

E-5-C

Roll No.

Total No. of Questions : 36]

[Total No. of Printed Pages : 16

XKDAR21

5505-C

SCIENCE

Time : 3 Hours]

[Maximum Marks : 80

General Instructions :

- (a) The question paper has four Sections A, B, C and D. There are Thirty Six questions in the question paper and all questions are compulsory.
- (b) Section-A (Q. 1 to Q. 20) all questions and parts thereof are of 1 mark each. These questions contain multiple choice questions, very short answer questions and assertion-reason type questions. Answer to these should be given in one word or one sentence.
- (c) Section-B (Q. 21 to Q. 26) are short answer type questions, carrying 2 marks each.

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Turn Over

- (d) Section-C (Q. 27 to Q. 33) carrying 3 marks each.
- (e) Section-D (Q. 34 to 36) are long answer type questions, carrying 5 marks each.
- (f) There is no overall choice. However internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (g) Wherever necessary, neat and properly labelled diagrams should be drawn.

Section-A

1. The image formed by a concave mirror is real, inverted and larger than the object. What is the position of an object ?
2. Define centre of curvature of a spherical mirror.
3. A convex mirror is used as a reflector in street lights. Why ?

Or

Concave lens is also called a diverging lens. Why ?

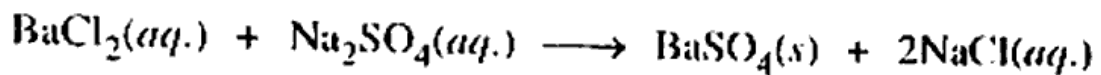
4. Which natural phenomenon among the following takes place because of scattering of light ?

- (A) Blue colour of the sky •
- (B) Twinkling of stars
- (C) Advanced sunrise and delayed sunset
- (D) Both (B) and (C)

5. If the resistance is doubled, what happens to current in a circuit ?

6. Write a balanced chemical equation for a reaction involving decomposition of calcium carbonate into calcium oxide and carbon dioxide.

7. Barium chloride reacts with sodium sulphate to form barium sulphate and sodium chloride :



The above reaction is an example of :

- (A) Combination reaction
- (B) Decomposition reaction
- (C) Displacement reaction •
- (D) Double-displacement reaction

8. From an alkane containing three carbon atoms, one hydrogen atom is replaced by chlorine to form a new compound. Name the newly formed compound and write its molecular formula.
9. Which among the following exist in their native state in nature ?
- | | |
|----------|---------|
| (I) Cu | (II) Au |
| (III) Zn | (IV) Ag |
- (A) (I) and (II)
- (B) (II) and (IV) ,
- (C) (II) and (III)
- (D) (III) and (IV)
10. Metals obtained by electrolytic reduction are :
- (A) Low in the activity series
- (B) In the middle of the activity series
- (C) Towards the top of the activity series •
- (D) Both (A) and (B)
11. Name any *two* non-biodegradable pollutants.
12. Name the plant hormone that promotes ripening of fruits.

13. Name the substance which on treatment with chlorine yields bleaching powder.

From question numbers 14 to 16, two statements (Assertion–A and Reason–R) are given. Select the correct answer to these questions from codes a, b, c and d as given below : <https://www.jkboseonline.com>

(a) Both A and R are true, and R is correct explanation of the assertion.

• (b) Both A and R are true, but R is not the correct explanation of the assertion

(c) A is true but R is false

(d) A is false but R is true

14. Assertion (A) • : When a copper object remains exposed to air for a long time, it loses its lustre.

Reason (R) : Copper reacts with atmospheric gases to form green coating of copper carbonate on its surface.

15. Assertion (A) : In a monohybrid cross, offsprings of F_1 generation express dominant character. ,

Reason (R) • : Dominance occurs only in heterozygous state.

16. Assertion (A) : A sanctuary is formed for the conservation of animals only.

Reason (R) • : Restricted human activities are allowed in sanctuaries.

17. Read the following and answer any *four* questions : (1×4=4)

When a coil of many circular turns of insulated copper wire is wrapped closely in the shape of a cylinder, it is called solenoid. In a current carrying solenoid one end behaves as a magnetic North pole and other end as the magnetic South pole.

(i) When we compare the magnetic field pattern of a solenoid with the magnetic field pattern of a cylindrical bar magnetic, it is found that :

- (A) The magnetic field lines are identical
- (B) The magnetic field lines have different pattern
- (C) A current carrying solenoid behaves like a bar magnet with fixed polarities
- (D) Both (A) and (C)

(ii) The magnetic field inside a solenoid is :

- (A) Uniform •
- (B) Non-uniform
- (C) Can be uniform or non-uniform
- (D) None of these

(iii) A current carrying solenoid has :

- (A) Attractive property only,
- (B) Directive property only
- (C) Both attractive and directive properties ✓
- (D) None of these

(iv) A current carrying solenoid behaves as a :

- (A) Temporary strong magnet ✓
- (B) Permanent strong magnet
- (C) Temporary weak magnet
- (D) Permanent weak magnet

(v) The magnitude of magnetic field by the solenoid depends on :

- (A) Current flowing through the solenoid
- (B) Number of turns per unit length of the solenoid
- (C) Both (A) and (B) ✓
- (D) None of these

18. Read the following and answer any *four* questions : (1×4=4)

Metals have a strong tendency to lose electrons to form positive ions and are called electropositive elements. On the other hand non-metals have a tendency to gain electrons to form negative ions and are called electronegative elements.

- (i) On moving from left to right in a period of a periodic table, metallic character :
- (A) Increases
 - (B) Decreases •
 - (C) First increases then decreases
 - (D) Remains same
- (ii) An element having electronic configuration of 2, 8, 2 is a :
- (A) Metal
 - (B) Non-metal
 - (C) Metalloid
 - (D) None of these•

- (iii) Which arrangement of alkali metals among the following represents decreasing order of metallic character ?
- (A) $\text{Cs} > \text{Rb} > \text{Li} > \text{Na} > \text{K}$
 - (B) $\text{K} > \text{Rb} > \text{Li} > \text{Na} > \text{Cs}$
 - (C) $\text{Cs} > \text{Rb} > \text{K} > \text{Na} > \text{Li}$ •
 - (D) $\text{Cs} > \text{K} > \text{Rb} > \text{Na} > \text{Li}$
- (iv) Which is the most electronegative element among the following ?
- (A) F •
 - (B) Cl
 - (C) Br
 - (D) I
- (v) On moving down the group in the periodic table, non-metallic character of elements :
- (A) Increases
 - (B) Decreases •
 - (C) First increases then decreases
 - (D) None of these

19. Read the following and answer any *four* questions : (1×4=4)

When an acid and a base react quantitatively with each other, they form salt. Salts have different properties than acids and bases.

(i) Reaction between an acid and a base to form a salt is called :

(A) Saponification

• (B) Neutralization

(C) Sublimation

(D) None of these

(ii) The salt derived from a strong acid and a strong base forms a solution having a pH value :

(A) More than 7

(B) Less than 7

(C) Equal to 7

• (D) Between 7 and 14

(iii) Which among the following is an example of a salt ?

• (A) Sulphuric acid

(B) Potassium hydroxide

(C) Hydrogen chloride

(D) Potassium nitrate

(iv) Which salt among the following is used in fire extinguisher ?

- (A) Sodium carbonate
- (B) Sodium bicarbonate
- (C) Calcium carbonate
- (D) None of these

(v) The solution of a salt is having the pH value less than 7. The salt has been derived from :

- (A) A weak acid and a weak base
- (B) A strong acid and a strong base
- (C) A weak acid and a strong base
- (D) A strong acid and a weak base

20. Read the following and answer any *four* questions : (1×4=4)

Natural resources form the very basis of entire life on this planet. Continuous increase in human population and unending desire of man has resulted into increasing demand for natural resources.

(i) Which among the following is the most rapidly dwindling natural resource ?

- (A) Forests
- (B) Water
- (C) Sunlight
- (D) Wind

(ii) Which statement(s) from the following correctly describe the concept of sustainable development ?

- I. Planned growth with minimum damage to the environment
- II. Growth irrespective of the extent of damage caused to the environment
- III. Stopping all developmental work to conserve the environment
- IV. Growth that is acceptable to all the stakeholders.

(A) II and III

(B) I and IV

(C) II and IV

(D) IV only

(iii) Which factor is mainly responsible for increase in demand of natural resources ?

(A) Increased human population

(B) Use of biodegradable chemicals

(C) Environmental pollution

(D) Scientific advancement

(iv) Soil erosion can be prevented by :

- (A) Overgrazing
- (B) Removal of vegetation
- (C) Afforestation
- (D) Deforestation

(v) Deforestation generally decreases :

- (A) Rainfall
- (B) Soil erosion
- (C) Drought
- (D) Global warming

Section-B

21. Suggest any *two* practices to protect our environment.

Or

Waste management is a challenging task. State any *two* ways for the disposal of waste.

22. When we just enter in a dark room like cinema hall, it takes some time to see objects. Why ?

23. What is the function of placenta ?

Or

Name any *five* modes of asexual reproduction.

24. On passing through a glass prism white light splits into its seven constituent colours. What is this phenomenon called and how it is caused ?

25. Draw a circuit diagram of Ohm's law apparatus.

26. Name the factors which affect photosynthesis.

Section-C

27. Give any *two* points of difference between pollination and fertilization.

Or

What is the advantage of sexual reproduction over asexual reproduction ?

28. Explain the cross between pure tall pea plant and pure dwarf pea plant through diagram.

29. Two resistors R_1 and R_2 are connected in series in a circuit having the resultant resistance of 6 Ohms. If the value of resistance for the resistor R_2 is 2 Ohms, calculate the value of resistance for the resistor R_1 .

30. What are the advantages of hydel power plant over thermal power plant ?
31. When an iron nail is dipped in a copper sulphate solution, blue colour of copper sulphate solution, fades and changes into light green colour. The iron nail that remained suspended develops a brownish coating on its surface. Name the type of reaction that takes place and write down a balanced chemical equation for the said reaction.
32. Differentiate between roasting and calcination.
33. Define Hormones. Name the hormone secreted by thyroid gland and state its function.

Section-D

34. Define Refraction. With the help of a ray diagram explain refraction of light through a glass slab.

Or

An object 5.0 cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30 cm. Find the position of the image, its nature and size.

(16)

35. Draw the structures for the following compounds :

- (i) 1-Butene
- (ii) 2-Iodopropane
- (iii) 2-Propanol
- (iv) Butanoic acid
- (v) 3-Pentanone

Or

○ Discuss briefly the physical and chemical properties of Ethanol.

36. Describe transport of water and food in plants.

Or

With the help of a labelled diagram, describe the alimentary canal of man.