MODEL PAPER OF BIOLOGY GRADE-12

Maximum Marks: 17 **Time Allowed: 20 mins.**

Objective Part

Q. 1: 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 ink pen in the answer book. Cutting or filling two or more circles will result in zero mark in that question. **(1 × 17 = 17)**

	MCQs	(A)	(B)	(C)	(D)
i.	Positive feedback loops are less common because they:	Are slow	Destabilize the system	Use no effectors	Never stop
ii.	Efferent arterioles of juxtamedullary nephrons give rise to:	Peritubular venules	Afferent arterioles	Vasa recta	Interlobular arteries
iii.	Nissl's granules are mainly composed of:	Mitochondria	Ribosomes and RER	Golgi bodies	Lysosomes
iv.	Sodium–potassium pump moves:	2 Na^+ in, 3 K^+ out	3 Na^+ in, 2 K^+ out	2 K^+ in, 3 Na^+ out	3 K^+ in, 2 Na^+ out
v.	Releasing hormones from hypothalamus reach the anterior pituitary through:	nerve fibers	lymph vessels	blood vessels	synapses
vi.	LH stimulates:	Sertoli cells	Germ cells	Leydig cells	Epididymis
vii.	Crossing over may alter expected ratios by:	preventing segregation	creating linkage breaks	increasing dominance	reducing fertilization
viii.	A woman is a carrier for hemophilia. What percentage of her sons may inherit the disease?	25%	50%	75%	100%

ix.	Okazaki fragments are joined by:	Helicase	Ligase	Primase	Gyrase
x.	GC hairpin structure mainly functions to:	Start transcription	Stop RNA polymerase	Repair DNA	Translate protein
xi.	Which vector is specially designed for large DNA fragments?	BAC	tRNA	mRNA	Operon
xii.	Most reliable method to confirm gene presence is:	Antibiotic test	Blue-white screening	DNA hybridization	Microscopy
xiii.	Why are natural TILs often ineffective against malignant melanoma?	They cannot divide	Tumor suppresses immune response	They lack nuclei	They produce antibodies only
xiv.	Primary reservoir of sedimentary cycles is:	Atmosphere	Oceans	Earth's crust	Biosphere
xv.	The first step in drugs discovery is;	Lead optimization	Preclinical Testing	Target identification	Hit identification
xvi.	Changes in gene frequency due to migration of individuals are called;	Genetic drift	Mutation	Gene flow	Genetic recombination
xvii.	Which group of bacteria is involved in nitrification?	Azotobacter	Nitrosomonas	Clostridium	Rhizobium

Subjective Part

Time Allowed: 2.40 Hrs. **Maximum Marks: 68**

(Section-I)

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

i. Enlist the structural / anatomical adaptations to reduce water loss in terrestrial animals.

ii. What are the physiological adaptations to reduce water loss in terrestrial animals?

iii. Why is thermoregulation important for animals?

iv. Differentiate the two types of nephrons.

v. What is glomerular filtration?

vi. How does ADH relate to Diabetes Insipidus?

vii. Why does DNA have a strong affinity for histone proteins?

viii. Evaluate Griffith's hypothesis about the role of the polysaccharide coat in virulence.

ix. What is a pulse-chase experiment?

x. What is meant by a palindromic sequence in restriction sites?

xi. How the vector turns into recombinant vector?

xii. Differentiate between blue colonies and white colonies in blue-white screening.

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

i. Define neuroglia. Write its function.

ii. Name any two excitatory neurotransmitters and state where they act.

iii. What are the functions of Luteinizing Hormone (LH)?

iv. What is myxedema? What are its symptoms?

v. Name the accessory glands of male reproductive system and their functions.

vi. Why do primary oocytes remain inactive for many years in females?

vii. Justify why O-negative individuals are called universal donors and AB-positive individuals are called universal recipients.

viii. Write brief note on Y-linked inheritance in humans.

ix. How can gene linkage and its frequency be detected?

x. What is Se gene? Where it is located?

xi. Differentiate between Natural selection and neutral selection.

xii. State Hardy-Weinberg theorem.

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

i. How does respiratory tract provide first line defence?

ii. How does the membrane-attack complex (MAC) destroy microbes?

iii. Differentiate between polyclonal and monoclonal antibodies.

iv. Differentiate between antiviral and antiretrovirals drugs.

v. Write a mode of Tetracycline action?

vi. Explain how penicillin kills bacteria.

vii. Write note on ammonification.

viii. Explain how energy is lost between trophic levels in an ecosystem.

ix. Design a simple strategy to protect agriculture from climate change impacts.

(SECTION – II)

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

Q. 5: (a) Classify the animals on the bases of the ability to thermoregulate. 4

(b) Explain the flow of energy in successive trophic levels. 4

Q. 6: (a) Describe how the counter-current mechanism helps regulate urine concentration. 4

(b) Explain the theory of natural selection as proposed by Darwin. 4

Q. 7: (a) Explain the events and propagation of action potential. 4

(b) How do inflammatory response act as non-specific response to infections? 4

Q. 8: (a) State the names of the hormones secreted by thyroid gland. Write the function of each hormone. 4

(b) Explain the steps of polymerase chain reaction (PCR). 4

Q. 9: (a) Describe the events of a menstrual cycle. 4

(b) Explain the experimental work conducted by Griffith that demonstrated that DNA is the hereditary material. 4

List of Excluded Practicals for Biology Grade-11

- Use of graticule and micrometer to study stomata and cells.
- Measuring the size of primary, secondary cell walls and middle lamella by micrometry
- Demonstration of the evolution of CO_2 from leaf discs placed in dark and light, with the help of indicator (hydrogen carbonate).

List of Excluded Practicals for Biology Grade-12

- Examination of the prepared slides of histology of ovaries and drawing its structures.