

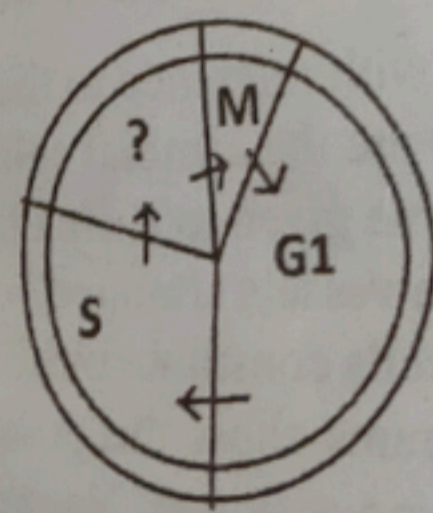
Maximum Marks: 70

General Instructions:

- (i) All questions are compulsory.
- (ii) The question paper has five sections and 33 questions. All questions are compulsory.
- (iii) Section-A has 16 questions of 1 mark each; Section-B has 5 questions of 2 marks each; Section-C has 7 questions of 3 marks each; Section-D has 2 case-based questions of 4 marks each; and Section-E has 3 questions of 5 marks each.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (v) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section-A

- Q1 As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics
- (a) Will decrease (b) Will increase (c) Remain same (d) May increase or decrease
- Q2 A dikaryon is formed when
- (a) Meiosis is arrested (c) Cytoplasm does not fuse
(b) The two haploid cells do not fuse immediately (d) None of the above
- Q3 In some animal groups, the body is found divided into compartments with serial repetition of at least some organs. This characteristic feature is called
- (a) Segmentation (b) Metamerism (c) Metagenesis (d) Metamorphosis
- Q4 Which one of the following is not a poisonous snake?
- (a) Cobra (b) Viper (c) Python (d) Krait
- Q5 A prothallus is
- (a) A structure in pteridophytes formed before the thallus develops
(b) A saprophytic free-living structure formed in pteridophytes
(c) A gametophyte free living structure formed in pteridophytes
(d) A primitive structure formed after fertilization in pteridophytes
- Q6 Cis and trans face of golgi body are ___ and ___ respectively.
- (a) Convex, Concave (b) Concave, Convex (c) Convex, Convex (d) Concave, Concave
- Q7 Which of the following membrane proteins are partially or totally buried in cell membrane?
- (a) Integral proteins (b) Peripheral proteins (c) Both (a) and (b) (d) Glycoproteins
- Q8 Which one of the following pairs is wrongly matched?
- (a) Salvinia - Prothallus (c) Mustard - Synergids
(b) Viroid's - RNA (d) Ginkgo - Archegonia
- Q9 Ureters act as urinogenital ducts in
- (a) Human males (b) Human female (c) Both male and female frogs (d) Male frog
- Q10 Identify the phase of the cell cycle.
- (a) Prophase (c) G2
(b) G0 (d) Telophase



- Q11 Which one is correct about DNA?
- (a) DNA exist as double helix.
(b) Two strands of polynucleotide in DNA are antiparallel.
(c) The nitrogen bases are projected more or less perpendicular to this backbone but face inside.
(d) All the above
- Q12 Cortex is the region found between:
- (a) Pericycle and endodermis (c) Endodermis and vascular bundle
(b) Endodermis and pith (d) Epidermis and stele

Read the assertion and reason carefully to mark the correct option out of the options given below:

- (a) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
- (b) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
- (c) If the assertion is true but the reason is false.
- (d) If both the assertion and reason are false.

- Q13 Assertion: Bacteria are the most abundant micro-organisms
Reason: Bacteria only shows autotrophic mode of nutrition.
- Q14 Assertion: Trichomes helps in preventing water loss due to transpiration.
Reason: On the stem, the epidermal hairs are called trichomes.
- Q15 Assertion: Chitin is homopolymer.
Reason: Chitin is made up of only one type of monomer i.e. N-acetylglucosamine
- Q16 Assertion: All living organisms are linked to one another.
Reason: Because all organism sharing common genetic material, but to varying degree

Section B

- Q17 *Musca domestica*
(a) Give the common name of the organism. [1/2]
(b) What do the first two parts of the name denote? [1]
(c) Why are they written in italics? [1/2]
- Q18 Gametophyte is a dominant phase in the life cycle of a bryophyte. Explain. [2]
- Q19 (a) Given that the average duplication time of *E. coli* is 20 minutes, how much time will two *E. coli* cells take to become 32 cells? [1]
(b) Comment on the statement— Telophase is reverse of prophase. [1]
- Q20 (a) Briefly explain the structure and location of the chromosome.. [1]
(b) What are flagella? Explain the structure of flagella. [1]
- Q21 What is stomatal apparatus? Explain the structure of stomata with a labelled diagram. [2]

OR

What is a fruit? Diagrammatically show the parts of a mango fruit.

Section C

- Q22 (a) Write the name of two monosaccharides obtained on hydrolysis of lactose sugar. [1x3]
(b) Why Vitamin C cannot be stored in our body?
(c) What is the difference between a nucleoside and nucleotide? [1x3]
- Q23 Differentiate between the following:
(a) RER and SER (c) Peripheral and Integral membrane proteins.
(b) Mitochondria and Plastids [1x3]
- Q24 Mention two similarities between:
(a) Aves and mammals (b) A frog and crocodile (c) A turtle and pila [2+1]
- Q25 (a) Draw labelled diagrams of Female and male thallus of a liverwort.
(b) Why are bryophytes called the amphibians of the plant kingdom? [1/2]
- Q26 Answer the following with reference to the anatomy of Dicot stem:
(a) Where exactly are the cambial cells located in the vascular bundle? [1/2]
(b) What is the name given to such a bundle? [1]
(c) How are xylem vessels arranged? [1]
(d) What type of cells constitute pith? [1]

- Q27 With the help of diagrams show the position and arrangement of various floral organs in an epigynous and a perigynous flower. Name an example of each. [3]

OR

- Q28 Define aestivation. Show any four types of them diagrammatically. [3]
Give a brief account on any three groups of protozoans.

Section D

- Q29 Biological classification is the scientific procedure that involves the arrangement of the organisms in a hierarchical series of groups and sub-groups on the basis of their similarities and dissimilarities. Right from the archaic times, several attempts have been made to classify the living organisms. The first man to attempt a scientific basis of classification was Aristotle. He used simple morphological characters to classify plants as trees, shrubs, and herbs.

(a) The common name of pea is simpler than its botanical (scientific) name *Pisum sativum*. Why then is the simpler common name not used instead of the complex scientific/botanical name in biology? [1]

OR

Cyanobacteria and heterotrophic bacteria have been clubbed together in Eubacteria of kingdom Monera as per the "Five Kingdom Classification" even though the two are vastly different from each other. Is this grouping of the two types of taxa in the same kingdom justified? If so, why? [1]

(b) Algae are known to reproduce asexually by variety of spores under different environmental conditions. Name any two spores and the conditions under which they are produced. [2]

(c) Fungi are cosmopolitan, write the role of fungi in your daily life. [1]

Q30 A flower, also known as a bloom or blossom, is the reproductive structure found in flowering plants. Flowers consist of a combination of vegetative organs - sepals that enclose and protect the developing flower. These petals attract pollinators, and reproductive organs that produce gametophytes, which in flowering plants produce gametes. The male gametophytes, which produce sperm, are enclosed within pollen grains produced in the anthers. The female gametophytes are contained within the ovules produced in the ovary.

(a) Define placentation and identify the type of placentation in the diagram given below. [1]



(b) Differentiate between the following: [2]
i) Fibrous root and adventitious root.
ii) Apocarpous and syncarpous ovary.

OR

i) Differentiate between racemose and cymose type of branching of stem with example.
ii) Differentiate between two diadelphous and polyadelphous stamen with example. [1]

(c) Write the economic importance Solanaceae family. [1+2]

Section- E

Q31 (a) Give the characteristic features of the following citing one example of each: [1]
i. Chondrichthyes and Osteichthyes
ii. Urochordata and cephalochordate

(b) What is the relationship between germinal layers and the formation of body cavity in case of coelomate, acoelomates and pseudocoelomates? [3+2]

(a) Differentiate between the following: [3+2]
(i) Homosporous and heterosporous pteridophytes
(ii) Liverworts and moss

(b) Write a two economic importance of algae and gymnosperms.

(a) Name the three types of respiration in the frog? How does frog respire during hibernation? [3+2]

(b) Diagrammatically represent the internal organs of a frog showing complete digestive system. [3+2]

OR

(a) Name the three basic tissue systems in the flowering plants. Give the tissue names under each system. [3+2]

(b) Draw a well labelled diagram of Dicot root (primary).

Q33 What are the various stages of meiotic prophase-I? Enumerate the chromosomal events during each stage? [5]

OR

Explain with the help of graph, how do enzymes increase the rate of chemical reaction. List and briefly explain any two factors which affects the enzyme activity.

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