

SECTION-A

1. How does the resistance of a wire vary with its area of cross-section?
2. Name any two nuclear fuels used for the process of nuclear fission.
3. What were the limitations of Newland's law of octaves?
4. Describe an activity to show that the colors of white light splitted by a glass prism can be recombined to get white light by another identical glass prism. Also draw a ray diagram to show the recombination of the spectrum of white light.
5. Write the function of each of the following parts of human eye:
cornea, iris, crystalline lens, ciliary muscles.
6. Name the acid produced in our stomach. What happens if there is an excess of acid in the stomach? How can it be cured? Name one antacid.

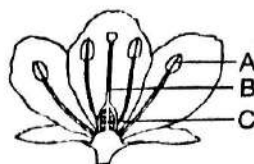
Or

- (a) Three acidic solutions A, B and C have $\text{pH}=0, 3$ and 5 respectively.
 - (i) Which solution has the highest concentration of H^+ ions?
 - (ii) Which solution has the lowest concentration of H^+ ions?
- (b) How concentrated sulphuric acid can be diluted? Describe the process.
7. An element 'X' belongs to 3rd period and group 16 of the Modern Periodic Table
 - (a) Determine the number of valence electrons and the valency of 'X'.
 - (b) Molecular formula of the compound when 'X' reacts with hydrogen and write its electron dot structure.
 - (c) Name the element 'X' and state whether it is metallic or non-metallic.
8. How do Mendel's experiment show that traits are inherited independently?

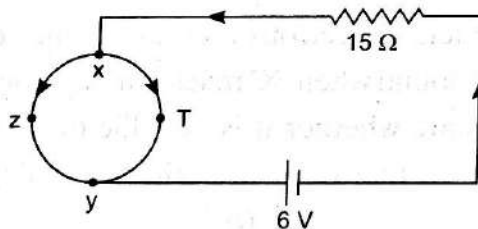
Or

- "Two areas of study namely evolution and classification are interlinked." Justify this statement.
9. The image of an object formed by a mirror is real, inverted and is of magnification -1 .
 - (a) If the image is at a distance of 40 cm from the mirror, where is the object placed?
 - (b) Where would the image be if the object is moved 20 cm towards the mirror?
 - (c) State reason and also draw the ray diagram for the new position of the object to justify your answer.
 - *10. The activities of man had adverse effects on all forms of living organisms in the biosphere. Unlimited exploitation of nature by man disturbed the delicate ecological balance between the living and non-living components of biosphere. The unfavourable conditions created by man himself threatened the survival not only of himself but also of the entire living organisms on the mother earth. One of your classmates is an active member of 'Eco club' of your school which is creating environmental awareness amongst the school students, spreading the same in the society and also working hard for preventing environmental degradation of the surroundings.
 - (a) Why is it necessary to conserve our environment?
 - (b) State the importance of green and blue dustbins in the safe disposal of the household waste.
 - (c) List two values exhibited by your classmate who is an active member of Eco-club of your school.

11. Name the parts A, B and C shown in the following diagram and state one function of each.



12. Suggest three contraceptive methods to control the size of human population which is essential for the health and prosperity of a country. State the basic principle involved in each.
13. The atomic number of Na and Mg is 11 and 12 respectively and they belong to the same period.
- Which one would have smaller atomic size?
 - Which one would be more electropositive?
 - To which group would each one belong?
14. Far point of a myopic person is 40 cm. What type of lens should he wear so as to see the distant objects clearly? Calculate the focal length and the power of the lens he should use.
15. Distinguish between exhaustible and inexhaustible resources of energy. Give one example of each.
16. With the help of a suitable example, explain how ionic compounds are formed. State any three general properties of ionic compounds.
17. (a) Explain how does a cell maintain current in a circuit.
- (b) In the circuit given below the resistance of the path xTy = $2\ \Omega$ and that xZy = $6\ \Omega$.
- Find the equivalent resistance between x and y.
 - Find the current in the main circuit.
 - Calculate the current that flows through the path xTy and xZy.



18. (a) What do you understand by exothermic and endothermic reactions? Explain with one example each.
- (b) Translate the following statements into balanced chemical equations:
- Sodium metal reacts with water to give sodium hydroxide and hydrogen gas.
 - Ammonium chloride solution is added to barium hydroxide solution to give ammonium hydroxide and barium chloride.
- (c) When SO_2 gas is passed through saturated solution of hydrogen sulphide, the following reaction occurs:



For this reaction, name the substance oxidized, reduced, the oxidizing agent and the reducing agent.

19. (a) What is lymph? How is composition of lymph different from blood plasma? What is the direction of its flow?
- List two function of lymphatic system.
 - State differences between the blood vessels artery, vein and capillary.

20. (a) Define reflex arc. Draw a flowchart showing the sequence of events which occur during sneezing.
(b) List four plant hormones. Write one function of each.
21. (a) What is the difference between direct current and alternating current? Write one important advantage of using alternating current.
(b) An air-conditioner of 2 kW is used in an electric circuit having a fuse of 10 A rating. If the potential difference of the supply is 220 V, will the fuse be able to withstand when the air-conditioner is switched on? Justify your answer.

Or

- (a) Draw a schematic labeled diagram of a domestic wiring circuit which includes
(i) a main fuse (ii) a power meter (iii) one light point and (iv) a power plug.
(b) Why is it necessary to connect an earth wire to electric appliances having metallic covers?

SECTION-B

22. What observations can be made after zinc granules are added to a test tube containing dil. HCl?
23. What change can be seen when acids and bases are treated with universal indicator solution?
24. In Ohm's experiment, it is advised to take out the key from the plug when the observations are not being taken. Why?
25. Two resistors are connected in series and then in parallel. What effect will it have on the readings of voltmeter and ammeter and why?
26. What are the various steps which should be followed in the preparation of temporary mount of stained leaf peel?
27. (a) Where do the following reactions occur in a cell- Glycolysis and Krebs cycle?
(b) Write an equation to represent aerobic respiration.