

Q1. Suggest any two contraceptive methods to control the size of human population and explain them. **2 Marks**

Q2. Construct an aquatic food chain showing four trophic levels. **2 Marks**

Q3. Draw two structural isomers of butane. **2 Marks**

Q4. In a cross between red coloured and white coloured flowers, when plants with red coloured flowers of F_1 generation were self pollinated, plants of F_2 generation were obtained in which 75% of plants were with red flowers and 25% plants were with white flowers. Explain the inheritance of traits in the above cross with the help of a flow chart only along with the ratio of plants obtained. **2 Marks**

Q5. A student is viewing under a microscope a permanent slide showing various stages of asexual reproduction by budding in yeast. Draw diagrams of what he observes. (in proper sequence) **2 Marks**

Q6. Draw a labelled diagram in proper sequence to show budding in hydra. **2 Marks**

Q7. With the help of a schematic flow chart, show the breakdown of glucose in a cell to provide energy
1. In the presence of oxygen
2. In lack of oxygen **2 Marks**

Q8. How do the ornamental plants propagate? Mention the method of propagation for the following:
1. Jasmine.
2. Rose.
3. Bougainvillea.
4. Hibiscus. **2 Marks**

Q9. Name the source gland and one major effect of each of the following hormones:
1. Parathormone.
2. Progesterone. **2 Marks**

Q10. Give proper term for each of the following:
1. Smaller constituent operational unit of biosphere.
2. Accumulation of non-biodegradable toxic substance in the increasing order in a food chain. **2 Marks**

Q11. State one reason to justify the position of man at the apex of most food chains. **2 Marks**

Q12. Define geotropism. Give one example of geotropism. **2 Marks**

Q13. Which cartilage of larynx forms "Adam's apple" in man? **2 Marks**

Q14. Draw a flow chart to show the classification of nervous system into various parts. **2 Marks**

Q15. Describe an activity to show that while paper is biodegradable but plastic (say, polythene) is non-biodegradable. **2 Marks**

Q16. How does an Amoeba reproduce? Describe the process of reproduction in Amoeba with the help of labelled diagrams of different stages in its reproduction process. **2 Marks**

Q17. Write a chemical equation to show the process of photosynthesis in plants. **2 Marks**

Q18. Draw a circuit diagram to show how a soft iron piece can be transformed into an electromagnet. **2 Marks**

Q19. If a harmful chemical enters a food chain comprising snakes, hawks, mice and plants, which of these organisms is likely to have maximum concentration of the harmful chemicals in its body? **2 Marks**

Q20. What is autonomic nervous system? What is its function? **2 Marks**

Q21. What is meant by homologous series of carbon compounds? Write the general formula of (i) alkenes, and (ii) alkynes. Draw the structures of the first member of each series to show the bonding between the two carbon atoms. **3 Marks**

Q22. List three main factors responsible for the speciation and briefly describe each one of them. **3 Marks**

Q23. A carboxylic acid (molecular formula $C_2H_4O_2$) reacts with an alcohol in the presence of an acid catalyst to form a compound 'X'. The alcohol on oxidation with alkaline $KMnO_4$ followed by acidification gives the same carboxylic acid $C_2H_4O_2$. Write the name and structure of,
1. Carboxylic acid.
2. Alcohol.
3. The compound 'X'. **3 Marks**

Q24. Describe an activity to show that the colours of white light splitted by a glass prism can be recombined to get white light by another identical glass prism. Also draw ray diagram to show the recombination of the spectrum of white light. **3 Marks**

Q25. Draw ray diagrams for the following cases when a ray of light:
1. Passing through centre of curvature of a concave mirror is incident on it.
2. Parallel to principal axis is incident on convex mirror.
3. Is passing through focus of a concave mirror incident on it. **3 Marks**

Q26. With the help of labelled diagram, show an experimental setup for the reaction of Magnesium with dilute sulphuric acid. Give equation of the reaction involved. **3 Marks**

Q27. Define the following terms in the context of a diverging mirror:
1. Principal focus
2. Focal length
Draw a labelled ray diagram to illustrate your answer. **3 Marks**

Q28. Draw two different possible structures of a saturated hydrocarbon having four carbon atoms in its molecule. What are these two structures of the hydrocarbon having same molecular formula called? Write the molecular formula and the common name of this compound. Also write the molecular formula of its alkyne. **3 Marks**

Q29. 1. From the following group of organisms create a food chain which is the most advantageous for Human beings in terms of energy.
Hawk, Rat, Cereal plant,
Goat, Snake, Human Being
2. State the possible disadvantage if the cereal plant is growing in soil rich in pesticides.
3. Construct a food web using the organisms mentioned above. **3 Marks**

Q30. 1. Create a food chain of the following organisms:
Insect, Hawk, Grass, Snake, Frog
2. Name the organism at the third trophic level of the created food chain.
3. Which organism of this food chain will have the highest concentration of non-biodegradable chemicals?
4. Name the phenomenon associated with it. **3 Marks**

5. If 10,000 joules of energy is available to frogs, how much energy will be available to snakes in this food chain?

Q31. Draw the pattern of the magnetic field produced around a vertical current carrying straight conductor passing through a horizontal cardboard. Mark the direction of current and the magnetic field lines. Name and state the rule which is used to determine the direction of magnetic field associated with a current carrying conductor. **3 Marks**

Q32. Complete the following flow chart based on ecosystem and its components. **3 Marks**

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Q33. What role does sexual reproduction play in evolution? **3 Marks**

Q34. Design an experiment to demonstrate hydrotropism. **3 Marks**

Q35. If one hold his breath after expiration for about 30sec., would there still be occurring any exchange of respiratory gases in the lung during this period? Explain. **3 Marks**

Q36. What is a neuron? Draw a labelled diagram of a neuron. **3 Marks**

Q37. Give one example to show how the endocrine system coordinates our body activities. **3 Marks**

Q38. Explain how, new Bryophyllum plants can be produced from the leaves of the old plant ? Illustrate your answer with the help of a labelled diagram. **3 Marks**

Q39. The power of a lens is -0.25 D. II Based on this information, find out
1. The type of lens and its focal length.
2. The eye defect for which it may be used as a corrective lens.
3. The nature and size of the image formed by this lens when an object is placed between F and $2F$ from the optical centre of this lens. **3 Marks**

Q40. Which defect of the eye is known as far-sightedness? When does this defect arise? State two reasons. How is this defect corrected? **3 Marks**

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