

SECTION - A

- Q. 1.** Name the heaviest and longest bone in the human body. **1**
- Q. 2.** Which type of UV radiations can be lethal to organisms? **1**
- Q. 3.** Why does thinning of bones usually start occurring in human females at about 50 years of age? **1**
- Q. 4.** What is polyethylene glycol used for in somatic hybridization? **1**
- Q. 5.** *Drosera* carries out photosynthesis and still traps insects Why? **1**

SECTION - B

- Q. 6.** What is auxetic growth? Give two examples of organisms showing this kind of growth. **2**
- Q. 7.** What is a transgenic crop? Which plant is used to produce blood anti-coagulant protein? What is this protein called? **2**
- Q. 8.** Why do temperate regions show a lower value of primary productivity as compared to tropical regions? Give two reasons. **2**
- Q. 9.** What is oxidative decarboxylation? What happens to pyruvate immediately after this reaction? Name the enzyme involved in this reaction. **2**
- Q. 10.** Which animals suffer from Rinderpest? Give its two early symptoms and explain how it spreads. **2**
- Q. 11.** List any four objectives of the Wild-life (Protection) Act, 1972, amended in 1991. **2**
- Q. 12.** An Rh-negative mother has safely delivered her first Rh-positive child. Discuss the problems that can arise as a result of it and can affect a subsequent pregnancy. **2**
- Q. 13.** Explain symbiotic nitrogen fixation in leguminous plants. **2**
- Q. 14.** What is cretinism? Give its any two causes. **2**
- Q. 15.** What is the end product of glycolysis in aerobes, and where does this process List the conditions under which fermentation occurs in plant cells. **2**
- Or
- Where exactly does electron transport system operate in Mitochondria? What is the role of oxygen and F₀ — F₁ In this pathway? How many molecules of ATP are produced when one molecule of NADH goes through this path?

SECTION - C

Q. 16. Name the hormone that stimulates the human gall bladder to release bile juice. How does this juice reach the duodenum? Explain the function of bile juice in food digestion. **3**

Q. 17. In what form do plants absorb phosphorus from the soil? Name one cell organelle and one organic molecule that require phosphorus in the Cell. List any two phosphorus deficiency symptoms in leaves. **3**

Q. 18. What are the two intrinsic mechanisms that provide autoregulation of glomerular filtrate? Explain any one of these. **3**

Q. 19. Differentiate between quiescent and dormant seeds. Give any four reasons why some seeds need to undergo dormancy. **3**

Q. 20. What is meant by the term 'Hot Spots' in biodiversity? two criteria used for determining a Hot Spot. Name two Hot Spots of India. **3**

Or

What is Brown air? Give two harmful effects of this air on humans. How is grey air different from brown air?

Q. 21. Explain the principle of Sonography. **3**

Q. 22. Give the location and function in the human eye, of the following: **3**

- a) Cornea
- b) Iris
- c) Vitreous humor

Q. 23. Plantlets produced in the laboratory need to be hardened before transplanting them in the field. Explain why they need to be hardened and how it is carried out. **3**

Q. 24. Name and explain the kind of interaction in the following: **3**

- a) Algae and Fungi in Lichens
- b) Hermit crab and Sea-anemone
- c) Head louse and Humans

Q. 25. Name the type and give the effects of the following drugs on humans:

- a) LSD
- b) Morphine
- c) Barbiturates

SECTION - D

Q. 26. Explain the mechanism of closing and opening of stomata. Name the category of plants which keep their stomata open during the night and closed during the day. **5**

Or

Explain the mechanism of C₄ photosynthetic carbon cycle. Name any two plants where it

occurs. Mention the difference in the structure of chloroplasts in the mesophyll cells and bundle sheath cells in such plants.

Q. 27. Draw labelled diagrams of the following:

- a) T.S. of a dehiscent anther of an angiosperm
- b) Internal structure of a pollen grain of an angiosperm 5

Or

Draw a flow-chart showing hormonal control of human female reproductive system

Highlight the positive and negative feedback mechanism in it.

Q. 28. What is cardiac cycle Explain the different steps involved in the pumping action of the heart during a single cardiac cycle 5

Or

(i) What is residual volume 'How much is it in a normal human adult?

(ii) Explain the role of diaphragm-and ribcage in inspiration and expiration in humans.