B–5–X

Roll No..... .....

Total No. of Questions : **36**] [Total No. of Printed Pages : **8**

10th SZJDAR22

6205–X

SCIENCE

(Physics, Chemistry and Life Science)

Time : 2.30 Hours] **[Maximum Marks : 80**

Section–A

1. How is power of a lens related to its focal length ? 1

2. Write the mirror formula. 1

3. If the magnification has a minus sign, then what is the nature of image formed ?

Or

What is the unit of refractive index ? 1

4. What is the nature of an image formed on the retina of the eye ? 1

5. Name the commercial unit of electrical energy. 1

6. Why should magnesium ribbon be cleaned before burning in air ? 1

7. Write the balanced chemical equation for the following reaction :

Zinc + Silver nitrate → Zinc nitrate + Silver 1

8. What is the general formula for alkyne ?

Or

Write the structural formula of butane. 1

9. Which noble gas has only two electrons in its valence shell ? 1

10. The atomic number of an element X is 17. The number of electrons in its ion X^- will be :

(A) 17 (B) 18

(C) 19 (D) 20 1

11. Name a carbon containing molecule which has two double bonds. 1

12. What would be the colour of litmus in a solution of sodium carbonate ? 1

13. Name the gland which produces testosterone. 1

For question nos. **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 :

(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)** : Mendel selected the pea plant for his experiments.
Reason (R) : Pea plant is cross-pollinating and has unisexual flowers. 1

15. **Assertion (A)** : Ozone is both beneficial and damaging.
Reason (R) : Stop the release of chlorofluorocarbons to protect the ozone. 1

16. **Assertion (A)** : Decomposers act as cleaning agents of the environment.

Reason (R) : The decomposers recycle waste material in the hydrosphere. 1

Q. Nos. **17** to **20** contain 5 sub-parts each. You are expected to answer any *four* sub-parts in these questions.

17. Electric motor works on the principle that a current carrying conductor placed perpendicular to a magnetic field experience a force.

(i) The device used for producing electric current is called a :

(A) Generator (B) Galvanometer

(C) Ammeter (D) Motor

(ii) The phenomena of electromagnetic induction is :

(A) The process of charging a body

(B) The process of generating magnetic field due to current passing through a coil

(C) Producing electric current due to relative motion between a magnet and the coil

(D) The process of rotating a coil of an electric motor

(iii) The essential difference between an AC generator and a DC generator is that :

(A) AC generator has an electromagnet while a DC generator has permanent magnet

(B) DC generator will generate a higher voltage

(C) AC generator will generate a higher voltage

(D) AC generator has slip rings while DC generator has a commutator

(iv) Current carrying conductor is a :

(A) Permanent magnet (B) Temporary magnet

(C) Natural magnet (D) None of these

(v) Which among the following produces strong magnetic field ?

(A) Permanent magnet (B) Natural magnet

(C) Bar magnet (D) Electromagnet 1×4=4

18. In the modern periodic table the elements are arranged in increasing order of their atomic numbers :

(i) Which of the following statements about the modern periodic table is correct ?

(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

(ii) The elements A, B, C, D and E have atomic numbers 9, 11, 17, 12 and 13 respectively. Which pair of elements belong to the same group ?

(A) A and B (B) B and D

(C) A and C (D) D and E

(iii) Which of the following elements exhibit maximum number of valence electrons ?

(A) Na (B) Al

(C) Si (D) P

(iv) Where would you locate the element with electronic configuration 2, 8 in the modern periodic table ?

(A) Group 8 (B) Group 2

(C) Group 18 (D) Group 10

(v) Which of the given elements A, B, C, D and E with atomic numbers 2, 3, 7, 10 and 30 respectively belongs to the same period ?

(A) A, B, C (B) B, C, D

(C) A, D, E (D) B, D, E 1×4=4

19. Plaster of Paris is calcium sulphate hemihydrate. It is commonly known as P.O.P. :

(i) The chemical formula of Plaster of Paris is :

(A) $CaSO_4.H_2O$ (B) $2CaSO_4.3H_2O$

(C) $2CaSO_4.H_2O$ (D) $CaSO_4.\frac{1}{2}H_2O$

(ii) Plaster of Paris is prepared from :

(A) Slaked lime (B) Gypsum

(C) Baking powder (D) Bleaching powder

(iii) Plaster of Paris is used by doctors for setting fractured bones because when it is mixed with water, it sets into :

(A) Hard mass (B) Soft mass

(C) Lump (D) Fluffy mass

(iv) Plaster of Paris is prepared by heating one of the following to a temperature of 100°C. This is :

(A) $CaSO_3.2H_2O$ (B) $CaCl_2.2H_2O$

(C) $CaCO_3.2H_2O$ (D) $CaSO_4.2H_2O$

(v) When Plaster of Paris is kept uncovered for a long time, it gets :

(A) Dehydrated (B) Hydrated

(C) Moistureless (D) None of these 1×4=4

20. Anything in the environment which can be used is called a natural resource ?

(i) Which of the following is not a natural resource ?

(A) Soil (B) Water

(C) Electricity (D) Natural gas

(ii) The most dwindling natural resource in the world is :

(A) Water (B) Soil

(C) Sunlight (D) Forests

(iii) Which of the following is not a fossil fuel ?

(A) LPG (B) Natural gas

(C) Biogas (D) CNG

(iv) The major programme started to replenish the damaged forest is called :

(A) Horticulture (B) Tissue culture

(C) Agriculture (D) Silviculture

(v) The three R's which can help us to conserve natural resources for long term use are :

(A) Recycle, Regenerate, Reuse

(B) Reduce, Regenerate, Reuse

(C) Reduce, Reuse, Redistribute

(D) Reduce, Recycle, Reuse 1×4=4

Section–B

21. What happens to the size of pupil of our eye :

(i) in dim light

(ii) in bright light ?

Or

Give the scientific names of the following parts of the eye :

(i) Carries signals from an eye to the brain

(ii) A hole in the middle of the iris 2

22. In the formation of spectrum of white light by prism, which colour is deviated least and which colour is deviated most ? 2

23. Explain vegetative propagation with the help of two examples.

Or

What is the basic difference between asexual reproduction and sexual reproduction ? 2

24. Calculate the number of electrons constituting one Coulomb of charge. 2

25. What are autotrophs ? Give *one* example. 2

26. Give an example of a four step food chain operating in grassland. 2

Section–C

27. State and explain Joule's law of heating.

Or

Why a series arrangement is not used for connecting domestic electrical appliances in a circuit ? 3

28. What is meant by conventional sources of energy ? Write names of two such sources. 3

29. What is a redox reaction ? Explain with an example. 3

30. What is corrosion ? How can it be prevented ? 3

31. What is a plant hormone ? Name *two* plant hormones and state one function of each. 3

32. Draw a neat labelled diagram of a flower showing its various parts. What are stamen and carpel in a flower ? 3

33. What is meant by acquired and inherited traits ? Explain with *one* example each. 3

Section–D

34. Define Nutrition. Explain different modes of nutrition with example. Why is nutrition necessary for an organism ?

Or

Define Excretion. Name the excretory unit of a kidney. 5

35. Construct ray diagrams to illustrate the formation of a virtual image using :

(i) A converging lens

(ii) A diverging lens

Or

State and explain the laws of refraction of light with the help of labelled diagram. Define refractive index of a substance. 5

36. What is the unique property of carbon atom ? How is this property helpful to us ? Explain why diamond is hard while graphite is soft.

Or

What is a functional group ? Write *three* common functional groups. Name the functional group of the following compounds :

(i) CH_3COOH

(ii) CH_3CH_2CHO

(iii) C_2H_5OH 5