

**E-5-B**

Roll No.....

Total No. of Questions : 18]

[Total No. of Printed Pages : 8

**XARKDN20**

**2305-B**

**SCIENCE**

*(Physics, Chemistry and Life Science)*

**Time : 3 Hours]**

**[Maximum Marks : 84**

**Section-A**

**(PHYSICS)**

**(Long Answer Type Questions)**

1. Using the ray diagram, find the nature, position and size of image formed by a convex lens, when object is placed :
- (a) At infinity
  - (b) Between the centre of curvature and principal focus
  - (c) Beyond the centre of curvature

*Or*

- (a) Define magnification and derive the relation  $m = \frac{h'}{h}$
- (b) The magnification produced by a plane mirror is +1. What does this signify ?

6

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Turn Over

**E-5-B**

<https://www.jkboseonline.com>

**(Short Answer Type Questions)**

4 each

2. Explain the dispersion of light through a glass prism.

*Or*

Why does the sky appear dark instead of blue to an astronomer ?

3. Define potential difference and derive the relation  $v = \frac{w}{q}$ . Give its units.

*Or*

How will you connect three resistances each of 6 ohms so that the resultant resistance would be 9 ohms and 4 ohms ?

4. Explain the nature of magnetic field produced due to current in a circular loop of wire.

*Or*

Explain the working of an electric motor and give its applications.

**(Very Short Answer Type Questions)**

2 each

5. (i) A doctor has prescribed a corrective lens of power +1.5 D. Find the focal length of the lens. Is the prescribed lens converging or diverging ? <https://www.jkbboseonline.com>
- (ii) What do you mean by Nuclear Fission ?
- (iii) Why does a wire made of nichrome glow, while as a copper wire does not ?

(Multiple Choice Questions)

1 each

6. (i) Gobar gas is :
- (A) Methane gas
  - (B) Ethane gas
  - (C) L.P.G.
  - (D) Nitrogen gas
- (ii) The amount of light that is entering the eye is controlled by :
- (A) Pupil
  - (B) Iris
  - (C) Cornea
  - (D) Eyelids
- (iii) The speed of light is maximum in :
- (A) Glass
  - (B) Vacuum
  - (C) Water
  - (D) Air
- (iv) The convex mirror is used in/by :
- (A) Headlights of vehicles
  - (B) Solar furnaces
  - (C) Side/rear view mirror of vehicles
  - (D) Doctors/Dentists

**Section-B**

**(CHEMISTRY)**

**(Long Answer Type Questions)**

7. How and under what conditions does ethanoic acid react with ethanol and sodium carbonate ?

*Or*

Explain the versatile nature of carbon. Why it forms only covalent compounds ?

6

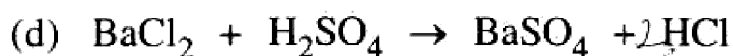
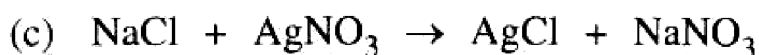
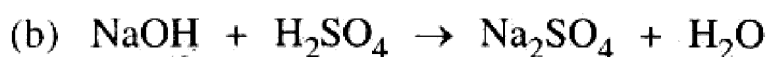
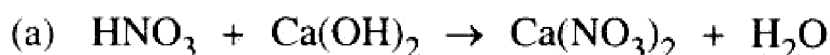
**(Short Answer Type Questions)**

4 each

8. What are decomposition reactions ? Give three examples where heat, light and electricity is involved.

*Or*

Balance the following chemical equations :



9. What are the achievements of Mendeleev's periodic table ? What was the basis of classification in it ?

*Or*

Define atomic radius. How do the atomic radii of elements change in a group ?

10. How does zinc is extracted from its sulphide ore ? Give the chemical reactions that take place during the process.

*Or*

How do metals react with non-metals ? Write an example.

**(Very Short Answer Type Questions)**

2 each

11. (i) Draw the structure of benzene and give its formula.  
(ii) What do you mean by enrichment of an ore ?  
(iii) Why does an aqueous solution of acid conduct electricity ?

**(Multiple Choice Questions)**

1 each

12. (i) The pH of acid rain is :
- (A) 7.1
  - (B) 7.2
  - (C) 5.6
  - (D) less than 5.6
- (ii) Bleaching powder is prepared by passing chlorine gas through :
- (A) Quick lime
  - (B) Dry slaked lime
  - (C) Lime water
  - (D) Brine solution

(iii) When iron fillings are added to copper solution, the colour of the solution changes to :

- (A) Red
- (B) Yellow
- (C) Blue
- (D) Green

(iv) Which of the following substances makes the fruits sour ?

- (A) Acids
- (B) Bases
- (C) Salts
- (D) Organic acids

**Section-C**

**(LIFE SCIENCE)**

**(Long Answer Type Questions)**

13. Describe the various pathways in which glucose is oxidised to provide energy in the various organisms.

*Or*

What are the components of the transport system in human beings ?

Give the function of these components.

**(Short Answer Type Questions)**

4 each

14. What is asexual reproduction ? How do the following animals reproduce asexually ?

- (a) Plasmodium
- (b) Hydra
- (c) Planaria
- (d) Bryophyllum

*Or*

Define reproductive health. What happens when the egg is not fertilized ?

15. Write down at least *three* characteristics of food webs.

*Or*

How can you help in reducing the problem of waste disposal ? Give any *two* methods.

16. Why should we need to conserve forests and wildlife ?

*Or*

What are the factors that have effected the soil fertility and degraded it ?

**(Very Short Answer Type Questions)**

2 each

17. (i) Define Sex determination.
- (ii) Define Reflex action. Give at least *one* example.
- (iii) Define the term evolution.

**(Multiple Choice Questions)**

1 each

18. (i) The asexual reproduction takes place through budding in :
- (A) Amoeba
  - (B) Yeast
  - (C) Plasmodium
  - (D) Hydra
- (ii) The function of insulin is to :
- (A) Regulate growth of the body
  - (B) Maintain sugar balance of the body
  - (C) Control production of thyroxine
  - (D) Remove harmful products from the body
- (iii) The function of cerebellum is to :
- (A) Cause movements of the body
  - (B) Maintain posture of body
  - (C) Keep balance of the body
  - (D) Maintain both balance and posture of the body
- (iv) The first step in sexual reproduction at the cellular level is :
- (A) Formation of special sex cells
  - (B) Cell division
  - (C) DNA copying
  - (D) Elongation of cells