



INDIAN SCHOOL AL WADI AL KABIR

FINAL EXAM (2025- 26) ANSWER KEY

SET I

CLASS XI

BIOLOGY

Section-A

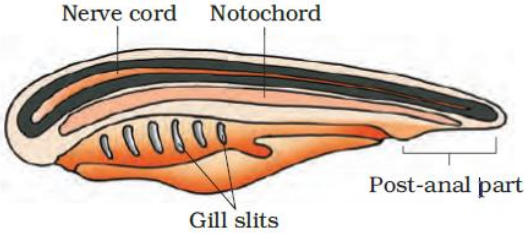
| Q.No. | Questions | Marks |
|-----------|--|-------|
| 1. | C. Plasmogamy, Karyogamy and meiosis | 1 |
| 1 | D. Gymnosperm | 1 |
| 3. | C. A.-(iv), B- (i), C.-(ii), D.-(iii) | 1 |
| 4. | B. Proteins embedded in phospholipid bilayer | 1 |
| 5. | D. Both A and C | 1 |
| 6. | D.A.- Action spectrum, B.- Absorption spectrum (Chlorophyll a) | 1 |
| 7. | B. Cytochrome a ₃ | 1 |
| 8. | A. Glyceraldehyde 3- phosphate is the electron donor and acetaldehyde is the electron acceptor | 1 |
| 9. | C. Renal pyramids | 1 |
| 10. | D. Deficiency of iodine in our diet | 1 |
| 11. | B. Calcium | 1 |
| 12. | C. Somatic neural system | 1 |
| 13. | a) Both A and R are true and R is the correct explanation of A. | 1 |
| 14. | b) Both A and R are true and R is not the correct explanation of A. | 1 |
| 15. | b) Both A and R are true and R is not the correct explanation of A. | 1 |
| 16. | a) Both A and R are true and R is the correct explanation of A. | 1 |
| Section-B | | |

| | | |
|-----|---|-----|
| 17. | A taxon is a formally recognized, named group of organisms at any rank in a biological classification system, representing a unit of scientific classification (e.g., species, genus, kingdom). Examples at different levels include Kingdom: Animalia, Phylum: Chordata, Class: Mammalia, and Species: <i>Homo sapiens</i> . | 1+1 |
| | <p style="text-align: center;">OR</p> <p>the system of <u>nomenclature</u> in which two terms are used to denote a species of living <u>organism</u>, the first one indicating the genus and the second the specific <u>epithet</u>.</p> <ul style="list-style-type: none"> • The scientific name should be italicized in printed form and if handwritten, it should be underlined separately. • The generic name's (Genus) first alphabet should be in uppercase. • The specific name (species) should be in lowercase. • The scientific names of any two organisms are not similar. | |
| 18. | <p>Plant: <i>Marchantia</i></p> <p>a: Archegoniophore (female reproductive stalk with umbrella-like head)</p> <p>b: Thallus/gemma cup</p> <p>Part C: Rhizoids</p> <p>Hair-like, unicellular structures present on the ventral surface of the thallus, Help in anchorage of the plant to the substratum, Also aid in absorption of water and minerals</p> <p style="text-align: center;">OR</p> <p>A. Fucus B. Dictyota</p> <p>Holdfast:</p> <p>Anchors the thallus firmly to the rock or substratum, preventing the plant from being washed away by water currents.</p> <p>Stipe:</p> <p>Acts like a stalk; it supports the frond and helps in conduction of nutrients and water between the holdfast and the blade.</p> | 2 |
| 19. | <p>Frogs are cold-blooded (ectothermic) animals, so they cannot regulate their body temperature.</p> <ul style="list-style-type: none"> • During extreme summer: Frogs go into aestivation (summer sleep) to avoid dehydration and excessive heat. • During extreme winter: Frogs undergo hibernation (winter sleep) to protect themselves from very low temperatures and reduced metabolic activity. | 1+1 |
| 20. | <p>i. Glomerular filtrate is the initial fluid formed in the Bowman's capsule during ultrafiltration of blood. It contains Water, Salts , Glucose, amino acids while urine is a concentrated solution of nitrogenous wastes and</p> | 1+1 |

| | | |
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| | <p>excess salts.</p> <p>ii. Most aquatic animals (like fishes) primarily excrete ammonia (NH₃). Ammonia is highly toxic, but it is very soluble in water. Aquatic animals live in water, so ammonia can diffuse rapidly into the surrounding water, preventing its accumulation in the body. This type of excretion is called ammoniotelic.</p> <p style="text-align: center;">OR</p> <p>i. Podocytes are specialized epithelial cells of the Bowman's capsule in the nephron of the kidney. They wrap around the glomerular capillaries and form filtration slits that help in ultrafiltration of blood.</p> <p>ii. The JGA helps in maintaining blood pressure, blood volume, and filtration efficiency of the kidney.</p> | |
| 21. | <p>i. Red muscle fibers work for prolonged periods because they are rich in mitochondria, myoglobin, and capillaries, allowing for efficient aerobic respiration and high fatigue resistance. Conversely, white muscle fibers possess less myoglobin and mitochondria, relying on anaerobic glycolysis, which leads to rapid lactic acid accumulation and fatigue.</p> <p>ii. Amoeboid Movement: Macrophages, leukocytes (white blood cells). Ciliary Movement: Ciliated epithelium (e.g., in the trachea/respiratory tract, Fallopian tubes).</p> | 1+1 |

| Section-C | | |
|-----------|--|-------|
| 22. | <p>i. Vascular Tissue: <u>Bryophytes</u> (e.g., mosses) are non-vascular, lacking xylem and phloem, whereas <u>Pteridophytes</u> (e.g., ferns) are vascular plants that possess xylem and phloem for transport.</p> <p>Dominant Phase: In bryophytes, the main, independent plant body is the haploid gametophyte. In contrast, the main plant body of a pteridophyte is the diploid sporophyte, which is differentiated into true roots, stems, and leaves.</p> <p>ii. Gymnosperms are considered a heterosporous group because they produce two distinct types of spores—<u>microspores</u> and <u>megaspores</u>—which differ in size and function.</p> | 1+1+1 |
| 23. | <p>Based on the position of calyx, corolla and androecium in respect of the ovary on thalamus, the flowers are described as hypogynous, Perigynous and epigynous. In the hypogynous flower the gynoecium occupies the highest position while the other parts are situated below it. The ovary in such flowers is said to be superior, e.g., mustard, China rose and brinjal. If gynoecium is situated in the centre and other parts of the flower are located on the rim of the thalamus almost at the</p> | 1+1+1 |

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| | same level, it is called perigynous. The ovary here is said to be half inferior, e.g., plum, rose, peach. In epigynous flowers, the margin of thalamus grows upward enclosing the ovary completely and getting fused with it, the other parts of flower arise above the ovary. | |
| 24. | <ul style="list-style-type: none"> i. The cell that is arrested in the diplotene phase for months or years is the primary oocyte in female vertebrates, including mammals. This prolonged arrest occurs during Prophase I of meiosis, where the cells remain until ovulation, when hormonal signals resume meiosis. ii. Diakinesis (end of prophase I) , Metaphase I , Anaphase I, Telophase I and Cytokinesis | 2+1 |
| 25. | <ul style="list-style-type: none"> i. Type of leaf: Monocot leaf, Modified epidermal cells: Bulliform cells ii. Bulliform cells help the leaf fold or roll during water stress, reducing the surface area exposed to air. This minimizes transpiration, thus conserving water in xerophytic plants. iii. Any two difference | 1+1+1 |
| 26. | <ul style="list-style-type: none"> i. The partial pressure of a gas is the pressure exerted by that particular gas in a mixture of gases. ii. The volume of air in the respiratory system that does not take part in gas exchange. iii. Air left in the lungs after maximum forceful expiration. This is called the residual volume (RV). | 2+1 |
| 27. | <ul style="list-style-type: none"> i. The inner parts of cerebral hemispheres and a group of associated deep structures like amygdala, hippocampus, etc., form a complex structure called the limbic lobe or limbic system. Along with the hypothalamus, it is involved in the regulation of sexual behaviour, expression of emotional reactions (e.g., excitement, pleasure, rage and fear), and motivation. ii. A canal which passes through midbrain → Cerebral aqueduct A tract of nerve fibres that connect the hemisphere → Corpus callosum Two pairs of round lobes are present at the dorsal portion of midbrain- corpora quadrigemina. The layer of cells which covers the cerebral hemisphere- cerebral cortex. | 1+2 |
| 28. | <ul style="list-style-type: none"> i. Lymph is a colourless fluid containing specialised lymphocytes which are responsible for the immune responses of the body. Lymph is found in lymphatic vessels, which are part of the lymphatic system. ii. Injury triggers a reaction in the blood vessel, and activates platelets (specialised blood cell fragments) and clotting factors (specific proteins) in the blood, which work together to slow and stop the bleeding. A clot is formed over the damaged area, which the body will naturally dissolve when the injury has healed. Fibrins are formed by the conversion of inactive fibrinogens in the plasma by the enzyme thrombin. Thrombin, in | 1+2 |

| | | | | | | | | | | | |
|-----------|---|----------------------------|---------|---------|-------|---------------|---------|-----------|-----------------|-------------|-------------------------------------|
| | <p>turn are formed from another inactive substance present in the plasma called prothrombin. An enzyme complex, thrombokinase, is required for the above reaction. This complex is formed by a series of linked enzymic reactions</p> | | | | | | | | | | |
| 29. | <p>A. An incomplete digestive system is a type of gastrovascular cavity characterized by having a single opening that functions as both the mouth (for ingestion) and the anus (for egestion)</p> <div style="text-align: center;">  <p>The diagram shows a longitudinal section of a chordate. At the top, a dark, hollow nerve cord is shown. Below it is a rod-like notochord. Further down, a series of vertical gill slits are visible. At the posterior end, there is a tail-like structure labeled as the post-anal part.</p> </div> <p>B.</p> <p>C. Differences (any two):</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Feature</td> <td style="width: 50%;">Aurelia</td> <td style="width: 50%;">Adamsia</td> </tr> <tr> <td>Habit</td> <td>Free-swimming</td> <td>Sessile</td> </tr> <tr> <td>Body form</td> <td>Umbrella-shaped</td> <td>Cylindrical</td> </tr> </table> <p style="text-align: center;">OR</p> <p>D. All vertebrates possess chordate features such as notochord (in embryonic stage), dorsal hollow nerve cord and pharyngeal gill slits, hence they are chordates. However, some chordates lack a vertebral column, therefore all chordates are not vertebrates.</p> | Feature | Aurelia | Adamsia | Habit | Free-swimming | Sessile | Body form | Umbrella-shaped | Cylindrical | <p>1</p> <p>1</p> <p>1</p> <p>1</p> |
| Feature | Aurelia | Adamsia | | | | | | | | | |
| Habit | Free-swimming | Sessile | | | | | | | | | |
| Body form | Umbrella-shaped | Cylindrical | | | | | | | | | |
| 30. | <p>A. Thyroid hormones regulate the basal metabolic rate. Deficiency of these hormones lowers metabolism, reducing energy production, leading to fatigue, weight gain and cold intolerance.</p> <p>B. Thyrocalcitonin lowers blood calcium levels by promoting deposition of calcium in bones and inhibiting bone resorption.</p> <p>C. Adult women: . In adult women, hypothyroidism may cause menstrual cycle to become irregular. Pregnant women: Cretinism in child</p> <p style="text-align: center;">OR</p> <p>D. The disorder is Graves' disease. It is caused by excessive secretion of thyroid hormones resulting in increased metabolic rate.</p> | <p>1</p> <p>1</p> <p>2</p> | | | | | | | | | |
| 31. | <p>A.</p> <p>i. Non-cyclic photophosphorylation involves both PS I and PS II, producing ATP, NADPH and oxygen. It is called non-cyclic because electrons do not return to the original chlorophyll molecule.</p> <p>ii. Cyclic photophosphorylation produces only ATP, while non-cyclic photophosphorylation produces ATP, NADPH and oxygen.</p> | <p>3</p> | | | | | | | | | |

iii.

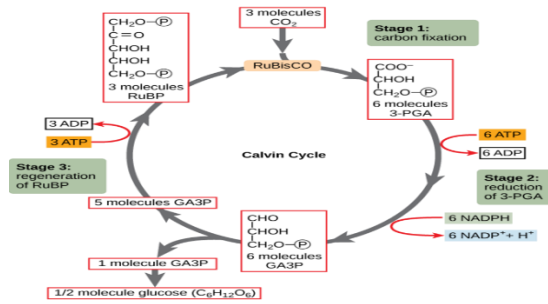
a)

- PS I: P700
- PS II: P680

b) Chlorophyll a absorbs blue-violet light, while chlorophyll b absorbs red-blue light.

OR

B.



i.

(Neat labelled diagram showing carboxylation, reduction and regeneration)

ii. Observe the diagram and answer the following:

- C₄ plants
- Oxaloacetic acid (OAA)
- Mesophyll cell – PEP carboxylase
Bundle sheath cell – RuBisCO
- Kranz anatomy is the special arrangement of bundle sheath cells surrounding vascular bundles in C₄ plants.

32.

A.

i. Complete the flow chart and indicate ATP usage at step D.

- A: Glucose-6-phosphate
- B: Fructose-1,6-bisphosphate
- C: Dihydroxyacetone phosphate
- D: ATP is used

ii.

It prevents sudden loss of energy and allows efficient ATP synthesis.

iii.

RQ is the ratio of CO₂ released to O₂ consumed during respiration.

RQ for fats is 0.7.

2

2

OR

B.

i. Give the schematic representation of Krebs cycle.
(Neat labelled diagram)

ii.

Total ATP yield in aerobic respiration

| Stage | ATP |
|---------------|---------------|
| Glycolysis | 8 |
| Link reaction | 6 |
| Krebs' cycle | 24 |
| Total | 38 ATP |

A total of 38 ATP molecules are produced per glucose molecule.

iii.

Complex III is cytochrome bc₁ complex. It transfers electrons from ubiquinol to cytochrome c.

33.

A.

i.

- a) Gibberellins
- b) Cytokinins
- c) Gibberellins
- d) Abscisic acid

ii.

Bolting is rapid elongation of internodes in rosette plants. It is caused by gibberellins.

iii.

Plants show continuous growth and differentiation due to the presence of meristematic tissues.

OR

B.

i.

Absolute growth rate is total increase in size. Relative growth rate is growth per

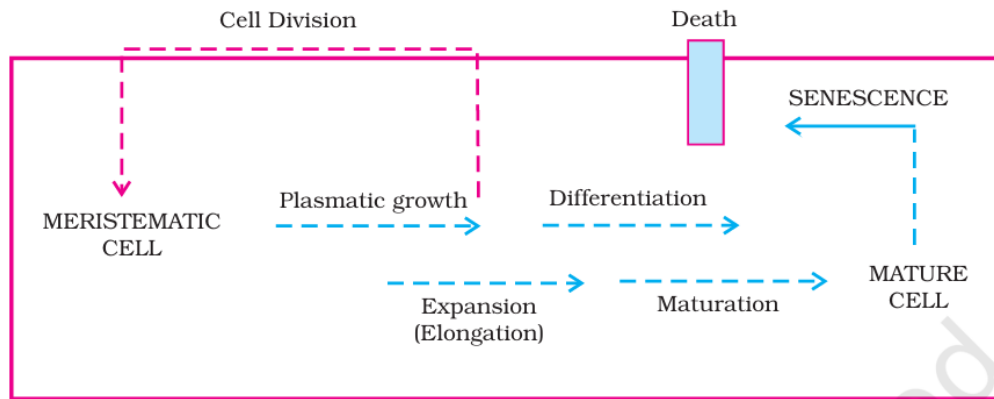
2

unit size.

ii.

Smaller leaf shows a higher relative growth rate as the increase is proportionally greater.

iii.



Development includes growth, differentiation and maturation of plant cells.

iv.

Plasticity is the ability of plants to change form in response to the environment.

Example: Heterophylly in cotton.