR-12-1-23

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	In urea cycle, arginine splits into urea and ornithine by an enzyme :			
	(A) Arginase	(B) Ornithase	(C) Citrulase	(D) Dehydrogenase
2	Which vertebra in reptiles is modified for the rotational movement :			
	(A) Atlas	(B) Thoracic	(C) Axis	(D) Sacral
3	At the place of attachment of leaf with the shoot, a swollen part is called :			
	(A) Pith	(B) Pit	(C) Pulvinus	(D) Cortex
4	Resting membrane potential of a neuron is :			
	(A) – 50 mV	(B) – 70 mV	(C) – 60 mV	(D) – 80 mV
5	Abscisic acid can be sprayed on tree crops to regulate :			
	(A) Leaf drop	(B) Shoot drop	(C) Flower drop	(D) Fruit drop
6	Vehicles for transport of male gamete in land plant is :			
	(A) Pollen tube	(B) Pollen grain	(C) Vacuole	(D) Anther
7	Cell wall becomes thicker and pitted during cell :			
	(A) Maturation	(B) Elongation	(C) Differentiation	(D) Division
8	Copying of mRNA from DNA is called :			
	(A) Transduction	(B) Transdation	(C) Transformation	(D) Transcription
9	DNA polymerase III :			
	(A) Recognizes primer	(B) Constructs primer		
	(C) Initiates DNA replication	(D) Unwinds DNA helix		
10	Down syndrome is :			
	(A) Trisomy 19	(B) Trisomy 18	(C) Trisomy 21	(D) Trisomy 23
11	Bombay phenotype is an example of :			
	(A) Pleiotropy	(B) Epistasis	(C) Probability	(D) Dominance
12	Primer for PCR contains about :			
	(A) 05 – 07 bases	(B) 10 – 20 bases	(C) 25 – 30 bases	(D) 30 – 40 bases
13	One common type of vector is :			
	(A) Plasmid	(B) Chromosome	(C) Lysosome	(D) Mitochondria
14	The ultimate source of all changes is :			
	(A) Genetic drift	(B) Migration	(C) Mutation	(D) Selection
15	Overgrazing may lead to :			
	(A) Tundra	(B) Grassland	(C) Desert	(D) Taiga
16	Scum in eutrophication is formed by :			
	(A) Algae	(B) Fungi	(C) Bacteria	(D) Virus
17	Which of these diseases is caused due to nutritional deficiency :			
	(A) Diphtheria	(B) Arteriosclerosis	(C) Scurvy	(D) Osteoarthritis

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(Academic Sessions 2019 – 2021 to 2021 – 2023)

BIOLOGY 223-1st Annual-(INTER PART – II) Time Allowed : 2.40 hours

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

SECTION – I LHR-12-1-23

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

(i) What is counter current multiplier mechanism?
(ii) Define excretophores. Give their functions.
(iii) Give the role of pyrogens.
(iv) What is negative geotropism? Give at least one example.
(v) Write the composition of procuticle.
(vi) Give the structure of sarcoplasmic reticulum.
(vii) What is ovoviviparity? Give an example.
(viii) Draw and label the diagram of C.S. of seminiferous tubule.
(ix) What is difference between climate and weather?
(x) What is grassland ecosystem? Give at least one example.
(xi) Define soil.
(xii) Draw the flow chart showing the formation of ASH and CO_2 from dead plants.

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

(i) Define nerve impulse.
(ii) Define nociceptors.
(iii) What do you know about cretinism?
(iv) How can you protect the baby against Rh^- incompatibility?
(v) What is MODY?
(vi) In birds, the female is heterogametic. How?
(vii) Write down two practical uses of DNA finger printing.
(viii) Discuss any two benefits of transgenic bacteria to promote health in plants.
(ix) Define and give examples of ex-vivo and in-vivo gene therapy.
(x) What are biogeochemical cycles?
(xi) Discuss role of decomposers in ecosystem.
(xii) Define food chain. Write an example.

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

(i) How light plays important role in plant growth?
(ii) Into how many layers mesoderm splits and also define the coelom?
(iii) In what way mutation causes sickle cell disease?
(iv) Why replication always take place in 5′ → 3′ direction?
(v) What do you know about Okazaki fragments?
(vi) Compare mitosis with meiosis.
(vii) Write symptoms of Down's syndrome.
(viii) Differentiate between homologous and analogous organs.
(ix) What are vestigial organs? Give one example.

SECTION – II

Note : Attempt any THREE questions.

5. (a) What is Renal failure? Describe its cure. 4
   (b) What is cancer? Give its causes and effects. 4
6. (a) Define joints. How are they classified? Explain. 4
   (b) Define succession. Explain xerosere in detail. 4
7. (a) What is active membrane potential? Explain its major causing factors. Also draw a graph that shows changes in membrane potential from resting to active membrane potential. 4
   (b) Define Hardy-Weinberg theorem. Also explain the Hardy-Weinberg equations for calculating the frequencies of alleles and genotypes in populations at equilibrium. 4
8. (a) Explain the birth of twins in human beings. 4
   (b) Describe the assortment of alleles of two contrasting pairs of traits when followed in the same cross by giving one example. 4
9. (a) What is growth? Discuss different conditions for growth. 4
   (b) Define gene therapy, explain in which diseases ex-vivo gene therapy are needed. 4

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(Academic Sessions 2019 – 2021 to 2021 – 2023)

IOLOGY 223-1st Annual-(INTER PART – II) Time Allowed : 20 Minutes

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

PAPER CODE = 8464 L1H2-12-7-23

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	Hair end organs : (A) Receive deep pressure stimulus (B) Receive touch stimulus (C) Are located in the limbs (D) Are sensitive for vibration sense
2	During the replication process of DNA, the lagging strand : (A) Replicates towards replication fork (B) Is synthesized by DNA ligase (C) Replicates away from replication fork (D) Replicates continuously
3	Lamarckism means : (A) To calculate the gene frequency (B) Inheritance of acquired traits (C) Descent with modification (D) Natural selection and adaptation
4	Which one is a degenerative disease : (A) Scurvy (B) Kwashiorkor (C) Beriberi (D) Arteriosclerosis
5	The central cavity of the kidney where urine is collected is called : (A) Bowman's capsule (B) Vasa recta (C) Pelvis (D) Renal medulla
6	EcoR1 is : (A) Used in PCR (B) Used in reverse transcription (C) A viral enzyme (D) A restriction enzyme
7	Most of the increase in the thickness of stem is caused by : (A) Secondary xylem (B) Secondary phloem (C) Cork (D) Bark
8	Which of these dominance relations is characterized by the intermediate phenotype of heterozygote between the phenotypes of two homozygotes : (A) Complete dominance (B) Over dominance (C) Partial dominance (D) Co-dominance
9	A grassland present in temperate climate is called : (A) Prairies (B) Taiga (C) Savanna (D) Alpine grassland
10	Intercalary meristems in plants get separated from apical meristems by : (A) Permanent tissue (B) Cork tissue (C) Vascular cambium (D) Cork cambium
11	Which of these exist in xylem as solid bundles : (A) Collenchyma (B) Fibers (C) Sclereides (D) Vessels
12	According to Erwin Chargaff : (A) A + T = C + G (B) A + G = C + T (C) A + C = G + T (D) C + T = A + T
13	Alternating diploid sporophyte with haploid gametophyte generation in plants is called : (A) Diplontic life cycle (B) Haplontic life cycle (C) Diplohaplontic life cycle (D) Haplodiplontic life cycle
14	G-2 of interphase : (A) Lasts for 90 minutes (B) Is post mitotic phase (C) Is pre mitotic phase (D) Is characterized by DNA synthesis
15	Which of these plant hormones inhibits the growth of root and stem during physiological stress : (A) Auxin (B) Cytokinin (C) Gibberellins (D) Abscisic acid
16	A probe is used : (A) As restriction enzyme (B) In gene therapy (C) To search genomic library (D) For the treatment of cystic fibrosis
17	Succession starting in pond is called : (A) Halosere (B) Hydrosere (C) Xerosere (D) Derosere

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BIOLOGY 223-1st Annual-(INTER PART – II) Time Allowed : 2.40 hours

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

SECTION – I CHR-12-2-23

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

(i) What are heat shock proteins? Give their role.
(ii) How are animals able to do osmoregulation in hypotonic environment?
(iii) Define homeostasis. Give components of homeostatic control system.
(iv) Write name of regions of vertebral column with number of vertebrae.
(v) Define remolding.
(vi) How does digitigrade differ from unguligrade?
(vii) Write cause and symptoms of syphilis.
(viii) What do you mean by fruit set and fruit ripening?
(ix) Name two common animals and two plants of temperate deciduous forests.
(x) Differentiate between coniferous alpine and boreal forests.
(xi) Define non-renewable resources. Give one example.
(xii) How environment is a source essential to maintain life?

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

(i) Define coordination. Give its types in animals.
(ii) Give only two commercial uses of Gibberellins.
(iii) Write the distribution of pain and cold receptors on animal body.
(iv) Give the relationship between the terms gene and locus.
(v) What do you understand by over-dominance?
(vi) Write the pattern of inheritance of sex influenced traits.
(vii) What are restriction endonucleases? Give their functions.
(viii) Give the biotechnological uses of bacteria in mining.
(ix) What is gene therapy? Write at least one example.
(x) Write difference between habitat and niche.
(xi) Define climax community with one example.
(xii) Give the significance of predation.

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

(i) What is grey crescent? Give its role.
(ii) How can aging be slowed down?
(iii) How do histone and DNA interact with each other in chromosome?
(iv) What is transforming principle?
(v) How is initiation complex formed in translation?
(vi) In what respect mitosis in plants differ from that of animal cell?
(vii) Differentiate between benign and malignant tumor.
(viii) State endosymbiont hypothesis with example.
(ix) What is meant by " Modern Synthesis"?

SECTION – II

Note : Attempt any THREE questions.

5. (a) Discuss osmoregulation in plants for their survival. 4
   (b) Define cell cycle and also give a detailed account of phases of interphase. 4

6. (a) Highlight the main points of that model which explains the muscle contraction. 4
   (b) Discuss important steps of nitrogen cycle. 4

7. (a) Describe the location, secretion and roles of thyroid gland. 4
   (b) State and explain Hardy-Weinberg theorem. 4

8. (a) Give details of menstrual cycle in human females. 4
   (b) Define law of independent assortment. Explain it with an example. 4

9. (a) What are growth correlations? Explain Apical Dominance, its removal and its applications. 4
   (b) Explain the methodology to carried out DNA finger-printing. 4