

SECTION- A

1. Write two advantages associated with water harvesting at the community level. 1
- [AI]** 2. Name and define the SI unit of current. 1

OR

Name the physical quantity which is same in all the resistors when they are connected in series.

3. Read the given passage and answer the following questions.

Sanjana is suffering from a frequent stomach pain and vomiting. She went to the Doctor. The doctor asked her to go for an Ultrasound. In the report, a stone was found in her gall bladder. Doctor asked her to remove the Gall bladder by operation. But she was reluctant to go for the operation.

- (a) What is the role played by Gall bladder in human body?
 (b) Does the removal of Gall bladder affect person's health?
 (c) Bile helps in emulsification of fats. True or False?
 (d) Which part of alimentary canal receives bile from the liver?

- (i) Stomach (ii) Small intestine
 (iii) Large intestine (iv) Oesophagus

4

4. Using the given part of the periodic table, answer the following questions :

Group → Period ↓	1	2	13	14	15	16	17	18
3	X		B	C	D	E		
4	Y							
5	Z							

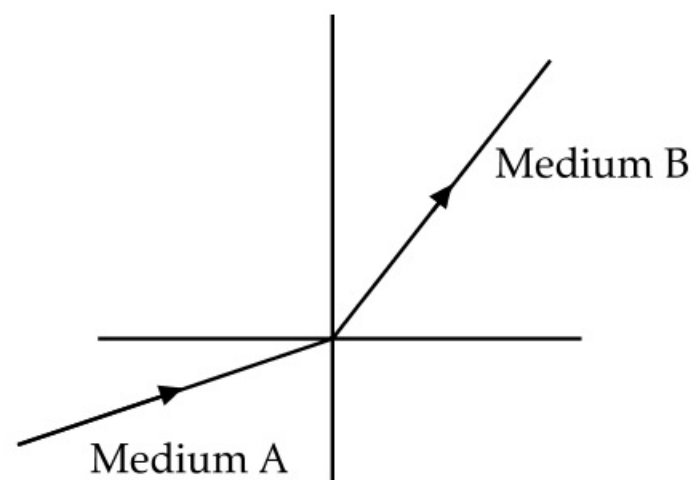
- (a) Name the element having smallest atomic size.
 (b) Write electronic configuration of element E.
 (c) Identify the elements which have similar physical and chemical properties as the element Y.
 (d) The number of groups the modern periodic table has
 (i) Seven (ii) Eight
 (iii) Seventeen (iv) Eighteen
5. Which of the following are exothermic processes ? 4
- (i) Reaction of water with quick lime. 1
 (ii) Dilution of an acid.
 (iii) Evaporation of water.
 (iv) Sublimation of camphor (crystals).
 (a) (i) and (ii) (b) (ii) and (iii)
 (c) (i) and (iv) (d) (iii) and (iv)

OR

Which of the following does not belong to the same homologous series?

- (a) CH₄ (b) C₂H₆
 (c) C₃H₈ (d) C₄H₈
6. Which of the following statements about the Modern Periodic Table is correct ? 1
- (a) It has 18 horizontal rows known as Periods.
 (b) It has 7 vertical columns known as Periods.
 (c) It has 18 vertical columns known as Groups.
 (d) It has 7 horizontal rows known as Groups.

7. What prevents backflow of blood inside the heart during contraction? 1
 (a) Valves in heart
 (b) Thick muscular walls of ventricles
 (c) Thin walls of atria
 (d) All of the above
8. In a synapse, chemical signal is transmitted from : 1
 (a) dendritic end of one neuron to axonal end of another neuron.
 (b) axon to cell body of the same neuron.
 (c) cell body to axonal end of the same neuron.
 (d) axonal end of one neuron to dendritic end of another neuron.
9. A light ray enters from medium A to medium B as shown in the figure. The refractive index of medium B relative to A will be : 1



- (a) Greater than unity (b) Less than unity
 (c) Equal to unity (d) Zero
10. Which of the following can make a parallel beam of light when light from a point source is incident on it? 1
 (a) Concave mirror as well as convex lens.
 (b) Convex mirror as well as concave lens.
 (c) Two plane mirrors placed at 90° to each other.
 (d) Concave mirror as well as concave lens.
11. The focal length of the eye lens increases when eye muscles : 1
 (a) are relaxed and lens becomes thinner.
 (b) contract and lens become thicker.
 (c) are relaxed and lens becomes thicker.
 (d) contract and lens become thinner.
12. Electrical resistivity of a given metallic wire depends upon : 1
 (a) its length. (b) its thickness.
 (c) its shape. (d) nature of the material.

For question numbers 13 and 14, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below :

- (i) Both A and R are true and R is correct explanation of the assertion.
 (ii) Both A and R are true but R is not the correct explanation of the assertion.
 (iii) A is true but R is false.
 (iv) A is false but R is true.
13. **Assertion (A) :** Humans are not truly aerobic. 1
Reason (R) : They produce lactic acid anaerobically.

OR

- Assertion (A) :** In human male, testes are extra-abdominal which are present inside scrotum.
Reason (R) : Scrotum has a relatively lower temperature needed for the production and storage of sperms.

14. **Assertion (A)** : If the rays are diverging after emerging from a lens; the lens must be concave. 1

Reason (R) : The convex lens can give diverging rays.

SECTION- B

AI 15. 2 g of silver chloride is taken in a china dish and the china dish is placed in sunlight for sometime. What will be your observation in this case? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction. 3

OR

Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the reactions.

(a) Zinc reacts with silver nitrate to produce zinc nitrate and silver.

(b) Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide.

AI 16. Explain the following : 3

(a) Sodium chloride is an ionic compound which does not conduct electricity in solid state, whereas it does conduct electricity in molten state as well as in aqueous solution.

(b) Reactivity of aluminium decrease if it is dipped in nitric acid.

(c) Metals like calcium and magnesium are never found in their free state in nature.

17. Why is atomic number considered to be a more appropriate parameter than atomic mass for the classification of elements in a periodic table ? How does the metallic character elements vary as we move (i) from left to right in a period, and (ii) top to bottom in a group in the modern periodic table ? Give reasons to justify your answer ? 3

18. What is geotropism ? Draw a labelled diagram of a potted plant showing positive geotropism and negative geotropism. 3

OR

Name the property that causes tendril to circle around the object. Explain how it happens and how is plant benefitted by it.

AI 19. List three techniques that have been developed to prevent pregnancy. Which one of these techniques is not meant for males ? How does the use of these techniques have a direct impact on the health and prosperity of a family ? 3

AI 20. A student holding a mirror in his hand, directed the reflecting surface of the mirror towards the Sun. He then directed the reflected light on to a sheet of paper held close to the mirror. 3

(a) What should he do to burn the paper ?

(b) Which type of mirror does he have ?

(c) Will he be able to determine the approximate value of focal length of this mirror from this activity? Give reason and draw ray diagram to justify your answer in this case.

OR

A 10 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 18 cm. Find the nature, position and size of the image formed.

21. (a) Nichrome wire of length 'L' and radius 'R' has resistance of 10Ω . How would the resistance of the wire change when :

(i) Only length of the wire is doubled ?

(ii) Only diameter of the wire is doubled ? Justify your answer.

(b) Why element of electrical heating devices are made up of alloys ? 3

22. What is meant by Solenoid ? How does a current carrying Solenoid behave ? Give its main use. 3

23. What is dam ? Why do we seek to build large dams ? While building large dams, which three main problems should particularly be addressed to maintain peace among local people ? Mention them. 3

24. You have been selected to talk on "Ozone layer and its protection" in the school assembly on 'Environment Day'. 3

(a) Why should ozone layer be protected to save the environment ?

(b) List any two ways that you would stress in your talk to bring in awareness amongst your fellow friends that would also help in protection of ozone layer as well as the environment.

SECTION- C

[AI] 25. Write the chemical formula and name of the compound which is the active ingredient of all alcoholic drinks. List its two uses. Write chemical equation and name of the product formed when this compound reacts with : 5

(i) sodium metal

(ii) hot concentrated sulphuric acid.

OR

What is methane? Draw its electron dot structure. Name the type of bonds formed in this compound. Why are such compounds :

(i) poor conductors of electricity ? and

(ii) have low melting and boiling points?

What happens when this compound burns in oxygen ?

26. (a) Write chemical equations for the following reactions: 5

(i) Calcium metal reacts with water.

(ii) Cinnabar is heated in the presence of air.

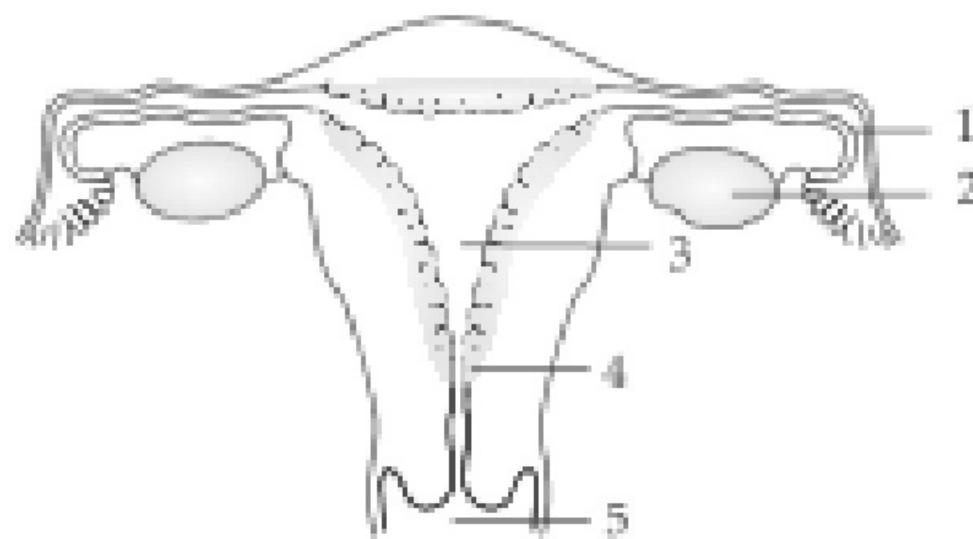
(iii) Manganese dioxide is heated with aluminium powder.

(b) What are alloys? List two properties of alloys.

[AI] 27. Define pollination. Explain the different types of pollination. List two agents of pollination. How does suitable pollination lead to fertilization? 5

OR

(a) Identify the given diagram. Name the parts 1 to 5.



(b) What is contraception? List three advantages of adopting contraceptive measures.

28. (a) What are homologous structures? Give an example.

(b) "The sex of a newborn child is a matter of chance and none of the parents may be considered responsible for it." Justify this statement with the help of a flow chart showing sex-determination in human beings. 5

29. A 6 cm tall object is placed perpendicular to the principal axis of a concave mirror of focal length 30 cm. The distance of the object from the mirror is 45 cm. Use mirror formula to determine the position, nature and size of the image formed. Also, draw labelled ray diagram to show the image formation in this case. 5

OR

An object 6 cm in size is placed at 50 cm in front of a convex lens of focal length 30 cm. At what distance from the lens should a screen be placed in order to obtain a sharp image of the object ? Find the nature and size of the image. Also, draw labelled ray diagram to show the image formation in this case.

30. Establish a relationship to determine the equivalent resistance R of a combination of three resistors having resistances R_1 , R_2 and R_3 connected in series. Calculate the equivalent resistance of the combination of three resistors of 2Ω , 3Ω and 6Ω joined in parallel. 5