

BIOLOGY (Theory)

(314)

SECTION –A

1. Name two cell organelles which are membrane bound. 1
2. Trapa (Singhara) is an aquatic plant. What is so peculiar about its roots? 1
3. Name the two bones present on either side of incus in our middle ear. 1
4. A normal starfish living in the sea accidentally broke its one arm. Show by a diagram how this separated arm will start regenerating. 1
5. Define the term metastasis. 1
6. What is decibel? Name any one source that can produce noise of about 120 decibel. 1
7. Why the use of certain chemicals such as chloro-fluoro-carbons has been banned. 1
8. Why are oil and natural gas categorized as fossil fuels? 1
9. Draw a diagram of a yeast cell that has just produced one bud. Label any three different structures in it. 2
10. What are cristae in mitochondria? What is the function of these cell organelles? 2
11. What are cristae in mitochondria? What is the function of these cell organelles? 2
12. Give in a tabular form any two different between growth movements and turgor movements in plants. 2
13. Give below is the floral formula of shoe flower incomplete in certain respects:

(a) Rewrite the floral formula by adding the missing aspects.

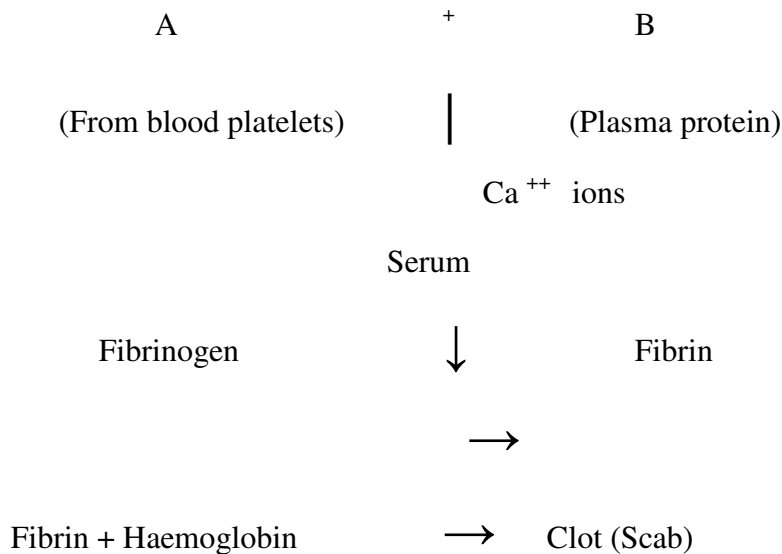
(b) Which one of the following plants is also a member of the same family as that of shoe flower?

Hollyhock; Radish; Sugarcane

2

14. Given below is a simplified scheme of the steps involved in the coagulation of blood. It has two blanks A and B, and two wrongly named substances rewrite the scheme by filling in the blanks and correcting the mistakes:

2



15. (a) Rearrange the following steps/stages in their proper sequence in the embryonic development of vertebrates :

Cleavage; Gastrula; Fertilization; Blastula

(c) List the two major changes that occur during last stage of the corrected sequence.

2

16. Name and briefly describe the surgical methods of contraception in human males and females respectively.

2

17. Define the following terms :

2

(a) Birthrate

(b) Fertility

18. (a) Construct a pyramid of the trophic levels of the following :

Hawk; Plants; Snakes; Mice

(b) Suppose the plants in this pyramid are able use 1000 kilojoules of energy, indicate the amount of energy available to the subsequent trophic levels.

2

19. (a) Describe the specialized anatomy of the leaves in C4 plants.

(b) Name the first product of photosynthesis in C3 and C4 plants respectively.

20. How do the vascular bundles in dicot and monocot stems differ in regard to their—

(a) number;

(b) arrangement;

(c) Uniformity in size?

3

21. (a) List the three categories of animals based on the type of nitrogenous product they excrete out.

(b) Which one of these products is least toxic? Name one vertebrate group and invertebrate group which excrete out this product.

3

22. A plant is producing flowers that are small and without any colour, nectar or scent. List any

three characteristics each of (a) the pollen grains and (b) the stigma of such flowers.

3

23. (a) Write the abbreviated names of the three types of ribonucleic acid

(b) What does the first letter of any two of these abbreviated names indicate respectively?

3

24. Once it was reported that a couple (husband and wife) got four children as following:

- (a) One son with normal vision
- (b) One colour –blind son
- (c) One carrier daughter for this trait
- (d) One colour –blind daughter

3

Discuss whether the case could be true.

25. What were the main pints/steps in Mendel's technique for crossing pea plants to obtain F1 hybrids? 3

26. Define wildlife. List any four reasons why the wildlife needs to be conserved (details not required). 3

27. Given below is a comparison of the bones of forelimbs of six vertebrates-Human, Cat Whale, Horse, Bird and Bat:

- (a) Name the animal A, B, C and D.
- (b) Are the structures built on a similar plan or a different one?
- (c) What do you call such organs? Define them.

28. (a) Define tumour.

(b) Differentiate between benign tumour and malignant tumour

- (c) List any four causes of cancer.

4

29. (a) What is a tissue?

(b) List the three different types of meristematic tissue and mention their location in plants. 5

30. (a) How does pancreas differ from organs like thyroid and adrenal in its manner of pouring out secretions?

(b) Name the two hormones and their source cell types, that are poured out of pancreas.

(c) Mention any one function each of the above two hormones.

5

SECTION-B

OPTION-I

(Tools and Techniques in Biology)

31. An empty jam bottle containing over-ripe banana has kept open at a fruit shop. Give the common and the scientific name of the insect which will soon fly into it. 1
32. Name the common stains used for staining (a) chromosomes and (b) blood film respectively. 1
33. What are the two methods of finding out the pH of a solution? Describe the one that gives only a general estimation of pH. 2
34. Define resolution power. Compare the extent of resolution power of a compound microscope and an electron microscope. 2
35. What is a herbarium? How are the collected plants processed for it? 4

OPTION-II

(Economic Biology)

31. What is the medicinal value of fish liver oil? 1
32. How is retting done for obtaining jute fibres? 1
33. Give common names of any two mushrooms cultivated in India. Describe briefly the controlled atmosphere method of their preservation. 2
34. Wherefrom comes the beeswax used by the bees in making beehives? Mention any three

uses of beeswax by the humans.

2

36. (a) What are the two methods widely used for genetic improvement of cattle and sheep in animal husbandry?

(b) Describe briefly the procedure followed in each of these.

4

OPTION-III

(Health Sciences)

31. Name any two diseases of the eyes that can be caused due to sharing of towels and handkerchiefs. 1

32. An adult person is suffering from softening of bones and loss of tooth enamel. Name the deficient disease and the deficient mineral nutrient. 1

33. Correct the following statement about housefly giving reason: 2

Housefly is the pathogen of cholera”

34. List any four methods of transmission of AIDS. 2

35. (a) Name the two principal harmful chemical contents in tobacco.

(b) List any two immediate effects on body and any four long-term harmful effects on health due to tobacco addiction. 4

OPTION-IV

(Emerging Area in Biology)

31. Define cloning. 1
32. Why is DNA ligase often described as 'molecular glue'? 1
33. Name the three types of vaccines. To which one of these types do the BCG and polio vaccines belong? 2
34. Name the last step in the mechanism of translation during protein synthesis. Explain very briefly what happens in this step. 2
35. (a) What are the two major groups of sugars?
- (b) Categorise the following sugars under the above two groups: Glucose; triose; Maltose ; Fructose; Galactose; Lactose
- (c) State the most important role of sugars for all organisms. 4