FIRST YEAR HIGHER SECONDARY MODEL EXAMINATION– FEBRUARY - 2024

126

PART – III

BIOLOGY (BOTANY & ZOOLOGY)

SCORING KEY (UNOFFICIAL)

	PART -A BOTANY	
Qn. No.	**Scoring indicators**	**Marks**
	PART - I	
	Answer any 3 questions from 1 – 4. Each carry 1 score	
1.	Phyllotaxy.	1
2.	c / Biosynthesis of glucose.	1
3.	Leucoplast.	1
4.	a / Gemmae.	1
	PART - II	
	Answer any 9 questions from 5 – 15. Each carry 2 scores	
5.	a) Plant growth promoters are involved in growth promoting activities of plants, such as cell division, cell enlargement, tropic growth, flowering, fruiting and seed formation. b) Auxins / gibberellins / cytokinins. (Any two example)	1 + 1 =2
6.	a) The compounds that are oxidised during respiration are known as respiratory substrates b) Carbohydrates.	½ + 1½ =2
7.	a) Bryophytes. b) They can live in soil but are dependent on water for sexual reproduction.	1 + 1 = 2
8.	a) Ethylene. b) Ethylene action increases the respiration rate during fruit ripening. This rise in rate of respiration is called respiratory climactic.	1 + 1 = 2

<table>
<tr><th>Qn. No.</th><th>Scoring indicators</th><th>Marks</th></tr>
<tr><td>9.</td><td>a) Cells that do not divide exit G_1 phase and enter into an inactive quiescent stage called (G_0). / Cells that enter into G_0 stage remain metabolically active but does not undergo division.
b) DNA synthesis / DNA replication.</td><td>1 + 1 = 2</td></tr>
<tr><td>10.</td><td>Used in polishing.
Used for filtration of oils and syrups.</td><td>1 + 1 = 2</td></tr>
<tr><td>11.</td><td>a) According to the law if a chemical process is affected by more than one factor, then its rate will be determined by the factor which is nearest to its minimal value.

Internal Factors - Number, size, age and orientation of leaves / mesophyll cells and chloroplasts / internal CO_2 concentration / the amount of chlorophyll.
(Any two factors)</td><td>1 + 1 = 2</td></tr>
<tr><td>12.</td><td><table><tr><th>METAPHASE</th><th>ANAPHASE</th></tr><tr><td>• Spindle fibers attach to kinetochores of chromosomes.
• Chromosomes are moved to spindle equator and get aligned along metaphase plate.</td><td>• Centromeres split and chromatids separate.
• Chromatids move to opposite poles.</td></tr></table>(Any two difference)</td><td>½ x 4 = 2</td></tr>
<tr><td>13.</td><td><table><tr><th>STEM</th><th>ROOT</th></tr><tr><td>Conjoint vascular bundles.
Endarch xylem.</td><td>Radial vascular bundles.
Exarch xylem.</td></tr></table></td><td>½ x 4 =2</td></tr>
<tr><td>14.</td><td>a) The oxygenation activity of RuBisCO leading to the production of one molecule of phosphoglycerate and one molecule of phosphoglycolate in C_3 plants is called photorespiration.
b) C_4 plants have a mechanism that increases the concentration of CO_2 at the action site of RuBisCO or bundle sheath cell. / The decarboxylation of C4 acid in the bundle sheath cells to release CO_2. / In C_4 plants the RuBisCO functions as a carboxylase minimising the oxygenase activity.</td><td>1 + 1 = 2</td></tr>
<tr><td>15.</td><td>a) Open vascular bundle- Cambium present in between xylem and phloem / It can produce secondary xylem and phloem tissues.
b) Closed vascular bundle – Cambium absent in between xylem and phloem / Secondary xylem and secondary phloem tissues cannot be produced.
(Any one point in each)</td><td>1 + 1 = 2</td></tr>
</table>

PART – III

Answer any 3 questions from 16 – 19. Each carry 3 scores

16.

a) A – Metacentric B – Sub metacentric C – Acrocentric D – Telocentric.

b) Few chromosomes have non-staining secondary constrictions that gives the appearance of a small fragment called the satellite.

2 + 1 = 3

17.

(a) – The ratio of the volume of CO2 evolved to the volume of O2 consumed in respiration is called Respiratory quotient.

Or

$$R.Q = \frac{\text{Volume of } CO_2 \text{ evolved}}{\text{Volume of } O_2 \text{ consumed}}$$

b) 1 or One

1+1+1= 3

18.

a) – Arrangement of ovules within the ovary.

b) – (1) – Marginal placentation.

(2) – Axile placentation.

(3) – Parietal placentation.

(4) – Free central placentation.

1 + 2 = 3

19.

Light reaction	Dark reaction
• Photochemical phase. • ATP and NADPH are produced. • Takes place in grana.	• Biosynthetic phase. • ATP and NADPH are utilized. • Take place in stroma.

1 +1 +1 = 3

	PART -B **ZOOLOGY**	
Qn. No.	Scoring indicators	Marks
	PART - I	
	Answer any 3 questions from 1 – 6. Each carry 1 score	
1.	Carolus Linnaeus	1
2.	Ichthyophis.	1
3.	Lyases	1
4.	Corpus luteum.	1
5.	Tetany.	1
	PART – II	
	Answer any 9 questions from 6 – 16. Each carry 2 scores	
6.	A) – Coelenterata /Cnidaria B) – Chondrichtyes C) – Acoelomate (First pair relationship not clear) D) – Mollusca.	½ x 4 =2
7.	a) – Pristis/Saw fish. b) – Class – Chondrichthyes. c) – All are marine fishes / They have cartilaginous endoskeleton / Mouth is ventral / Gill slits separate without operculum / Skin contains placoid scales / Air bladder absent. (Any two characters)	½ + ½ + 1 =2
8.	Yes. In vertebrata, notochord is present in the embryonic stage. It is replaced by bony vertebral column in adult stage. / In protochordates (Urochordata and Cephalochordata) only notochord is present, vertebral column absent.	½ + 1½ = 2
9.	(i) – Non-protein component of the enzyme is called cofactor. (ii) – 1. Prosthetic group Tightly bound organic molecules Eg:- Haem in peroxidase 2. Co-enzyme Transiently bound organic molecules Eg:- NAD or NADP 3. Metallic ion Inorganic ions Eg:- Zn^{2+}, Cu^{2+} (Any 2 types of co-factor example or explanation give 2 score)	½ x 4 =2

<table>
<tr><th>Qn. No.</th><th>Scoring indicators</th><th>Marks</th></tr>
<tr><td>10.</td><td><table><tr><th>Ammonotelic</th><th>Uricotelic</th></tr><tr><td>Bony fishes
Aquatic amphibians</td><td>Birds
Reptiles</td></tr></table></td><td>½ x 4 =2</td></tr>
<tr><td>11.</td><td>a) A – Adenine / Purine.
B – Uracil / Pyrimidine.
b) Adenosine
Uridine.</td><td>½ x 4 =2</td></tr>
<tr><td>12.</td><td>SA node → AV node → Bundle of His → Purkinje fibers → Ventricles.</td><td>½ x 4 =2</td></tr>
<tr><td>13.</td><td><table><tr><th>A</th><th>B</th></tr><tr><td>Neutrophil</td><td>Phagocytic</td></tr><tr><td>Basophil</td><td>Secrete histamine, serotonin</td></tr><tr><td>Eosinophil</td><td>Allergic reaction of body</td></tr><tr><td>Lymphocyte</td><td>Immune response of body</td></tr></table></td><td>½ x 4 =2</td></tr>
<tr><td>14.</td><td>a) A – Actin
B – Myosin
b) A – ‘F’ actin / ‘G’ (Globular) actin/ Troponin / tropomyosin
B – Heavy meromyosin (HMM) / light meromyosin (LMM).
(Any one subunit in each)</td><td>½ x 4 =2</td></tr>
<tr><td>15.</td><td>a) A – Hormone-receptor complex.
B – Genome / DNA.
b) Cortisol / testosterone / estradiol / progesterone.
(Any two hormones)</td><td>½ x 4 =2</td></tr>
<tr><td>16.</td><td>(a) – Yes. The frog excretes urea and thus is a ureotelic animal.
(b) – Summer sleep is called aestivation and winter sleep is called hibernation.</td><td>½ x 4 =2</td></tr>
<tr><td></td><td>PART – III</td><td></td></tr>
<tr><td colspan="3">Answer any 3 questions from 17 – 20. Each carry 3 scores</td></tr>
<tr><th>Qn. No.</th><th>Scoring indicators</th><th>Marks</th></tr>
<tr><td>17.</td><td>i) – A
ii) – Aschelminthes.
iii) – Write the name of one animal belong to phylum Porifera or Coelenterata or Ctenophora or Platyhelminthes</td><td>1+1+1 = 3</td></tr>
</table>

Qn. No.	Scoring indicators	Marks
18.	(a) Oxygen dissociation curve (b) Partial pressure of O_2 / Partial pressure of CO_2 / H^+ ion concentration / Temperature. (Any two factors) (c) It is useful in studying the effect of factors like PCO_2, H^+ ion concentration etc., on binding of O_2 with haemoglobin.	1+1+1 =3
19.	**Glomerular filtration / Ultrafiltration** Water and dissolved component of blood filter out from glomerulus. GFR- Glomerular filtration rate 125ml/minute. **Tubular reabsorption** Selective reabsorption of nutrients and ions from renal tubules. 99 percentage of the filtrate is reabsorbed. **Tubular secretion** Active secretion of some substances from the renal tubule into the peritubular capillaries.	2 + 1 =3
20.	a) Dura mater, arachnoid and pia mater. b) A– It maintain the potential difference across the neurolemma / sodium-potassium pump transports 3 Na^+ outwards for 2 K^+ into the neuron / Help in generation and transmission of nerve impulse. B – Control body temperature / urge for eating and drinking / secrete hormones C – Control respiration / cardiovascular reflexes / gastric secretions. (Any one function)	2 + 1 = 3