

PART - A

- I 1. b. any rank in the taxonomic hierarchy 1x15=15
 2. d. Statement 1 is correct and 2 is incorrect.
 3. c. leafy stage.
 4. a. mycorrhiza
 5 a. pseudocoelom
 6 d. well defined muscular pharynx
 7 c. fruit wall
 8 b. endodermis
 9 b. Statement 1 is true and statement 2 is false.
 10. d. Both the statements are right.
 11. c. They control pollution by purifying water.
 12 b. chain of ribosomes on mRNA
 13 a. amyloplast - carbohydrates, elaioplast - oil & fat, aleuroplast - protein.
 14 a. intercellular ground substance.
 15 c. purine - adenine, guanine
 pyrimidine - thymine, cytosine.

II

16. systematics
 17. mycobiont
 18. radula
 19. axillary bud
 20. mesosomes.

1x5=5.

IIIPART - B.

21.

- a) ICBN - International code for botanical nomenclature.
 b) ICZN - International code for zoological nomenclature.

22.

Kingdom - Plantae
 Division - Angiospermae
 Class - Monocotyledonae
 Order - Poales
 Family - Poaceae
 Genus - Triticum
 Species - aestivum.

23. 1. They are helpful in making curd from milk.
 2. Production of antibiotics.
 3. fixing nitrogen in legume roots
 4. majority are decomposers.

1/2
each

24. * T. O. Diener.
 * It is a free RNA and lacks protein coat.

1
1

25. Numerical taxonomy - based on all observable characteristics. Number and codes are assigned to all the characters and the data are then processed.

2.

26.

Chordates

- * Notochord present
- * central nervous system is dorsal, hollow and single
- * Pharynx perforated by gill slits.
- * Heart is ventral
- * A post-anal part is present

Non-chordates

- * Notochord absent
- * central nervous system is ventral solid and double.
- * Gill slits are absent.
- * Heart is dorsal (if present)
- * Post anal tail is absent.

any 2.
1 mark
each

27. * Cambium present between xylem and phloem.
 * It forms secondary xylem and phloem tissues.

1
1

PART - C

- IV 28. 1. Fresh water organisms found in stagnant water.
 2. They have a protein rich layer called pellicle which makes their body flexible.
 3. They have 2 flagella, a short and a long one.
 4. Photosynthetic in presence of sunlight.
 5. When deprived of sunlight they are heterotrophic and predate on other smaller organisms.

1/2 mark
each

6) Pigments of euglenoids are identical to higher those in higher plants:

29. Green algae / Chlorophyceae:

1) Pigments — Chlorophyll a, b

2) Stored food — Starch

3) Cell wall composition — Cellulose.

1 each

30. a) any pisces, amphibian, reptile.

b) any aves, mammals.

c) any reptile.

31. a) Reptile b) Hemichordata c) Echinodermata.

1 each

32. 1) bean shape, dumb-bell shape highly

2) Outer walls are thin and inner walls are thickened.

3) They possess chloroplasts.

Function - Regulate the opening and closing of stomata.

any 2

1m each

33. Frog -

* Skin is smooth and slippery due to the presence of mucus.

* Dorsal side of body is olive green with dark irregular spots and ventral side of skin is pale yellow.

* Body is divisible into head and trunk.

* Above mouth, a pair of nostrils is present.

* Eyes are bulged and covered by nictitating membrane.

* Membranous tympanum receives sound signals.

* Forelimbs are small and end in four digits.

* Hindlimbs are larger and end in five "

* Feet have webbed digits that help in swimming.

* They exhibit sexual dimorphism.

any 6

1/2 m each

34. Quaternary structure -

- More than one polypeptide or subunits.
- polypeptides are linear, string of spheres, spheres arranged one upon each other in the form of a cube or plate etc

Ex - human haemoglobin.

PART- D

V 35. a) marine habitats.

- * branched, filamentous, profusely branched
- * Chlorophyll a, c, carotenoids, xanthophylls.
- * stored food - mannitol.
- * vegetative cells - gelatinous coating of algin.

b) Veg. reproduction - fragmentation

Asexual " - zoospores

Sexual " - isogamous, anisogamous, oogamous

c) Ectocarpus, Dictyota, Laminaria, Sargassum, Fucus.

any two
1 mark
each

any 2
1 mark
each

any 2
1 mark
each

36 Mammals -

- * polar ice caps, deserts, forests, grasslands, dark caves
- * milk producing glands.
- * 2 pairs of limbs - walking, running, flying, swimming etc.
- * Skin covered by hair.
- * External ear pinnae present.
- * Different types of teeth
- * Heart is 4 chambered.
- * homeotherms
- * Lungs * sexes separate * Internal fertilisation.

Ex for oviparous - ~~Artibeus~~ ^{or} Monotremes (Platypus)

Ex for viviparous - any ^{other} mammal.

any 8
1/2 mark
each

1/2
1/2

37 T.S of dicot stem diagram.

10 labellings 1/2
mark
each

38. > Marginal placentation - Placenta forms a ridge along the ventral ~~side~~ suture of the ovary. Ex Pea.

2. Axile Placentation - Placenta is axial and ovules are attached to it in a multilocular ovary. Ex

Ex China rose, lemon, Tomato.

3. Parietal - Ovules develop on the inner wall of the ovary which is one chambered. Ex Mustard, Argemone.

4. Free central - Ovules are borne on central axis and septa are absent. Ex Dianthus, Primrose.

5) Basal - Placenta develops at the base and single ovule is attached to it. Ex Sunflower/Marigold.

39. Floral characters of Solanaceae -

- Inflorescence - Solitary, axillary or cymose
- Flower - bisexual, actinomorphic
- Calyx - 5, united, persistent, valvate aestivation.
- Corolla - 5, united, valvate aestivation.
- Androecium - 5, epipetalous.
- Gynoecium - bicarpellary, syncarpous, bilocular superior ovary, axile placentation
- Fruits - Berry or capsule
- Seeds - many, endospermous.

Floral formula - $\oplus \quad \overset{\text{♂}}{\underset{\text{♀}}{K}}(5) \overset{\text{A}}{C}(5) \overset{\text{A}}{5} \overset{\text{G}}{\underline{2}}$

40. * Chromatin contains DNA and basic proteins called histones.

* Types of chromosomes -

1) Metacentric - middle centromere, 2 equal arms.

2) Sub-metacentric - centromere slightly away from middle, one shorter & one longer arm.

3) Acrocentric - centromere close to its end, one short and one very long arm.

4) Telocentric - terminal centromere.

41. Mitochondria diagram } 5 labellings each 2 1/2
Chloroplast diagram. } 2 1/2

- VI 42. Fluid Mosaic model of Plasma membrane - Singer & Nicolson in 1972
- * Composed of phospholipids in bilayer & proteins.
 - * Polar heads towards outside and hydrophobic tails towards inner part.
 - * Phospholipids have cholesterol.
 - * Peripheral proteins lie on the surface.
 - * Integral proteins are partially or totally buried in the membrane.
- 1 mark each

43. Male reproductive system of frog. 10 labellings 1/2 each

44. Oxidoreductases / dehydrogenases - Catalysing oxidoreduction between two substrates
- 2) Transferases - Catalysing a transfer of group between a pair of substrate.
- 3) Hydrolases - Catalysing hydrolysis of ester, ether, peptide, glycosidic, C-C, C-halide or P-N bonds.
- 4) Lyases - Catalyse removal of groups from substrates
- 5) Isomerases - Conversion of optical, geometric or positional isomers.
- 6) Ligases - Linking together of two compounds.
- Ex C-O, C-S, C-N, P-O etc bonds.
- any 5 1 mark each