

Science - 824-EO - 2023 Question Paper

Time Allowed :3 Hours	Maximum Marks :70	Total questions :35
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General Instructions

Instruction:

- (i) First 15 minutes are allotted to students to read the question paper.
- (ii) The question paper is divided into two sections–Section (A) and Section (B).
- (iii) Section (A) and (B) are divided into three sub-sections: (a), (b), and (c).
- (iv) Questions in Section (A) are multiple choice type. Selecting the correct choice, fully colour the correct circle in the OMR sheet. Only blue or black ball point pen can be used.
- (v) 1 mark is allotted to each question of Section (A), which contains only multiple choice questions.
- (vi) Section (B) consists of descriptive questions.
- (vii) Marks allotted to each question are given on the right side of the question.
- (viii) It is necessary to answer all the questions of each sub-section of Section (B) altogether. Each sub-section should be started on a new page.
- (ix) All questions are compulsory.

1. A mirror producing a virtual image larger than the object is:

- (A) Plane
- (B) Concave
- (C) Convex
- (D) Any spherical

2. The human eye forms the image of an object at its:

- (A) iris
- (B) retina
- (C) pupil
- (D) cornea

3. The colour of white light which is deviated maximum on passing through the glass prism is:

- (A) yellow
- (B) violet
- (C) red
- (D) orange

4. The current passing through an electric kettle has been doubled. The heat produced will become:

- (A) half
- (B) double
- (C) four times
- (D) one-fourth

5. The most suitable material for making the core of an electromagnet is:

- (A) brass
- (B) soft iron
- (C) aluminium
- (D) steel

7. Electric motor is a device which transforms:

- (A) mechanical energy into electrical energy
- (B) heat energy into electrical energy
- (C) electrical energy into heat energy

(D) electrical energy into mechanical energy

8. Pure air is:

- (A) a homogeneous mixture
- (B) a mixture of metals
- (C) a mixture of compounds
- (D) None of the above

9. Alkene is:

- (A) C_3H_6
- (B) C_2H_2
- (C) C_3H_8
- (D) C_4H_{10}

10. pH value of pure water is:

- (A) 0
- (B) 1
- (C) 7
- (D) 10

11. On moving from left to right in the third period of the periodic table:

- (A) Atomic number and atomic size increases
- (B) Atomic number and atomic size decreases
- (C) Atomic number increases and atomic size decreases
- (D) None of the above

12. Tally the given substances in Column A with their applications in Column B.

Column A Column B

- | | |
|-----------------------|---------------------------|
| a. Plaster of Paris | i. formation of soap |
| b. Caustic soda | ii. antibacterial |
| c. Sodium bicarbonate | iii. formation of an idol |
| d. Bleaching powder | iv. used for bleaching |

The right set of the tally is:

- (A) a - i, b - ii, c - iii, d - iv
- (B) a - ii, b - i, c - iv, d - iii
- (C) a - iv, b - iii, c - ii, d - i

(D) a - iii, b - i, c - iv, d - ii

13. Which one of the following gives red colour with methyl orange?

(A) NaCl (Aq)

(B) Glucose (Aq)

(C) KOH (Aq)

(D) None of the above

14. An eco-friendly renewable source of energy is:

(A) Wind energy

(B) Petroleum energy

(C) Natural gas

(D) Coal

15. Mendel is famous:

(A) In the field of heredity

(B) For discovery of DNA

(C) For eugenics

(D) For conservation of biodiversity

16. Sperms are formed in:

(A) Vas deferens

(B) Ovaries

(C) Testes

(D) Liver

17. Alveoli occur in:

(A) Liver

(B) Stomach

(C) Lungs

(D) Heart

18. For the transport of water, plants have:

(A) Phloem

(B) Stomata

(C) Pith

(D) Xylem

19. Normal blood pressure of a healthy human is:

- (A) 140/80
- (B) 120/80
- (C) 135/100
- (D) 125/115

20. Who among the following is famous as the 'Water Man of India'?

- (A) Bindeshwar Pathak
- (B) J.C. Chaudhry
- (C) Rajendra Singh
- (D) Sunderlal Bahuguna

21. Draw a labelled ray diagram to show the formation of the image of an object placed between the pole and infinity by a convex mirror. State the properties of the image formed. Why do we prefer a convex mirror as a rear-view mirror in vehicles?

22. Explain with a drawing how hypermetropia is corrected. The near point of a hypermetropic eye is 75 cm. What is the focal length of the lens required to correct this defect? The near point of a normal eye is 25 cm.

23. On what factors does the resistance of a conductor depend? An electric bulb operated at 80 volts takes 10 amperes of current. How much resistance should be connected in series with the bulb to use it at 240 volts so that it takes the same current?

24. Define Kilowatt hour. How many Joules are equal to 1 kilowatt-hour? An electric kettle rated 220 volts, 2.2 kilowatts works for 3 hours. Calculate energy consumed and the current.

OR

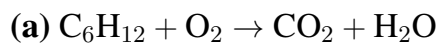
State the two ways to increase the force on a current-carrying conductor in a magnetic field. Name one device whose working depends on this effect. State Fleming's left-hand rule with the help of a well-labelled diagram.

25. Write IUPAC names of the following compounds:

(a) $\text{CH}_2 = \text{CH} - \text{CH}_2\text{ClOH}$

26. Write the electronic configuration of chlorine (atomic number 17). Explain its position in the periodic table and write its valency.

27. Balance the following chemical equations:



OR

Write short notes on the following:

(a) Oxidation Reaction

(b) Substitution Reaction

28. Describe Mendel's Laws.

29. Give an account of post-fertilization changes in an angiospermic plant.

31. Describe the male reproductive system of humans.

OR

Write an essay on sexual reproduction in flowering plants.