Please check the examination details below before entering your candidate information

Candidate Name	Class	Section

BLOOM Biology Olympiad (BBO)

Question Paper 2024-25

Class 11

Total Questions: **50+5** (Tie-Breaking Section)

Total Time Allotted : 60 minutes

Total Marks : 60

Instructions

1. There are **50 Multiple Choice Questions** in this booklet having 4 options out of which **ONLY ONE** is correct.
2. There are two sections in the Question Paper; **Section A** having 40 Questions carrying 1 Mark each & **Section B** having 10 Higher Difficulty Order Questions carrying 2 Marks each.
3. All questions are compulsory. There is **NO negative** marking for incorrect answers.
4. Total time allotted to complete the paper is 60 minutes.
5. Please fill in your details in the space provided on this page before attempting the paper.

OMR Sheet Instructions

1. Before starting the paper, fill in all the details in the OMR Sheet.
2. Additional 10 minutes will be provided to fill up the OMR sheet, before the start of the exam.
3. Use HB Pencil to darken the circle of the correct Option in OMR sheet. The correct way to darken the circle in OMR sheet is shown below.

4. Use black or blue ball point pen/HB pencil to fill the information in the OMR sheet. Partially filled OMR sheet will not be checked.
5. Return the OMR sheet to the invigilator after the exam.

Code#170

B11

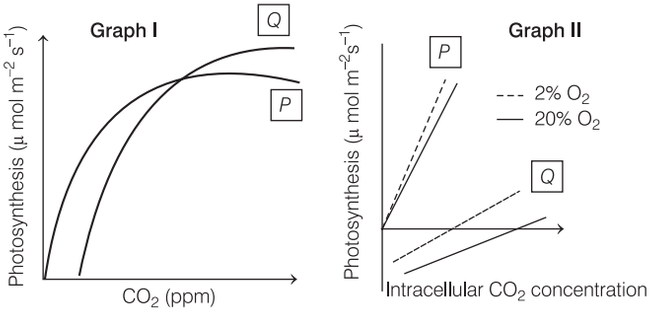
BLOOM CAP
Founded by | arihant

Section A (1 Mark)

1. A specimen is given to a biology student in which the asexual reproduction takes place by motile zoospores or non-motile aplanospores produced endogenously in sporangium. Which of the following feature is related to given specimen?

(a) They are commonly called sac fungi
(b) Their mycelium is branched and septate
(c) They can be saprophytes as well as obligatory parasites
(d) Karyogamy and meiosis takes place inside the basidium

2. A researcher was studying photosynthesis in two species of photoautotrophic diatoms P and Q. The efficiency of photosynthesis in terms of uptake of CO_2 was determined with increasing ambient CO_2 concentration (Graph I) and increasing intercellular CO_2 concentration at two different concentrations of O_2 (Graph II). Based on these experimental findings, diatoms *P* and *Q* respectively possess ..... and ..... pathway of photosynthesis.



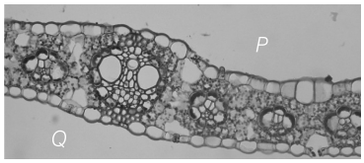
(a) C_3 and C_4
(b) C_4 and C_3
(c) C_3 and CAM
(d) C_4 and CAM

3. A gland X located on the dorsal side of forebrain, secretes a hormone that plays an important role in the regulation of diurnal rhythm of our body. While, the gland Y located at the anterior part of kidney, secretes hormone in response to stress and in emergency situations.

Identify X and Y from the options given below.

	X	Y
(a)	pituitary	pancreas
(b)	pineal	adrenal
(c)	hypothalamus	parathyroid
(d)	pituitary	thymus

4. Amit found a permanent slide in an old cupboard of his school laboratory. As the corner of the slide was broken, the label was incomplete. He could only read 'TS of….' . He started observing the slide under the microscope. He observed the section as shown in the picture below.



Based on his observations, state which of the following statement(s) is/are true?

I. It is a transverse section of a floating hydrophytic leaf.
II. The epidermal region towards '*P*' can be considered as the adaxial side.
III. The plant must be monocotyledonous.
IV. If water dries up, the leaf will curl downwards towards '*Q*'.
V. There is no prominent mid-vein present in this leaf.

Select the correct option.

(a) II only (b) I and IV
(c) II and III (d) III, IV and V

5. Which of the following is the correct pair?

(a) *Polysiphonia*- Floridean starch, phycoerythrin
(b) *Volvox*- Mannitol, chlorophyll-*a* and *b*
(c) *Dictyota*- Starch, fucoxanthin
(d) *Ectocarpus*-Floridean starch, fucoxanthin

6. Which of the following statement is correct?

(a) Some of the organisms can fix atmospheric nitrogen in specialised cells called sheath cells
(b) Fusion of two cells is called karyogamy
(c) Fusion of protoplasms between two motile or non-motile gametes is called plasmogamy
(d) Organisms that depend on living plants are called saprophytes

7. Which of the following statement correctly categorises the symmetry of the animals mentioned?

(a) Sponges exhibit radial symmetry, while coelenterates, ctenophores and echinoderms are asymmetrical and annelids and arthropods show bilateral symmetry.
(b) Sponges are asymmetrical, coelenterates, ctenophores and echinoderms display radial symmetry and annelids and arthropods exhibit bilateral symmetry.

(c) Coelenterates and echinoderms are asymmetrical, sponges exhibit radial symmetry and annelids and arthropods have bilateral symmetry.

(d) All animals mentioned, including sponges, coelenterates, ctenophores, echinoderms, annelids and arthropods, show bilateral symmetry.

8. A cell is treated with an enzyme that inhibits citrate synthase. What is the primary metabolic consequence of this inhibition?

(a) Increased production of ATP due to the accumulation of citric acid.

(b) Accumulation of acetyl Co-A and decreased production of downstream TCA cycle intermediates.

(c) Enhanced conversion of Oxaloacetic Acid (OAA) into alpha-ketoglutarate, leading to increased NADH levels.

(d) Increased conversion of succinyl Co-A to succinate, resulting in elevated levels of GTP.

9. All living members of the class X are ectoparasites on some fishes. They have an elongated body bearing 6-15 pairs of gill slits for respiration. They have a sucking and circular mouth without jaws and their body is devoid of scales and paired fins. The examples of species belonging to the class X includes

(a) *Petromyzon, Pristis* (b) *Myxine, Petromyzon*

(c) *Trygon, Myxine* (d) *Scoliodon, Pristis*

10. In a cell, solute A is actively transported into the cell against its concentration gradient using ATP, while solute B diffuses into the cell along its concentration gradient. Which of the following correctly describes the transport processes?

(a) Solute A moves *via* facilitated diffusion and solute B moves *via* active transport

(b) Solute A moves *via* active transport and solute B moves *via* simple diffusion

(c) Solute A moves *via* simple diffusion and solute B moves *via* facilitated diffusion

(d) Solute A and solute B both move *via* passive transport mechanisms

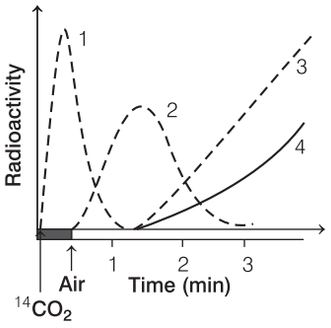
11. Match the Column I with Column II.

	Column I		Column II
A.	A pair of leaves arise at a node and form a whorl.	1	*Hibiscus*
B.	More than two leaves arise at a node and form a whorl	2.	*Calotropis*
C.	A single leaf arise at each node in an alternate manner	3.	*Alstonia*

Choose the correct answer from the options given below.

	A	B	C			A	B	C
(a)	3	1	2		(b)	2	1	3
(c)	1	3	2		(d)	2	3	1

12. Appearance of ^{14}C containing compounds during photosynthesis in a sugarcane plant are depicted in the graph.



1, 2, 3 and 4 respectively represent

(a) 3-phosphoglyceric acid, malic acid, starch, sucrose.

(b) Malic acid, 3-phosphoglyceric acid, sucrose, starch.

(c) Malic acid, 3-phosphoglyceric acid, starch, sucrose.

(d) 3-phosphoglyceric acid, malic acid, sucrose, starch

13. Which of the following is a characteristic feature of mitochondria?

(a) It can be lens-shaped, oval, spherical, discoid or even ribbon-like having variable length.

(b) They are composed of Ribonucleic Acid (RNA) and proteins and are not surrounded by any membrane.

(c) The matrix possesses single circular DNA molecule, a few RNA molecules, ribosomes (70S) and the components required for the synthesis of proteins.

(d) It is the membrane-bound space found in the cytoplasm. It contains water, sap, excretory product and other materials not useful for the cell.

14. During the process of blood clotting, an enzyme complex known as thrombokinase plays a crucial role. Which of the following statement accurately describes the sequence of events leading to the formation of a blood clot?

(a) Fibrinogen is converted into fibrin directly by thrombin without the need for thrombokinase

(b) Prothrombin is converted into thrombin by thrombokinase, the thrombin then converts fibrinogen into fibrin

(c) Thrombokinase directly converts fibrinogen into fibrin, bypassing the need for thrombin

(d) Thrombin acts to directly convert prothrombin into thrombokinase, the prothrombin then converts fibrinogen into fibrin

15. The beginning of *A* is recognised by the dissolution of the *B* and the tendency of the recombined homologous chromosomes of the bivalents to separate from each other except at the sites of cross overs. These X-shaped structures, are called *C*.

Choose the option that fills in the space correctly.

(a) diplotene, chiasmata, synaptonemal complex

(b) leptotene, synaptonemal complex, diplotene

(c) diplotene, synaptonemal complex, chiasmata

(d) pachytene, synaptonemal complex, chiasmata

16. Identify the vertebrate group of animals characterised by crop and gizzard in its digestive system.

(a) Aves (b) Reptilia
(c) Amphibia (d) Osteichthyes

17. Which of the following statements about the frog's anatomy is true?

(a) The vascular system of frog is well-developed closed type.
(b) It has three chambers, two ventricle and one atrium and is covered by a membrane called pericardium.
(c) Ten pairs of cranial nerves arises from the frog's brain.
(d) It has a lymphatic system that consists of lymph, lymph channels and lymph nodes.

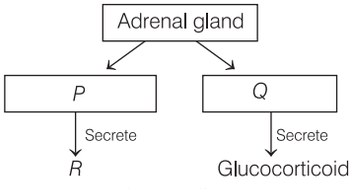
18. Harshad accidentally found a slide of a preserved plant specimen without a label. He placed the slide under a compound microscope to identify the specimen. He observed the following features.

I. Multicellular structure.
II. Outermost periderm.
III. Primary xylem tetrarch.
IV. Primary vascular tissues widely separated due to the activity of cambium.
V. Primary xylem showing metaxylem elements at the center.

The specimen most likely represents

(a) young dicot stem (b) mature dicot root
(c) young monocot stem (d) mature monocot root

19. Choose the incorrect option for the flowchart given below.

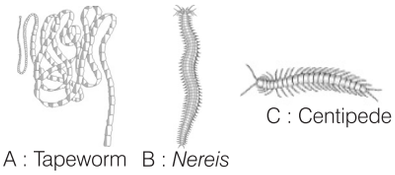


(a) *P* represents adrenal medulla
(b) *R* increase alertness, pupillary dilation and piloerection
(c) *R* is known as emergency hormone
(d) Secretion of hormone from *P* is under the control of ACTH

20. Assume a thylakoid which is somehow punctured, so that the interior of the thylakoid is no longer separated from the stroma. This damage will have the most direct effect on which of the following processes?

(a) Splitting of water
(b) Absorption of light energy by chlorophyll
(c) Flow of electrons from photosystem-II to photosystem-I
(d) Synthesis of ATP

21. The figures depict representative illustrations of three categories of animals with segmented bodies.



Which of these animal/s show metameric segmentation?

(a) B only (b) A and B
(c) B and C (d) A and C

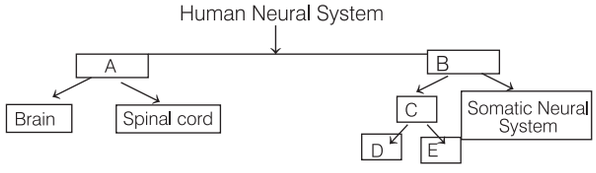
22. Match the Column I with Column II.

	Column I		Column II
A.	Family	1.	Angiospermae
B.	Order	2.	Dicotyledonae
C.	Class	3.	Sapindales
D.	Division	4.	Anacardiaceae

Choose the correct option.

	A	B	C	D		A	B	C	D
(a)	4	3	2	1	(b)	1	2	3	4
(c)	4	3	1	2	(d)	1	3	2	4

23. The diagram given below is the functional organisation of the human nervous system. Identify A, B, C, D and E in the figure.



(a) A-PNS, B-CNS, C-ANS, D-Sympathetic nervous system, E-Parasympathetic nervous system
(b) A-ANS, B-CNS, C-PNS, D-Sympathetic nervous system, E-Parasympathetic nervous system
(c) A-CNS, B-PNS, C-ANS, D-Sympathetic nervous system, E-Parasympathetic nervous system
(d) A-ANS, B-PNS, C-CNS, D-Sympathetic nervous system, E-Parasympathetic nervous system

24. In which of the following groups of organisms, the mesoderm is present as scattered pouches in between the ectoderm and endoderm?

(a) *Ancylostoma, Wuchereria*
(b) *Pheretima, Hirudinaria*
(c) *Pleurobrachia, Ctenoplana*
(d) *Taenia, Fasciola*

25. Which of the following condition promotes the release of oxygen from oxyhaemoglobin?

(a) High pO_2, low pCO_2, low H^+ concentration and lower temperature
(b) Low pO_2, high pCO_2, high H^+ concentration and higher temperature

(c) High pO_2, high pCO_2, low H^+ concentration and high temperature

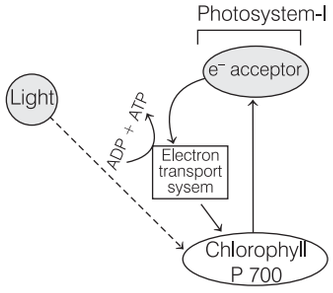
(d) Low pO_2, low pCO_2, high H^+ concentration and low temperature

26. The nuclear membrane disappears during cell division. After completion of cell division, it re-appears during the interphase. Which of the following contributes towards formation of the nuclear membrane?

(a) Spindle fibre proteins (b) Cytoskeletal elements

(c) Endoplasmic reticulum (d) Golgi bodies

27. Study the photosynthetic pathway given below. A few statements are made about this pathway. Choose the appropriate one.



(a) The pathway represents the cyclic phosphorylation that occurs in plants and algae.

(b) The pathway represents the anoxygenic photosynthesis that is found in bacteria.

(c) The pathway indicates photosynthesis of cyanobacteria, but is erroneous as it does not show synthesis of NADPH.

(d) The pathway indicates cyclic photosynthesis involving photosystem-I and II that is found in plants as well as bacteria

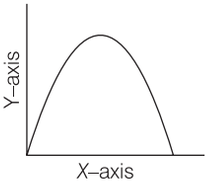
28. Match the Column I with Column II.

	Column I		Column II
A.	Proximal convoluted tubule	1.	It plays a significant role in the maintenance of high osmolarity of medullary interstitial fluid.
B.	Henle's loop	2.	It is lined by simple cuboidal brush border epithelium which increases the surface area for reabsorption.
C.	Distal convoluted tubule	3.	It extends from the cortex of the kidney to the inner parts of the medulla.
D.	Collecting duct	4.	It involves the conditional reabsorption of Na^+ and water.

	A	B	C	D
(a)	1	4	3	2
(c)	1	2	4	3

	A	B	C	D
(b)	2	4	1	3
(d)	2	1	4	3

29. The curve given here shows the enzymatic activity with relation to three conditions (pH, temperature and substrate concentration). What do the axes, X and Y represent?



(a) X-axis -Substrate concentration, Y-axis - Enzyme activity

(b) X-axis - Enzyme activity, Y-axis - Temperature

(c) X-axis - Enzyme activity, Y-axis - pH

(d) X-axis - Temperature, Y-axis - Enzyme activity

30. In a plant where mature vascular tissues are damaged and new tissues start forming from previously differentiated cells, which process is primarily responsible for this regeneration?

(a) Differentiation, where previously differentiated cells revert to a meristematic state and then form new tissues.

(b) Dedifferentiation, where mature cells lose their specialised functions and regain the ability to divide, leading to the formation of new tissues.

(c) Specialisation, where new tissues are formed directly from undifferentiated cells without any change in the differentiated cells.

(d) Redifferentiation, where previously differentiated cells transform into different specialised cell types directly, bypassing any meristematic stage.

31. Consider an organelle with the following features.

1. It forms a continuous network with the outer membrane of the nuclear envelope.
2. It is involved in post-translational modification and folding of proteins.
3. It contains ribosomes on its cytoplasmic surface, making it appear rough.
4. It does not participate in lipid synthesis or detoxification.

Which of the following correctly identifies this organelle?

(a) Rough Endoplasmic Reticulum (RER)

(b) Smooth Endoplasmic Reticulum (SER)

(c) Golgi apparatus

(d) Nucleolus

32. In a plant, the young flowers are located at the tip of the inflorescence while the mature flowers are positioned towards the base. Which of the following correctly describes this type of inflorescence and its flowering sequence?

(a) Racemose inflorescence: Flowers mature sequentially from the base to the tip in an acropetal order

(b) Cymose inflorescence: Flowers mature sequentially from the tip to the base in a basipetal order

(c) Spicate inflorescence: Flowers develop in a continuous sequence from the base to the tip with no specific order

(d) Head inflorescence: Flowers are arranged in a compact cluster at the base, with the youngest at the centre

33. Body having meshwork of cells, internal cavities lined with food filtering flagellated cells and indirect development are the characteristics of phylum

(a) Coelenterata (b) Porifera
(c) Mollusca (d) Protozoa

34. Kinesin-5 motors are tetrameric motors that bind to anti-parallel microtubules and slide them apart. The microtubules in a mitotic spindle can be divided into three groups (i) kinetochore microtubules, (ii) astral microtubules and (iii) interpolar microtubules.

During mitosis, kinesin-5 is most likely to be present on ..... microtubules and is expected to play a crucial role during ..... . Choose the correct option to complete the given statement.

(a) kinetochore and prophase
(b) interpolar and anaphase
(c) astral and anaphase
(d) interpolar and metaphase

35. Which of the following feature is common to both cnidarians and platyhelminthes?

(a) Absence of organ system
(b) Self-fertilisation
(c) Digestive system with a single opening
(d) Ability to absorb nutrients across their body wall

36. A joint X is present between the humerus and the pectoral girdle. Which of the following characteristic is related to this joint?

(a) It is characterised by the presence of a fluid filled synovial cavity between the articulating surfaces of the two bones.
(b) The bones involved are joined together with the help of cartilages.
(c) The bones involved fuse end-to-end with the help of dense fibrous connective tissues.
(d) It only permits limited movements.

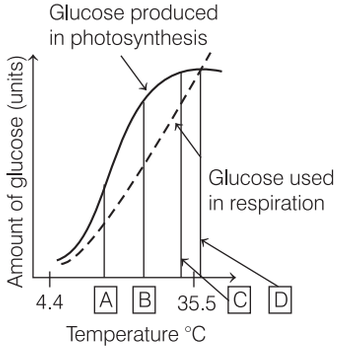
37. Which one of the following statement is correct?

(a) The seed in grasses is not endospermic
(b) Mango is a parthenocarpic fruit
(c) A proteinaceous aleurone layer is present in maize grain
(d) A sterile pistil is called a staminode

38. Choose on incorrect statement about meiosis.

(a) Meiosis ensures the conservation of the specific chromosome number of each species across generations, despite reducing the chromosome number by half.
(b) Meiosis results in increased genetic variability in the population of organisms from one generation to the next.
(c) Variations caused by meiosis are not significant for the process of evolution.
(d) Meiosis creates four genetically unique cells from an original cell.

39. Photosynthesis results in the production of glucose in plants which is then utilised for plant growth. Growth of a plant at different temperatures is shown in the graph. Given all other conditions are the same, at what temperature will the plant grow the fastest?



(a) A (b) B
(c) C (d) D

40. Which of the following statement(s) about blood capillaries is/are true?

I. These are found in the peripheral region of organs and body.
II. The rate of flow of blood in capillaries is the least.
III. Their total cross section area is intermediate between those of veins and arteries.
IV. They have only a thin layer of involuntary muscles in the wall.

(a) I, II, III and IV (b) II, III and IV
(c) Only II (d) I and IV

Section B (2 Marks)

Direction (Q. Nos. 41 to 44) Given below are two statements; one is labelled as Assertion (A) and other is labelled as Reason (R). Of the given statements choose the correct option as

(a) Both A and R are true and R correctly explains A
(b) Both A and R are true, but R does not correctly explains A
(c) A is true, but R is false
(d) A is false, but R is true

41. **Assertion** (A) Usually carbohydrates are oxidised to release energy, but proteins, fats and even organic acids can be used as respiratory substances in some plants, under certain conditions.

Reason (R) The energy trapped in ATP is utilised in various energy-requiring processes of the organisms, and the carbon skeleton produced during respiration is used as precursors for biosynthesis of other molecules in the cell.

42. **Assertion** (A) Erythrocytes (RBCs) are biconcave in shape and contain a red-coloured protein haemoglobin, which is essential for the transport of respiratory gases.

Reason (R) A healthy adult has an average of 5 to 5.5 million RBCs per cubic millimeter of blood, and these cells are formed in the red bone marrow and have an average lifespan of 120 days before being destroyed in the spleen.

43. **Assertion** (A) The major lipids in biological membranes are phospholipids arranged in a bilayer, with the polar heads facing outward and the hydrophobic tails facing inward.

Reason (R) Bilayer arrangement plasma protects the non-polar tails from the aqueous environment and ensures that the membrane remains stable.

44. **Assertion** (A) Progressive degeneration of skeletal muscle is called muscular dystrophy.

Reason (R) Muscular dystrophy is due to decreased level of oestrogen in old age.

45. Given below are two statements.

Statement I The somatic neural system relays impulses from the CNS to skeletal muscles.

Statement II The autonomic neural system transmits impulses from the CNS to the involuntary organs and smooth muscles of the body.

In the light of above statements, choose the correct answer from the options given below.

(a) Both statement I and statement II are correct
(b) Both statement I and statement II are incorrect
(c) Statement I is correct, but statement II is incorrect
(d) Statement I is incorrect, but statement II is correct

46. Given below are two statements.

Statement I The cells proximal to the region of meristematic activity undergo rapid elongation and enlargement and are responsible for the growth of roots in length.

Statement II Root hairs arises from the epidermal cells of the region of maturation.

In the light of above statements, choose the correct answer from the options given below.

(a) Both statement I and statement II are correct
(b) Both statement I and statement II are incorrect
(c) Statement I is correct, but statement II is incorrect
(d) Statement I is incorrect, but statement II is correct

Direction (Q. Nos. 47-50) Read the following and answer the questions given below.

Dr. Singh is studying three animal species with distinct characteristics.

Species A has a hard, segmented exoskeleton and jointed appendages, capable of complex moulting and shows high ecological adaptability.

Species B features a soft, unsegmented body with a hydrostatic skeleton for movement, specialised feeding structures and is adapted to moist environments.

Species C possesses a calcareous endoskeleton and a water vascular system for locomotion, has notable regenerative abilities and a decentralised nervous system, suited for marine environments.

47. Which feature is least likely to be found species A, compared to species B?

(a) Unique regenerative capabilities
(b) Complex moulting process
(c) Highly specialised feeding structures
(d) Adaptability to varied diets and habitats

48. Which feature is least likely to be present in an animal from species A when compared to an animal from species B?

(a) Radial symmetry
(b) Presence of hooks and suckers
(c) Dorso-ventrally flattened body
(d) High adaptability to diverse environments

49. Which of the following additional characteristic is correctly associated with each phylum represented by these species?

(a) Species A: Presence of a closed circulatory system; Species B: Protonephridia for excretion; Species C: Presence of pedicellariae for cleaning and defence.
(b) Species A: Open circulatory system; Species B: Presence of flame cells for excretion; Species C: Water vascular system for locomotion.
(c) Species A: Metamerism and segmentation; Species B: Presence of a coelomate body plan; Species C: Presence of bilateral symmetry throughout life.
(d) Species A: Presence of a hydrostatic skeleton; Species B: Open circulatory system; Species C: Ability to undergo metamorphosis.

50. Which of the following correctly matches each species with its corresponding phylum?

(a) Species A - Arthropoda; Species B - Platyhelminthes; Species C - Echinodermata
(b) Species A - Annelida; Species B - Nematoda; Species C - Arthropoda
(c) Species A - Echinodermata; Species B - Annelida; Species C - Platyhelminthes
(d) Species A - Nematoda; Species B - Echinodermata; Species C - Arthropoda

Tie-Breaking Section

Instructions

1. This section consists of 5 questions.
2. The score achieved in this section will not be included in the total marks.
3. If overall marks of two or more students are same, winner will be decided based on the score in this section.
4. Participation in this section is optional and students may choose to attempt it or not.

1. Consider a diploid organism with 2*n* value of 4. How many chromosomes and DNA molecules respectively are present in the G_1 and G_2-phases of a somatic cell of this organism? (consider only nuclear DNA)

(a) G_1: 4 and 4; G_2: 4 and 4
(b) G_1: 4 and 4; G_2 : 4 and 8
(c) G_1: 4 and 4; G_2 : 8 and 4
(d) G_1: 4 and 4; G_2 : 8 and 8

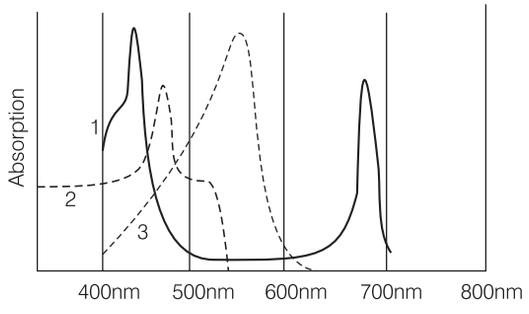
2. There are several types of enzyme catalysed reactions. In one type of enzyme catalysed reaction, in addition to the catalytic site to which the substrate (X) binds, the enzyme also has a site to which some other substance (Y) can bind. When Y binds to such an enzyme, the enzyme can still bind to the substrate but cannot convert it to the product. Which of the following will occur in such a case?

I. The affinity of the enzyme for the substrate will reduce.
II. V_{max} of the reaction will decrease.
III. Y will alter the conformation of X.
IV. The conformation of the catalytic site will be altered by binding of Y.
V. The effect of Y can be overcome by increasing the concentration of X.

Choose the correct option.

(a) I, III and IV (b) II, IV and V
(c) I, II and V (d) II and IV

3. Absorption spectra of some photosynthetic pigments are given below. These pigments show specific absorption patterns in a spectrum. Identify pigments 1, 2 and 3.



(a) 1-Chlorophyll-*a*, 2-Phycobilin, 3-Carotene
(b) 1-Chlorophyll-*a*, 2-Carotene, 3-Phycoerythrin
(c) 1-Carotene, 2-Chlorophyll-*a*, 3-Phycoerythrin
(d) 1-Phycoerythrin, 2-Carotene, 3-Chlorophyll-*a*

4. A student collected four plant specimens from the field. Following are the characteristics of these plants.

Plant A had microspores and megaspores in special structures and showed presence of seeds.

Plant B was dorsiventrally flat with presence of gametophytic structures.

Plant C bore microspores and megaspores in structures present on the leaves.

Plant D showed microspores and megaspores within specialised colourful structures.

What would be the correct classification of these plants?

(a) A - Angiosperm, B - Algae, C - Bryophyte, D - Gymnosperm
(b) A - Gymnosperm, B - Pteridophyte, C - Bryophyte, D - Angiosperm
(c) A - Gymnosperm B - Bryophyte, C - Pteridophyte, D - Angiosperm
(d) A - Bryophyte, B - Pteridophyte, C - Gymnosperm, D - Angiosperm

5. Consider the following statements about fungal reproduction.

I. Fungi reproduce asexually through structures such as conidia, sporangiospores or zoospores, and sexually through structures like oospores, ascospores and basidiospores.
II. The sexual reproduction cycle in fungi involves plasmogamy, karyogamy and then meiosis resulting in haploid spores.
III. Vegetative reproduction in fungi occurs through fragmentation, fission and budding.
IV. The sexual reproduction cycle in fungi involves plasmogamy and karyogamy only.

Which of the following statements are correct?

(a) Statements I and II are correct
(b) Statements I and III are correct
(c) Statements I, II and III are correct
(d) Statements I and IV are correct