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FIRST YEAR HIGHER SECONDARY EXAMINATION – SEPTEMBER - 2021

PART – III

BIOLOGY (BOTANY & ZOOLOGY)

SCORING KEY (UNOFFICIAL)

PART -A

BOTANY

Qn. No.	Scoring indicators	Marks

PART - I

1.	Mycorrhiza	1
2.	S phase / S / Synthesis phase	1
3.	Ethylene / Ethephon	1
4.	Bisexual	1
5.	*Nitrosomonas / Nitrococcus / Nitrobacter* (Any one bacterial name)	1
6.	Yeast / *Saccharomyces*	1

PART - II

7. (a) Green algae
(b) Phaeophyceae
(c) Red algae
(d) Mannitol / Laminarin — ½ x 4 = 2

8. Reticulate , Parallel — 1 + 1 =2

9.

Column A	Column B
Sub-stages of Meiosis I	**Events**
(i) Diakinesis	(d) Terminalisation of chiasmata
(ii) Zygotene	(c) Synapsis
(iii) Pachytene	(b) Crossing over
(iv) Diplotene	(a) Formation of chiasmata

i – (d) ii – (c) iii – (b) iv – (a) — ½ x 4 =2

10. Mitochondria produce cellular energy in the form of ATP, hence they are called power house of the cell. — 2

11. Transport of materials / Help in cell division / Cell growth / Secretion
(Any two relevant points) — 1 + 1 = 2

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Qn. No.	Scoring indicators	Marks
12.	(a) Trapping the light energy and synthesis of ATP and NADPH during photosynthesis is called light reaction. Or Light reaction include light absorption, water splitting, oxygen release and formation of high energy rich molecules such as ATP and NADPH. (b) Grana / Membranous system of chloroplast / thylakoids.	1 + 1 = 2
13.	(a) Kranz anatomy (b) Maize , Sorghum	1 + 1 = 2
14.	Lag phase / Exponential phase / Stationary phase (Any two points)	1 + 1 = 2
15.	Splitting of water (Photolysis of water) / Release of oxygen / Synthesis of NADPH Synthesis of ATP (Photophosphorylation) (Any two points)	1 + 1 = 2
16.	Apoplast pathway Symplast pathway	1 + 1 = 2
17.	Cell wall formation / DNA replication and distribution to daughter cells / help in cell respiration / Secretion / Increase the surface area of the plasma membrane and enzymatic content. (Any two points)	1 + 1 = 2
18.	(a) Carboxylation, Reduction and regeneration (b) Sucrose / Starch	1 + 1 = 2
19.	(a) *Gelidium / Gracilaria* (b) Used to grow microbes / Preparation of ice creams and jellies.	1 + 1 = 2

20.

Endarch	Exarch
• Protoxylem lies towards the centre or pith • Metaxylem lies towards the periphery • Present in stem	• Protoxylem lies towards the periphery • Metaxylem lies towards the centre or pith • Present in root

(Any two differences) 1 + 1 = 2

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Qn. No.	Scoring indicators	Marks
21.	(a) Radial (b) Conjoint open	1 + 1 = 2

22.

Heartwood	Sapwood
• The central hard durable and resistant wood • It contain dead element with lignified wall • It provide mechanical support • It does not conduct water.	• The peripheral region of secondary xylem • It is lighter in color • Involved in conduction • It is less durable wood

1 + 1 = 2

23. Ethanol and CO_2 — 1 + 1 = 2

24. (a) Antiport
(b) Symport

1 + 1 = 2

PART – III

25.

Aerobic respiration	Anaerobic respiration
• Respiration occur in the presence of oxygen. • Complete oxidation of substrate occur. • CO_2, H_2O and ATP are produced. • Occur in cytoplasm • High energy output	• Respiration occur in the absence of oxygen. • Partial oxidation of substrate occur. • Ethanol / Lactic acid and less amount of ATP is produced. • Occur in cytoplasm and mitochondria • Low energy output
OR Summerised equation for aerobic and anaerobic respiration 2 scores	

(Any two differences)

1 + 2 = 3

26. (a) Fabaceae
(b) zygomorphic / bisexual / 5 sepals / gamosepalous / 5 petals / papilionaceous corolla / vexillary aestivation / 10 stamens / diadelphous / hypogynous / ovary superior / monocarpellary / marginal placentation.

(Any two characters) 1 + 2 =3

27. (a) Metaphase
(b) Spindle fibers attach to the kinetochore of chromosomes.
Chromosomes are aligned along the metaphase plate
Chromosomes aligned at equator
Metaphase plate

(Any two characters) 1 + 2 = 3

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Qn. No.	Scoring indicators	Marks

28. The element must be absolutely necessary for supporting growth and reproduction.
The requirement of the element must be specific and not replaceable by another element.
The element must be directly involved in metabolism.

1+1+1= 3

29. (a) Respiratory quotient (RQ) is the ratio of carbon dioxide production to oxygen consumption during a respiratory process.

Or

$$RQ = \frac{\text{Volume of carbondioxide evolved}}{\text{Volume of oxygen consumed}}$$

(b) 1

2 + 1 = 3

30.

	Name of plant growth regulators	Functions
1	Auxin	(a) / (b) Apical dominance Initiate rooting in stem cutting
2	Giberelline	(c) / (d) Internode elongation of sugarcane Bolting
3	Cytokinin	(e) / (f) Promotes cell division Overcome apical dominance

(a) / (b) - (iv) / (v)
(c) / (d) - (i) / (iii)
(e) / (f) - (ii) / (vi)

½ x 6 = 3

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PART – B
ZOOLOGY

Qn. No.	Scoring indicators	Marks

PART – I

1. Lub : Closure of bicuspid and tricuspid valve
Dub : Closure of semilunar valve
[Lab? in question (Spelling error)] ½+½ = 1

2. (a) Cnidoblast / Cnidocytes / Stinging cell
(b) Used for anchorage / defense / capture of food (Any one point in each) ½+½ = 1

3. (a) Corpus callosum
(b) corpora quadrigemina ½+½ = 1
(a) മലയാളം ചോദ്യത്തിൽ 'ഘടകം' ?

4. Emphysema 1

5. Cardiac tissue : Intercalated disc
Ommatidia : Sense organ ½+½ = 1

6. Effect of temperature on enzyme action / Enzyme activity is low at low and high temperature / Enzyme activity is maximum at optimum temperature 1
(Any one relevant point)

PART – II

7. (a) Vasopressin / ADH (anti-diuretic hormone)
(b) **Hyper secretion of thyroid hormone**
[Grave's ? (Spelling error) / Not a deficiency disorder]
(c) Thyroid hormone / Thyroxine / T_4 / T_3
[Cretincism (Spelling error)?]
(d) Insulin ½ x 4 =2

8. (a) Ball and socket joint , hinge joint, pivot joint, gliding joint, saddle joint
OR
Between humerus and pectoral girdle, knee joint, between atlas and axis, between carpals, between carpals and metacarpals
(b) Actin, myosin
Troponin, tropomyosin, F actin, G actin, Meromyosin
(Any one point in each) 1 + 1 = 2
(Synovial joint type or example not specified & Different types of proteins are present)

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9. Diphyodont – Two sets of teeth develops during life time.
Or Milk teeth & Permanent teeth
Heterodont – Four different types of teeths are present.
Or Incisors, canine, premolars and molars

1 + 1 = 2

10. (a) Dioecious / Sexual dimorphism
(b)

Male Cockroach	Female Cockroach
• Male is smaller • In male abdomen is narrow • Anal style is present	• Female is slightly larger • In female abdomen is broad • Anal style is absent

(Any one difference)

1 + 1 = 2

11. (a) Decrease reabsorption of water / Reabsorption of Na and water from distal part of tubule / Increase blood pressure / Increase GFR
(b) Adrenal gland / Adrenal cortex
(c) Pituitary gland / Neurohypophysis / Hypothalamus
(d) Increases the reabsorption of water / Prevent diuresis

(Activity question from Teacher text SCERT)

½ x4 = 2

12. (a) Radula
(b) Bioluminescence
(c) Metagenesis
(d) Pneumatic

½ x4 = 2

13. Index to plant species found in an area – Flora
Specialised garden with collection of living plants – Botanical Gardens
Collection of preserved plants and animals – Museum
Information of any one Taxon – Monograph

ഷഡ്ഭുജങ്ങളെ നക്ഷത്രങ്ങളുമായി ചേരുംപടി എന്നത് ആശയക്കുഴപ്പം സൃഷ്ടിക്കും

½ x 4 =2

14. (A) Hepatic caeca or Gastric caeca – Secrete digestive juice
(B) Malpighian tubules - Removal of excretory product / Excretion

1 + 1 = 2

15. Proximal convoluted tubule → Henle's loop → Distal Convoluted tubule → Collecting duct

½ x 4 =2

16. (a) Mucosa
(b) Sub-mucosa
(c) Lumen
(d) Serosa

(Full score for correct response irrespective of correct order ?)

½ x 4 =2

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Qn. No.	Scoring indicators	Marks

17.

Fore limb	Hind limb
Humerus Carpals	Tibia Fibula

Or

Fore limb – Humerus , Carpals

Hind limb – Tibia Fibula

(Arrange correctly without heading full score ?)

1 + 1 = 2

18. (a) Adrenaline and Noradrenalin / Epinephrine and Norepinephrine / Emergency hormones.
(b) Emergency hormones / Hormones of Fight or flight / Catecholamines.
(c) Adrenal gland / Adrenal medulla
(d) Above the Kidney / Anterior part of each kidney

½ x 4 =2

19. (a) A. SA Node / SAN / Sino-atrial node
B. AV Node / AVN / Atrio-ventricular node
(b) SA node
It is responsible for initiating and maintaining the rhythmic contractile activity of heart.

(Figure not from SCERT text)

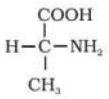
1 + 1 = 2

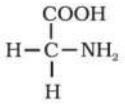
20. Spongilla – Phylum Porifera
Ctenoplana – Phylum Ctenophora
Laccifer – Phylum Arthropoda
Calotes – Class Reptilia

[Ctenoplasa (Spelling error) in question ?]

½ x4 = 2

21.

(a) 

(b) 

[അലനീൻ ? എന്ന് മലയാളം ചോദ്യത്തിൽ / ഘടന വരയ്ക്കാൻ ചോദിക്കാറില്ല]

1 + 1 = 2

22. Signal from CNS → Release of Acetylcholine at the Neuromuscular junction→ Generation of Action potential in the Sarcolemma→ Release of Ca^{++} ions in the Sarcoplasm → Binding of Ca^{++} ions with the troponin → Active site of actin exposes → Myosin binds to the exposed active sites of actin → Formation of crossbridge.

(Any four correct sequence full score)

½ x4 = 2

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Qn. No.	Scoring indicators	Marks

23. (A) Shark / Chondrichthyes / cartilage fishes
(B) Catla / Osteichthyes / Bony fishes

Chondrichthyes	Osteichthyes
• All are marine fishes • They have cartilaginous endoskeleton • Mouth is ventral • Gill slits separate without operculum • Air bladder absent	• It include both marine and fresh water fishes • They have bony endoskeleton • Mouth is terminal • Four pair of gills covered by operculum • Air bladder present

Any two differences full score

(Class identification not asked)

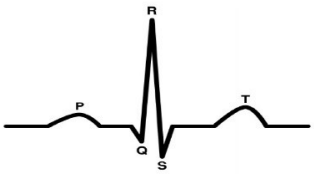
1 + 1 = 2

24. (a) Hydra
(b) Shark
(c) Spongilla
(d) Star fish

½ x4 = 2

PART – III

25. (a) It is an instrument used to record the activities of heart \ The graphical representation of electrical activity of heart during cardiac cycle .

(b) 

P wave – Depolarisation or electrical excitation of atria / Contraction of atria.
QRS wave – Depolarisation or electrical excitation of Ventricles / Contraction of ventricles
T wave – Repolarisation of ventricles / relaxation of ventricle

[(b) വരയ്ക്കാൻ ചോദിക്കാറില്ല]

1+ 2 = 3

26. (a) Apoenzyme
(b) Prosthetic Group – Eg :-Haem
Metal ion – Zinc of Carboxypeptidase
Co-enzymes – NAD, NADP
(c) Catalytic activity is lost.

1+1+1=3

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Qn. No.	Scoring indicators	Marks
27.	(a) Ctenophora – Comb plates? (b) Echinodermata – Endoskeleton of Calcareous ossicles / Spiny bodied (c) Mammalia – Presence of milk producing glands / Mammary glands (d) Chordata – Presence of notochord (e) Annelida – Metamerism / body surface marked out into segments (f) Arthropoda – Jointed Appendages **(In SCERT text reason responsible for group name is give to (b), (e) & (f) only)** **(ചോദ്യത്തിൽ താഴെ തന്നിരിക്കുന്ന ജീവികൾ ?എന്നാൽ ക്ലാസ് /ഫൈലം പേരാണ് തന്നിരിക്കുന്നത്)**	½ x6 =3
28.	(a) Oxygen dissociation curve (b) Partial pressure of O_2, Partial pressure of CO_2, H^+ ion concentration, Temperature. (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
29.	(a) Receptor → Afferent neuron → Inter neuron in spinal cord → Motor neuron → Effector organ b. Knee jerk reflex or any other example.	2 + 1 =3
30.	Tight junction – help to prevent leakage of material across tissues. Adhering junction – Keep neighboring cell together. Gap junction – Provide connection between cytoplasm & help in transfer of materials. **(Name and comment on the different type of cell functions make confusion)**	1+1+1=3