

SECTION-A

Question number 1 to 16 are Multiple Choice Question and each carries 1 mark.

1. ✓ Viroids, the smallest known agents of infectious diseases :

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- (i) are comprised of small single stranded RNA molecule
 - (ii) lack capsid
 - (iii) have no proteins associated with them
- (a) ✓ (i) and (ii) only (b) (i) and (iii) only
- (c) (i), (ii) and (iii) (d) (ii) and (iii) only

2. ✓ 'Kelps' is the term used for giant :

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- (a) green algae
- (b) ✓ brown algae
- (c) red algae
- (d) blue-green algae

3. ✓ Consider the following four statements whether they are correct or wrong :

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- (A) The sporophyte in liverworts is more elaborate than that in masses ✓
- (B) Salvinia is heterosporous
- (C) The life cycle in all seed bearing plants is diplontic
- (D) In pinus male and female cones are borne on different trees.

The two wrong statements together are :

- (a) (A) and (C)
- (b) (A) and (D)
- (c) (B) and (C) ✓
- (d) (A) and (B)

4. ✓ In coelenterate which of the following is used for anchorage, defense and for the capture of prey.

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- (a) ✓ Cnidoblasts
- (b) Hypostoma
- (c) Polyp
- (d) Medusa

5. Biological concept of species is mainly based on : 1
- (a) morphology and methods of reproduction
(b) methods of reproduction only
(c) morphological features only
(d) reproductive isolation
6. Water vascular system is found in : 1
- (a) Porifera (b) Mollusca
(c) Apes (d) Coelenterata
7. Zygomorphic condition can be represented as : 1
- (a) \oplus (b) %
(c) P (d) G
8. Casparian thickenings are found in cells of : 1
- (a) Pericycle of the root (b) Endodermis of the root
(c) Pericycle of the stem (d) Endodermis of the stem
9. Compared to those humans, the erythrocytes in frog are : 1
- (a) without nucleus but with haemoglobin
(b) nucleated and with haemoglobin
(c) very much smaller and fewer
(d) nucleated and without haemoglobin
10. Lysosomes are formed by : 1
- (a) endoplasmic reticulum (b) mitochondria
(c) golgi bodies (d) both (a) and (c)
11. Cytoskeleton is made up of : 1
- (a) Proteinaceous filaments (b) Calcium carbonate grounds
(c) Callose deposits (d) Cellulosic microfibrils

12. Which one of the following cellular parts is correctly described?

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- (a) Thylakoids – flattened membranous sacs forming the grana of chloroplasts
- (b) Centrioles – sites for active RNA synthesis
- (c) Ribosomes – those on chloroplast are larger (80s) while those in the cytoplasm are smaller (70s)
- (d) Lysosomes – optimally active at a pH of about 8.5

For questions No. 13 to 16, two statements are given – one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes a, b, c and d as given below:

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is correct explanation of the Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
- (c) Assertion (A) is true, but Reason (R) is false.
- (d) Assertion (A) is false, but Reason (R) is true.

13. Assertion (A) : Systematics is an important branch of biology. A

1

Reason (R) : Systematics names the organisms and divide them into groups and sub-groups according to set rules to make their study easy. A

14. Assertion (A) : Majority of dinoflagellates are planktonic and cover the surface of water body. ^x ~~ca~~ ^{ca}

1

Reason (R) : Gonyaulax groups in abundance over sea surface and make the sea appear red and cause 'red tide'.

15. Assertion (A) : An ovule is transferred into a fruit after fertilization. (A)

1

Reason (R) : The fruits are formed only after fertilization.

16. Assertion (A) : A plant cell does not swell up or burst if placed in a hypotonic solution. 1
Reason (R) : Rigid cell wall does not let the plant cell expand.

SECTION-B

17. What is the major function of (i) Cutin (ii) Suberin (iii) Wax (iv) Lignin in the cell wall? 2
18. (a) Name the organism that is made up of two components which live together in symbiotic association. Also name the two components. *Lichen* 2
- (b) Give the function of each component. 2

OR

19. Describe briefly the four major groups of protozoa with example of each group? 2
20. Define Symplast and Apoplast pathways? 2
21. Which organism remains associated with coralloid roots of cycas? What is the nature of association and what function does the organism perform inside the cycas roots? 2
22. Draw a well labelled diagram of V.S. of maize seed? 2

SECTION-C

23. Give a one word scientific term for the following : 3
- (i) Blood filled cavity in arthropods → *Pericardium*
 - (ii) Excretory organs of an annelid → *Nephridia*
 - (iii) Free floating form of Cnidaria → *Medusa*
 - (iv) Stinging cells of jelly fishes → *Cnidocytes*
 - (v) Individual animals bearing organs of both sexes → *hermaphrodite*
 - (vi) A collection of nerve cells bodies → *Annelida*
24. Describe the important characteristics of gymnosperms. 3
25. Define Phyllotaxy? Give its types with one example of each. 3
- arrangement of leaves & axillary buds*

opposite
alternate
interior.

OR

- (i) Below is a list of plant fibres. From which part of the plant these are obtained:
- (a) Coir
 - (b) Hemp
 - (c) Cotton
 - (d) Jute
- (ii) Write the precise function of
- (a) Sieve tub
 - (b) Interfascicular cambium

25. Describe the digestive system of frog. 3
26. Name the two cell organelles other than nucleus which have their own DNA. Describe about the various types of leucoplasts. 3
27. Explain the structure of Nucleus. 3
28. Write a short note on the different types of vacuoles in the cell with their functions. 3

SECTION-D

Question number 29 and 30 are case-based questions. Each question has sub-parts with internal choice in one sub-part.

29. Cell is the fundamental structural and functional unit of all living organisms. According to modern form of cell theory, all organisms are composed of one (Unicellular) or more (multicellular) cells and all new cells develop from the pre-existing living cells by division. Cells are of two basic types : Prokaryotic cells and Eukaryotic cells of these, the former are morphologically the most primitive cells. 4

- (i) In Prokaryotes, cell wall is made up of which material.
- (ii) List atleast two main features on which is classification of cell based between Prokaryotes and Eukaryotes.

(iii) Which is a Prokaryote giant?

(iv) Why is the term blue-green algae applied to few species of Prokaryote?

OR

Name atleast two blue-green algae?

30. Bryophytes are fundamentally terrestrial plants and usually grow in moist and shady places. They grow densely together and form green carpets or mats during rainy season on damp soil, rock, walls, bark of trees and on decaying logs on forests. This life span of bryophytes consist of two distinct phases – (i) the gametophytic phase, and (ii) the sporophytic phase. The gametophytes are either thalloid or leafy shoot having stem – like central axis and leaf-like appendages. Roots are absent and are replaced by unicellular or multicellular rhizoids. These do not have vascular tissues. 4

(i) Why are bryophytes called as 'The amphibians of plant kingdom'?

(ii) What is peat? How is it formed?

(iii) Why is sphagnum used as packing material for trans-shipment of living material?

(iv) Why are the stem – like and leaf – like structure of moss plant not called stem and leaves?

OR

What are Rhizoids and state their function?

SECTION-E

31. (i) Define inflorescence. Describe its two types with example of each. 2

(ii) On the basis of position of ovary describe the three types of flower and with example of each one. 3

70 → f

Define the following :

OR

- (i) Exarch and Endarch condition of Protoxylem
- (ii) Stele and Vascular bundle
- (iii) Protoxylem and Metaxylem
- (iv) Interfascicular cambium and intrafascicular cambium
- (v) Stem hair and root hair

1x5=5

32. (i) On the basis of shape and form explain the various types of bacteria? 2
- (ii) Explain the three phases of sexual reproduction in fungi? 3

OR

- (i) Write atleast six distinguish features between class Rhodophyta (Red algae) and Chlorophyta (green algae). 3
 - (ii) Differentiate between chordates and non-chordates. (Any four) 2
33. (i) On the basis of position of centromere. Explain the various types of chromosomes? 3
- (ii) Who proposed cell theory? Write the main points of the cell theory. 2

OR

- (i) Who proposed fluid mosaic model of cell membrane? Explain this model of cell membrane. 4
- (ii) Differentiate between RER and SER. 1