PRINCE ACADEMY
OF HIGHER EDUCATION
[Co-edu. Sr. Sec. School, Affiliated to CBSE, Affiliation No. - 1730387]

Palwas Road, Near Jaipur - Bikaner Bypass Crossing, SIKAR - 332001 (Raj.) INDIA
Mob. : 9610-75-2222, 9610-76-2222
www.princeeduhub.com | E-mail : princeacademy31@gmail.com

SAMPLE PAPER (2024-25)

CLASS - X

SCIENCE (086)

Time : 03.00 Hours **M. M. : 80**

General Instructions :

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION - A

1. The length of small intestine in a deer is more as compared to the length of small intestine of a tiger. The reason for this is ?

   (a) Mode of intake of food (b) Type of food consumed

   (c) Presence or absence of villi in intestines (d) Presence or absence of digestive enzymes.

2. Salivation is controlled by

   (a) Mid brain (b) Medulla (c) Hypothalamus (d) Fore brain

3. An agent of pollination is ?

   (a) Water (b) Air (c) Animals (d) All of these

4. Excessive exposure of humans to UV results in

   (i) Damage to kidney (ii) Damage to lungs
   (iii) Skin cancer (iv) Peptic ulcers

   (a) (i) & (ii) (b) (ii) & (iv) (c) only (iii) (d) (iii) & (iv)

5. In a person the tubule part of Nephron is not functioning at all. What will be its effect on urine formation?

   (a) The urine will not be formed (b) Quality & Quantity of urine is uneffected

   (c) Urine is more concentrated (d) Urine is more diluted

6. Which one among the following is not removed as waste product from the body of a plant ?

(a) Resins & Gums (b) Urea (c) Dry leaves (d) Excess water

7. Some crystals of copper sulphate were dissolved in water. The colour of the solution obtained would be:

(a) Green (b) Red (c) Brown (d) Blue

8. Clove oil and onion are examples of

(a) basic indicator (b) acid- base indicator

(c) olfactory indicator (d) artificial indicator

9. Formic acid is found in

(a) Spinach (b) Curd (c) Vinegar (d) Ant's sting

10. Although metals form basic oxides, which of the following metals form an amphoteric oxide?

(a) Al (b) Cu (c) Na (d) Ca

11. Which one of the following metals do not react with cold as well as hot water?

(a) Mg (b) Fe (c) Ca (d) Na

12. Which of the following represents the incorrect IUPAC name of the given compound?

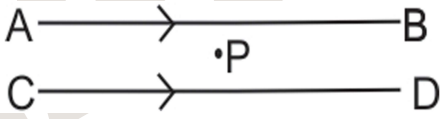
(a) CH_3CH_2 - $COOCH_3$: Ethanoic acid (b) CH_3CH_2 - CO - CH_3 : Butanone

(c) CH_3CH_2 - CHO : Propanal (d) CH_3 - CH_2 - CH_2 - CH_2 - OH : Butanol

13. You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at the same angle would bend the most?

(a) Kerosene (b) Water (c) Mustard oil (d) Glycerine

14. The resultant magnetic field at point P situated midway between two parallel wires placed horizontally each carrying a steady current is : -



(a) In the same direction as current in wires (b) In vertically upward directioon

(c) Zero (d) In vertically downward direction

15. Which of the following statements are true about respiration?

(i) During inhalation, ribs move inward and diaphragm is raised

(ii) In the alveoli, exchange of gases takes place i.e. oxygen from alveolar air diffuses into blood and carbon dioxide from the blood into the alveolar air

(iii) Haemoglobin has a greater affinity for carbon dioxide than oxygen.

(iv) Alveoli increase surface area for exchange of gases.

(a) (i) and (iv) (b) (ii) and (iii) (c) (i) and (iii) (d) (ii) and (iv)

PRINCE ACADEMY

16. The blood leaving the tissues becomes richer in.

(a) Carbon dioxide (b) Water (c) Haemoglobin (d) Oxygen

Q. No. 17 to 20 are Assertion - Reasoning based questions.

These consists of two statements Assertion (A) and Reason (R).

Answer these questions selecting the appropriate option given below.

(a) Both (A) and (R) are ture 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.

17. **Assertion (A)** : Reflex action operate without the process of thinking

Reason (R) : Delay is essential for reflex action to occur

18. **Assertion (A)** : Sex of child is determined by mother

Reason (R) : Mother is homogametic

19. **Assertion (A)** : The strength of the magnetic field at the center of a circular coil of wire depends on both the radius of the coil and the number of turns of the wire.

Reason (R): The magnetic field strength is directly proportional to the number of turns and the current flowing through the wire and inversely proportional to the radius.

20. **Assertion (A)** : Baking powder is used in making cake instead of using baking soda.

Reason (R) : Baking powder contains tartaric acid which reacts with sodium carbonate and removes bitter taste.

SECTION - B

21. Write the chemical composition of tooth enamel. Under what conditions of pH it starts corroding? Explain the reason of tooth decay and suggest one method to prevent it. 2

22. Mention one function of each of these hormones:- 2

(i) Adrenaline (ii) Growth hormones

OR

(i) Why do fishes die when taken out of water?

(ii) Name the Organisms that cannot prepare their own food?

23. Name the part of brain which controls 2

(i) Voluntary actions

(ii) Involuntary actions

OR

List in tabular form two differentiating features between cerebrum & cerebellum.

PRINCE ACADEMY

24. Draw the diagram of bisexual flower and labled the following parts of flower:-

(i) Carpel/Pistil (ii) Stamen 2

25. Draw ray diagrams showing the image formation by a concave lens when an object is placed
2

(a) between focus and twice the focal length of the lens

(b) beyond twice the focal length of the lens

26. (i) State the two causes of hypermetropia.

(ii) With the help of labelled ray diagram show correction of hypermetropia.
2

OR

Three incandescent bulbs of 100 W each are connected in series in an electric circuit. In another circuit another set of three bulbs of the same wattage are connected in parallel to the same source.

(a) Will the bulb in the two circuits glow with the same brightness? Justify your answer.

(b) Now let one bulb in both the circuits get fused. Will the rest of the bulbs continue to glow in each circuit? Give reason.

SECTION - C

27. (a) What is meant by asexual reproduction ? List two different methods of asexual reproduction.
3

(b) Describe in brief binary fission in Amoeba.

28. A chemical compound X is prepared using sodium chloride as starting material. The compound X is used for faster cooking. It also finds use as an ingredient in medicine to treat indigestion.
3

(i) Identify the compound X.

(ii) Give an equation for the chemical reaction which takes place upon heating X during cooking.

(iii) Which quality of compound X makes it suitable for treating indigestion?

29. Nikita took Zn, Al, Cu, Fe, Mg and Na metal and put each metal in cold water and then hot water. She reacted the metal with steam.
3

(i) Name the metal which reacts with cold water.

(ii) Which of the above metals react with steam?

(iii) Name the metal which reacts with hot water.

30. (i) Explain ozone formation? 3

(ii) What are the importance of ozone layer?

(iii) How is ozone layer depleted?

PRINCE ACADEMY

31. Size of the image that is obtain on a screen, of an object by a mirror having a focal length of 20 cm is observed to be reduced to 1/3rd of its size. 3

(i) At what distance the object been placed from the mirror?

(ii) What is the nature of the image and the mirror?

(iii) Draw a respective ray diagram.

32. (i) State the law that explains the heating effect of current with respect to measurable properties in an electrical circuit . 3

(ii) List the factors on which the resistance of conducting wire depends.

33. State Ohm's law? How can it be verified experimentally? 3

SECTION - D

34. (A) Define the follwing
5

(i) Pollination

(ii) Germination of seeds

(iii) Fertilization

(B) Write the post fertilizational changes occur during sexual reproduction in plants?

OR

(i) Name the type of fission that occurs in Leishmania and Plasmodium

(ii) Give reason why:

(a) Colonies of yeast fail to multiply in water but multiply in sugar solution.

(b) Rhizopus individuals do not grow on a dry slice of bread.

(iii) What are the importance of vegetative propagation? Write two different methods of vegetative propagation?

35. Give reasons for the following: 5

(i)Generally no hydrogen gas is evolved when metals react with dilute nitric acid.

(ii) Sodium hydroxide solution cannot be kept in aluminium containers.

(iii) Silver metal does not combine easily with oxygen but silver jewellery tarnishes after some time.

(iv) Sodium is obtained by the electrolysis of its molten chloride and not from its aqueous solution.

(v) Aluminium reacts with dilute hydrochloric acid slowly in the beginning.

OR

PRINCE ACADEMY

An organic compound A is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound B.

(i) Identify the compound A.

(ii) Write the chemical equation for its reaction with ethanol to form compound B.

(iii) How can we get compound ethanol form B?

(iv) Name the process and write corresponding chemical equation.

(v) Which gas is produced when compound A reacts with washing soda? Write the chemical equation

36. A student-focussed the image of a candle flame on a white screen using a convex lens. He noted down the position of the candle screen and the lens as under 5

Position of candle = 12.0 cm

Position of convex lens = 50.0 cm

Position of the screen = 88.0 cm

(i) What is the focal length of the convex lens?

(ii) Where will the image be formed if he shifts the candle towards the lens at a position of 31.0 cm?

(iii) What will be the nature of the image formed if he further shifts the candle towards the lens? Draw a ray diagram to show the formation of the image in case (iii), as said above.

OR

(i) A convex lens has a focal length of 10cm. At what distance from the lens should the object be placed so that it forms a real and inverted image at 20cm away from the lens? What would be the size of the image formed if the object is 2 cm high? With the help of a ray diagram show the formation of the image by the lens in this case.

(ii) A person having a myopia eye uses a concave lens of focal length 50 cm. What is the power of the lens?

SECTION - E

37. Read the following questions: 4

Common salt is an important raw material for various materials of daily use such as sodium hydroxide, bakingsoda, bleaching powder. These material are prepared by various procedures such as sodium hydroxide is prepared when electricity is passed through an aqueous solution of NaCl it decomposed to form sodium hydroxide. The process is called the chlor-alkali process. While bleaching powder is prepared by the action of chlorine on dry slaked lime ($Ca(OH)_2$). Washing soda is prepared by crystallisation of sodium carbonate.

(i) Write the products of the Chlor-alkali process.

(ii) Name an acid present in baking powder.

(iii) Discribe the nature of washing soda

(iv) Which salt is used in the manufacturing of borax?

OR

Sodium hydroxide solution is formed near which electrode.

PRINCE ACADEMY

38. Two pure pea plants are crossed, one having flowers at axial position (AA) and another having flowers at lateral position (aa). It is observed that in F_1 generation plants with flowers on Axial position were obtained. 4

Answer the following questions:

(i) What type of cross it is ?

(ii) What will be the genotype of plants in F_1 generation.

(iii) Explain the phenotypic and genotypic ratio of F_2 generation.

OR

What is the conclusion of the result of F_1 generation.

39. The ability of a medium to refract light is expressed in terms of its optical density. Optical density has a definite connotation. It is not the same as mass density. On comparing two media, the one with the large refractive index is optically denser medium than the other. The other medium with a lower refractive index is optically rarer. Also the speed of light through a given medium is inversely proportional to its optical density. 4

(i) Determine the speed of light in diamond if the refractive index of diamond with respect to vacuum is 2.42. Speed of light in vacuum is 3×10^8 m/s.

(ii) Refractive indices of glass, water and carbon disulphide are 1.5, 1.33 and 1.62 respectively. If a ray of light is incident in these media at the same angle (say θ), then write the incresing order of the angle of refraction in these media.

(iii) The speed of light in glass is 2×10^8 m/s and in water is 2.25×10^8 m/s.

(a) Which one of the two is optically denser and why?

(b) A ray of light is incident normally at the water-galss interface when it enters a thick glass container filled with water. What will happen to the path of the ray after entering the glass? Give reason.

OR

(iii) The absolute refractive indices of water and glass are 4/3 and 3/2 repectively. If the speed of light in glass is 2×10^8 m/s, find the speed of light in (i) vacuum and (ii) water.

* * * * *

PRINCE ACADEMY

PRINCE ACADEMY