A–5–X

Roll No.

Total No. of Questions : **40]** [Total No. of Printed Pages : **16**

10th ARM(SZ)JKUT2024

1005 X

SCIENCE

Time : 3 Hours] **[Maximum Marks : 80**

Section–A 1 each

Note **:–** Q. Nos. **1** to **18** are very short answer type questions of 1 mark each.

1. A spherical mirror and a thin spherical lens have each a focal length of –15 cm. The mirror and the lens are likely to be :

(A) Both concave

(B) Both convex

(C) The mirror is concave and the lens is convex

(D) The mirror is convex and the lens is concave

2. Which of the following statements is correct ?

(A) A person with myopia can see distant objects clearly

(B) A person with hypermetropia can see nearby objects clearly

(C) A person with myopia can see nearby objects clearly

(D) A person with hypermetropia cannot see distant objects clearly

3. A person cannot see distinctly object kept beyond 2 m. This defect can be corrected by using a lens of power :

(A) +0.5 D

(B) –0.5 D

(C) +0.2 D

(D) –0.2 D

4. The energy given to each Coulomb of charge passing through a 6 V battery is :

(A) 12 J

(B) 6 J

(C) 3 J

(D) 18 J

5. Which among the following is used to find out the direction of magnetic field lines around a current carrying straight conductor ?

(A) Ampere's swimming rule

(B) Fleming's right hand rule

(C) Maxwell's right hand thumb rule

(D) Fleming's left hand rule

6. Three solutions A, B and C when tested with universal indicator showed pH as 5, 1 and 13 respectively. Based on this observation choose the correct statement from the following :

(A) Solution A is a very strong acid and solution B is a weak acid

(B) Solution A is a weak acid and solution C is a weak base

(C) Both the solutions A and B are strong acids

(D) Solution B is a strong acid and solution C is a strong base

7. $CuO(s) + H_2(g) \rightarrow Cu(s) + H_2O(l)$

In the above reaction :

(A) Cu is an oxidising agent

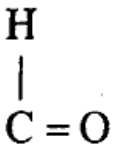
(B) H_2O is a reducing agent

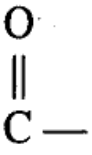
(C) CuO is an oxidising agent

(D) Both CuO and H_2 are oxidising agents

8. Which among the following represents the functional group of aldehydes ?

(A) —COOH

(B) 

(C) 

(D) —C ≡ C—

9. An element reacts with oxygen to give a compound with a high melting point. This compound is also soluble in water. The element is likely to be :

(A) Calcium

(B) Carbon

(C) Silicon

(D) Iron

10. Where should an object be placed in front of a convex lens to get a real image of the size of the object ?

(A) At the principal focus of the lens

(B) At twice the focal length

(C) At infinity

(D) Between the optical centre of the lens and its principal focus

11. Which one of the following properties is not generally exhibited by ionic compounds ?

(A) Solubility in water

(B) Electrical conductivity in solid state

(C) High melting and boiling points

(D) Electrical conductivity in molten state

12. Growing foetus derives nutrition from mother's blood through :

(A) Uterus

(B) Fallopian tube

(C) Placenta

(D) Cervix

13. Characters that are transmitted from parents to offsprings during sexual reproduction show :

(A) Only similarities with parents

(B) Only variations with parents

(C) Both similarities and variations with parents

(D) Neither similarities nor variations

14. In an ecosystem, the 10% of energy available for transfer from one trophic level to the next is in the form of :

(A) Heat energy

(B) Chemical energy

(C) Light energy

(D) Mechanical energy

15. Which is the correct sequence of the components of a reflex arc ?

(A) Receptors → Muscles → Sensory neuron → Motor neuron → Spinal cord

(B) Receptors → Motor neuron → Spinal cord → Sensory neuron → Muscles

(C) Receptors → Spinal cord → Sensory neuron → Motor neuron → Muscles

(D) Receptors → Sensory neuron → Spinal cord → Motor neuron → Muscles

Note **:–** From Q. Nos. **16** to **18**, two statements (Assertion–A and Reason–R) are given. Select the correct answer to these questions from the codes A, B, C and D as given below :

Codes :

(A) A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

16. **Assertion (A)** : When a current carrying conductor is placed in a magnetic field, it experiences a force.

Reason (R) : The force acting on a current carrying conductor is only due to the external magnetic field.

17. **Assertion (A)** : In human male, testes are extra abdominal and lie in scrotal sacs.

Reason (R) : Scrotum keeps temperature lower by 2°C for normal spermatogenesis.

18. **Assertion (A)** : Food web is a network of food chains which are inter-connected at various trophic levels.

Reason (R) : In a food web, one organism may occupy more than one position.

Section–B

2 each

Note :– There will be *ten* questions in this Section (Q. Nos. **19** to **28**) each of 2 marks.

19. What happens to the image distance in the eye when we increase the distance of an object from the eye ?

20. We cannot read a printed page by holding it very close to our eyes. Why ?

21. Let the resistance of an electrical component remains constant while the potential difference across the two ends of the component decreases to half of its former value. What change will occur in the current through it ?

22. Draw the pattern of magnetic field lines around a current carrying solenoid.

23. Write the balanced chemical equation for the following chemical reactions :

(i) Barium chloride + Aluminium sulphate → Barium sulphate + Aluminium chloride

(ii) Zinc carbonate → Zinc oxide + Carbon dioxide

24. Write the formula of cyclopentane and draw its electron dot structure.

25. What would you observe when zinc is added to a solution of Iron (II) sulphate ? Write the chemical reaction that takes place.

26. How is the concentration of hydroxide ions affected when excess base is dissolved in a solution of sodium hydroxide ?

27. Under what soil conditions do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calcium carbonate) ?

28. How does our body respond when adrenaline is secreted into the blood ?

Section–C 3 each

Note :– In this Section from Q. Nos. **29** to **37**, there will be *nine* questions with internal choice, each of 3 marks.

29. The potential difference between the terminals of an electric heater is 60 V when it draws a current of 4 A from the source. What current will the heater draw if the potential difference is increased to 120 V ?

Or

An electric iron of resistance 20 Ω takes a current of 5 A. Calculate the heat developed in 30 seconds.

30. Define Magnetic Field. List any *three* sources of magnetic field.

Or

What is an Electromagnet ? State any *two* points of difference between an electromagnet and a permanent magnet.

31. Differentiate between combination and decomposition reactions with the help of examples.

Or

What is a balanced chemical equation ? Why should chemical equations be balanced ?

32. Differentiate between minerals and ores with the help of examples.

Or

In an electrolytic refining of a metal M, what would you take as the anode, the cathode and the electrolyte

33. What advantage over an aquatic organism does a terrestrial organism have with regard to obtaining oxygen for respiration ?

Or

Differentiate between aerobic and anaerobic respiration. Name any *two* organisms that use the anaerobic mode of respiration.

34 Some diabetic patients are treated by giving insulin injections. Why ?

Or

Which animal or plant hormone is associated with the following ?

(i) Develop secondary sexual characters at puberty in boys.

(ii) Inhibits growth of plants

(iii) Goitre

35. Chances of fertilization are more if copulation has taken place during the middle of the menstrual cycle. Give reason.

Or

Give reasons for the following :

(i) Petals of flowers are variously coloured

(ii) Some plants are propagated only by vegetative methods.

36. How do Mendel's experiments show that traits are inherited independently ?

Or

What factors could lead to the rise of a new species ?

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

Or

What are the problems caused by the non-biodegradable wastes that we generate ?

Section–D 5 each

Note **:–** In this Section from Q. Nos. **38** to **40**, there will be *three* long answ : type questions with internal choice, each of 5 marks.

38. Draw a ray diagram in each of the following cases to show the formation of image when the object is placed :

(i) Between centre of curvature and principal focus of a concave mirror

(ii) At the focus of a concave mirror

(iii) Between focus and pole of the concave mirror

Or

An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focused image can be obtained ? Find the size and the nature of the image.

39. Draw the structures for the following compounds :

(i) Bromopentane

(ii) Hexanal

(iii) Propene

(iv) 2, 3-dimethyl butane

(v) 2-Propanol

Or

Explain the following reactions with examples :

(i) Combustion reaction

(ii) Substitution reaction

40. Describe the structure and functioning of nephron.

Or

Describe transport of the following materials in plants :

(i) Water

(ii) Minerals

(iii) Food