SECTION - A

Q. 1. How is haemoglobin differently located in humans and earthworms? **1**

Q. 2. What is apoptosis with reference to ageing? **1**

Q. 3. What are the starting points of a grazing food chain and a detritus food chain respectively? **1**

Q. 4. A cardiologist observed an enlarged QR wave in the ECG of a patient. What does it indicate? **1**

Q. 5. Name the type of cells that produce antibodies. **1**

SECTION - B

Q. 6. What is meant by Respiration Quotient (RQ)? When will the value of RQ be land when will it be less than.**2**

Q. 7. Explain any two functions of cerebrospinal fluid in humans. **2**

Q. 8. Name the organism that causes Anthrax in cattle. Why does the infected animal die within 2 or 3 days? **2**

Q. 9. Differentiate between quiescence and dormancy with reference to seed germination. **2**

Q. 10. How is out gut lining protected from its own secretion of proteases? **2**

Q. 11. Name the respective mineral nutrient element that **2**
(i) form the core constituent of the ring structure of chlorophyll
(ii) activates carboxylases
(iii) forms the component of nitrogenase
(iv) synthesises middle lamella of plant cells

Q. 12. What is photochemical smog composed of? How does this affect the plants? **2**

Q. 13. Define a portal vein. Explain the functions of such a vein in our digestive system. **2**
Or
What is the role of calcium ions in muscle contraction?

Q. 14. Why is aqueous gel applied between the skin and the scan head in sonography during clinical examination? Why is this technique generally preferred to radiography? **2**

Q. 15 . Lichen is considered a good example of obligate mutualism. Explain. **2**

SECTION - C

Q. 16. Name the T 3 and T 4 components of the thyroid hormone. Explain their specific action. **3**

Q. 17. Give a schematic representation of nitrogen cycle of a terrestrial ecosystem. Name any two microorganisms involved in it. **3**

Q. 18. Why does the rate of photosynthesis decrease at higher light intensities? What plays a protective role in such situations? **3**

Q. 19. Due to some physiological reasons the blood glucose level of an other wise normal person has shot up above normal. How will this condition be returned to normal through hormone action? **3**

Q. 20. (i) Give the scientific name of the soil bacterium which produces crystal (Cry) proteins.
(ii) How are these proteins useful in agriculture?
(iii) What do the differently written terms "Cry" and "cry" represent respectively? **3**

Q. 21. Draw a labelled diagram to show the impulse conductive system in human heart. **3**
Or
Draw a labelled sketch of human urinary system with its associated blood vessels.

Q. 22. List the three prominent theories to explain water translocation in trees. Describe the most accepted theory out of these. **3**

Q. 23. How is an allopolyploid produced' Explain with an example **3**

Q. 24. Differentiate between in situ and ex situ approaches of conserving biodiversity. **3**

Q. 25. Trace the development of a mature ovule from a megaspore mother cell. **3**

SECTION - D

Q. 26. Where does glycolysis occur in a cell? Explain its different steps. **5**
Or
Explain non-cyclic photophosphorylation in plants. Why is this process called so?

Q. 27. Describe oogenesis in human female. What promotes completion of second meiotic division in oogenesis? **5**

Q. 28. Differentiate between inbred line and a hybrid variety of crop. Explain the steps involved in the production of the hybrid variety. **5**