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SAMPLE  
TEST PAPER  
**X Class**

SUBJECT : SCIENCE

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Gudha Public School Campus, Delhi Sikar Bypass Raod, NEEEMKATHANA, RAJ.

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SESSION 2025-2026

**Class 10<sup>th</sup>**

**SCIENCE**

**SET-02**

**Time: 180 Minutes**

**M.M.: 80**

**General Instructions:**

1. Total no. of questions 39.
2. This Question paper contains - Three sections A, B, and C. Each section is compulsory.
3. Section A is Biology, Section B is Chemistry and Section C is Physics.

**SECTION-A**

- |   |   |
|---|---|
| <p>1. Which of the following organisms can regenerate into complete individuals when cut into pieces? <b>[1 Mark]</b></p> <p>(A) Amoeba and Paramecium<br/>(B) Hydra and Planaria<br/>(C) Earthworm and Frog<br/>(D) Yeast and Rhizopus</p> <p>2. Parasites obtain nutrition - <b>[1 Mark]</b></p> <p>(A) By killing their host<br/>(B) By photosynthesis<br/>(C) By deriving nutrition from plants or animals without killing them<br/>(D) By secreting enzymes on dead matter</p> <p>3. The primary function of the fore-brain? <b>[1 Mark]</b></p> <p>(A) Balancing the body<br/>(B) Controlling involuntary actions<br/>(C) Thinking and processing sensory information<br/>(D) Coordinating reflex actions</p> | <p>4. Which of the following represents heterozygous condition in a monohybrid cross? <b>[1 Marks]</b></p> <p>(A) TT (B) tt<br/>(C) Tt (D) Both TT and tt</p> <p>5. Which of the following is a correct combination of hormone and its function. <b>[1 Mark]</b></p> <p>(A) Thyroxin : Regulates growth and development of the body<br/>(B) Growth hormone : Regulates carbohydrate, protein, and fat metabolism<br/>(C) Testosterone : Deficiency causes goitre<br/>(D) Insulin : Regulates blood sugar level</p> <p>6. What is a food web? <b>[1 Mark]</b></p> <p>(A) A single linear sequence of organisms feeding on each other<br/>(B) A series of branching lines showing interconnections between organisms<br/>(C) A diagram showing only producers and decomposers<br/>(D) A pyramid showing energy loss</p> |
|---|---|

[1]

7. Why do most food chains have only three or four steps? **[1 Mark]**  
 (A) Because producers stop photosynthesis  
 (B) Because energy loss at each step leaves little usable energy for higher levels  
 (C) Because decomposers block the energy flow  
 (D) Because consumers stop feeding after four levels

8. **Assertion:** Aerobic respiration releases more energy than anaerobic respiration.  
**Reason:** In aerobic respiration, glucose is completely broken down into carbon dioxide and water. **[1 Mark]**

- (A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.  
 (B) Both Assertion and Reason are true, and Reason is not the correct explanation of Assertion.  
 (C) Assertion is true, but Reason is false.  
 (D) Assertion is false, but Reason is true.

9. **Assertion:** Ozone in the upper atmosphere is essential for life on Earth.

**Reason:** Ozone absorbs harmful ultraviolet (UV) radiation from the Sun, preventing it from reaching the Earth's surface. **[1 Mark]**

- (A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.  
 (B) Both Assertion and Reason are true, and Reason is not the correct explanation of Assertion.  
 (C) Assertion is true, but Reason is false.  
 (D) Assertion is false, but Reason is true.

10. Identify the plant hormone responsible for the bending of a shoot towards unidirectional light. Explain how it promotes phototropism. **[2 Marks]**

11. How is food transported in plants?

**OR**

Write one difference between heredity and variation. **[2 Marks]**

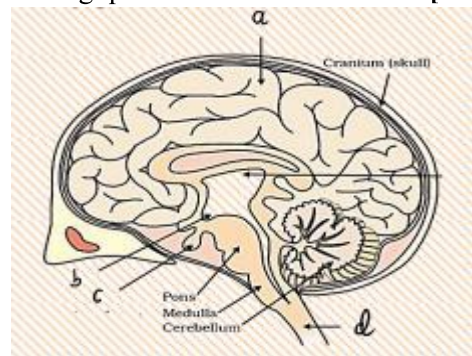
12. Describe the structure of the nephron with functioning. **[2 Marks]**

13. List two differences in tabular form between dominant trait and recessive traits. **[3 Marks]**

14. What is the difference between fission and budding? **[3 Marks]**

15. The cranial nerves from the brain and spinal nerves from the spinal cord, enables communication between the central nervous system and the rest of the body. The brain helps us think and act based on our thoughts.

Study the following diagram and answer the following questions. **[4 Marks]**



- (i) What are the major parts of the brain?  
 (ii) Label part 'a' and mention its functions.  
 (iii) Name one hormone secreted by labelled part 'c' and mention its name.  
 (iv) State the function of medulla.

16. **Attempt either A or B [5 Marks]**

(A) Draw a well labeled diagram of the female reproductive system and mention its parts.

**OR**

- (B) (i) Why is the breathing rate in aquatic organisms much faster than in terrestrial organisms?  
 (ii) What is lymph? Write its important functions.

## SECTION-B

17.  $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + 2\text{NaCl}$ . It is type of:

[1 Mark]

- (A) Both Precipitation reaction and Double
- (B) Double displacement reaction displacement reaction
- (C) Decomposition reaction
- (D) Precipitation reaction

18. Acid present in tomato is: [1 Mark]

- (A) Acetic acid
- (B) Methanoic acid
- (C) Lactic acid
- (D) Oxalic acid

19. Aqueous solutions of zinc sulphate and iron sulphate were taken in test tubes I and II by four students A, B, C and (D) Metal pieces of iron and zinc were dropped in the two solutions and observations made after several hours were recorded in the form of table as given below:

[1 Mark]

Student	Metal	Solution	Colour change of solution	Deposit/Coating obtained
A	Fe	ZnSO <sub>4</sub>	Turned green	Silvery grey coating
	Zn	FeSO <sub>4</sub>	No change	No change
B	Fe	ZnSO <sub>4</sub>	No change	Black deposit
	Zn	FeSO <sub>4</sub>	Colour faded	Grey coating
C	Fe	ZnSO <sub>4</sub>	No change	No change
	Zn	FeSO <sub>4</sub>	Turned colourless	Black deposit
D	Fe	ZnSO <sub>4</sub>	No change	Grey deposit
	Zn	FeSO <sub>4</sub>	No change	Black deposit

The correct reporting has been made in observations

- (A) Student A
- (B) Student C
- (C) Student D
- (D) Student B

20. Which of the following represents the incorrect IUPAC name of the given compound? [1 Mark]

- (A)  $\text{CH}_3\text{CH}_2 - \text{COOCH}_3$  : Ethanoic acid
- (B)  $\text{CH}_3\text{CH}_2 - \text{CO} - \text{CH}_3$  : Butanone
- (C)  $\text{CH}_3\text{CH}_2 - \text{CHO}$  : Propanal
- (D)  $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{OH}$  : Butanol

21. Which of the following gives the correct increasing order of acidic strength? [1 Mark]

- (A) Hydrochloric acid < Water < Acetic acid
- (B) Water < Acetic acid < Hydrochloric acid
- (C) Water < Hydrochloric acid < Acetic acid
- (D) Acetic acid < Water < Hydrochloric acid

22. Select the correct statements. [1 Mark]

- I. Oxide ores of heavy metals are concentrated by hydraulic washing.
  - II. Froth floatation process is used for the concentration of magnetic ores.
  - III. Oxides of highly reactive metals can be reduced to metals by the action of heat alone.
  - IV. Carbonate ores are decomposed to form metal oxides by heating in the absence of air.
- (A) II and III only
  - (B) I, III and IV only
  - (C) I and IV only
  - (D) I, II, III and IV

23. When acetic acid reacts with ethyl alcohol, we add conc.  $\text{H}_2\text{SO}_4$ . It acts as \_\_\_\_\_ and the process is called \_\_\_\_\_. [1 Mark]

- (A) Reducing agent, Esterification
- (B) Oxidizing agent, Saponification
- (C) Acid, Esterification
- (D) Dehydrating agent, Esterification

[3]

24. **Assertion:** Stannous chloride is a powerful oxidising agent which oxidises mercuric chloride to mercury.

**Reason:** Stannous chloride gives a grey precipitate with mercuric chloride, but stannic chloride does not do SO. [1 Mark]

- (A) Both Assertion and Reason are true, and the Reason is the correct explanation of the Assertion.  
(B) Both Assertion and Reason are true, but the Reason is not the correct explanation of the Assertion.  
(C) Assertion is true, but Reason is false.  
(D) Assertion is false, but Reason is true.

25. Why does micelle formation take place when soap is added to water? Will a micelle be formed in other solvents such as ethanol also. [2 Marks]

26. i. Which types of metals can be obtained in their pure form by just heating their oxides in air? Give one example. [3 Marks]

ii. Consider the reaction given below used to obtain Manganese metal in pure form:  
 $3\text{MnO}_2(\text{s}) + 4\text{Al}(\text{s}) \rightarrow 3\text{Mn}(\text{l}) + 2\text{Al}_2\text{O}_3(\text{s}) + \text{Heat}$

- (a) What type of reaction is it?  
(b) What is the role of aluminium in this reaction?

**OR**

Carbon cannot reduce the oxides of sodium, magnesium, and aluminium to their respective metals. Why? Where are these metals placed in the reactivity series? How are these metals obtained from their ores? Take an example to explain the process of extraction along with chemical equations. [3 Marks]

27. (i) How do you classify elements into metals and non-metals on the basis of their electronic configuration

(ii)  ${}^{23}_{11}\text{A}$ ,  ${}^{19}_9\text{B}$ ,  ${}^{24}_{12}\text{C}$ ,  ${}^{31}_{15}\text{D}$ ,  ${}^{35}_{17}\text{E}$

What type of bond will be formed if

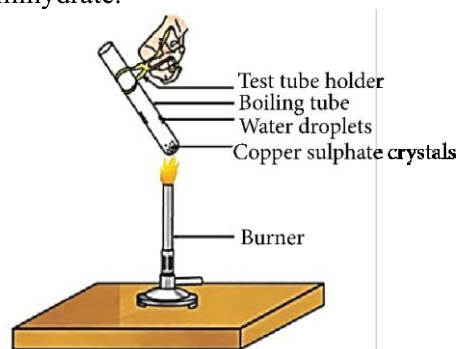
- (a) 'A' combines with 'B' ?  
(b) 'A' combines with 'E' ?  
(c) 'C' combines with 'E' ?  
(d) 'D' combines with 'E' ?

28.

(A) **Read the text carefully and answer the questions:** [4 Marks]

Copper sulphate crystal contains water of crystallisation when the crystal is heated the water is removed and salt turns white. The crystal can be moistened again with water. The water of crystallisation is the fixed number of water molecules present in 1 formula unit of copper sulphate. On heating gypsum at 373K, it loses water.

molecules and became calcium sulphate hemihydrate.



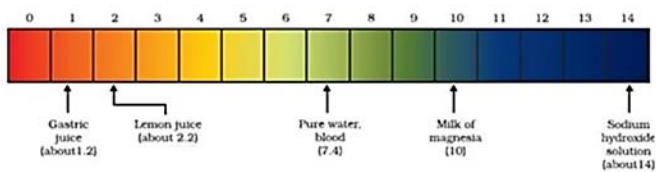
- (i) If the crystal is moistened with water, then which color of the crystal reappears?  
(ii) What is the commercial name of calcium sulphate hemihydrate?

**OR**

(B) **Read the text carefully and answer the questions:** [4 Marks]

The strength of acid and base depends on the number of  $\text{H}^+$  and the number of  $\text{OH}^-$  respectively. If we take hydrochloric acid and acetic acid of the same concentration, say one molar, then these produce different amounts of hydrogen ions. Acids that give rise to more  $\text{H}^+$  ions are said to be strong acids, and acids that give less  $\text{H}^+$  ions are said to be weak acids. Can you now say what weak and strong bases are?

[4]



- (i) Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd?
- (ii) Is Gastric juice a weak acid?

29. (i) Name the metal which does not stick to glass?  
 (ii) Name the non-metal which is a good conductor of electricity? [5 Marks]  
 (iii) Name the metal which is commonly used in thermit welding?  
 (iv) What gets deposited at the cathode, a pure or impure metal?  
 (v) What is the nature of Zinc oxide?

**OR**

What are carboxylic acids? Give the common names, IUPAC names and structural formula of first four members of the homologous series.

## SECTION-C

30. When light rays enter the eye, most of the refraction occurs at the [1 Mark]

- (A) crystalline lens  
 (B) outer surface of the cornea  
 (C) iris  
 (D) pupil

31. In an electrical circuit three incandescent bulbs A, B and C of rating 40 W, 60 W and 100 W respectively are connected in parallel to an electric source. Which of the following is likely to happen regarding their brightness? [1 Mark]

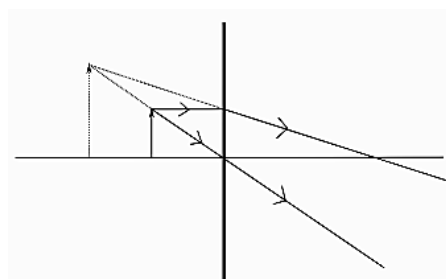
- (A) Brightness of all the bulbs will be the same  
 (B) Brightness of bulb A will be the maximum  
 (C) Brightness of bulb B will be more than that of A  
 (D) Brightness of bulb C will be less than that of B

32. **Assertion:** A convex mirror always forms an image behind it and the image formed is virtual.  
**Reason:** According to the sign convention, the focal length of a convex mirror is positive.

[1 Mark]

- (A) Both Assertion and Reason are true, and the Reason is the correct explanation of the Assertion.  
 (B) Both Assertion and Reason are true, but the Reason is not the correct explanation of the Assertion.  
 (C) Assertion is true, but Reason is false.  
 (D) Assertion is false, but Reason is true.

- 33.



The above figure shows the formation of an image by a lens shown by a thick line. [2 Marks]

Analyse the figure and answer the following questions.

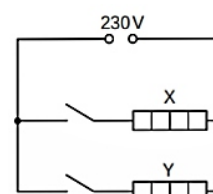
- (A) What is the type of lens used?  
 (B) What is the nature of the image?  
 (C) If the image is formed at a distance of 30 cm from the lens and the image is twice the size of the object, then where is the object placed?

### For visually impaired students

- (A) What type of lens always forms a virtual erect and diminished image?  
 (B) List two uses of such a lens.

34. Attempt either option A or B

- (A)



[2 Marks]

[5]

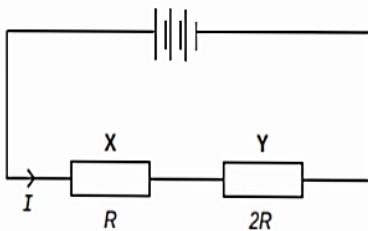
The electric circuit (above figure) in a clothes dryer contains two heaters X and Y in parallel. The above figure shows the circuit connected to a 230 V power supply. When both switches are closed, the current in X is 3.5 A

Analyse the circuit given above and answer the following questions.

- Calculate the power developed in heater X.
- If the resistance of X is double that of Y calculate the current in heater Y.

OR

(B)



The above figure shows two resistors X and Y connected in series to a battery. The power dissipated for this combination is  $P_1$ . When these resistors

are connected in parallel to the same battery then the power dissipated is given by  $P_2$ . Find out the ratio  $\frac{P_1}{P_2}$ .

**For visually impaired students**

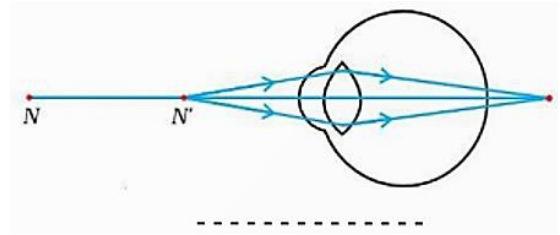
- We have four resistors A, B, C and D of resistance  $3\Omega$ ,  $6\Omega$ ,  $9\Omega$  and  $12\Omega$  respectively. Find out the lowest resistance which can be obtained by combining these four resistors.

OR

- You are given 2 fuse wires A and B with current ratings 2A and 5A respectively. Justify with reason which of the two would you use with a 1000W, 220V room heater?

- What is the fundamental difference between hypermetropia and myopia in terms of the optical experience of a person?
  - The diagram below shows a special case of an eye defect.
    - What is the defect that is shown in the figure?

- State one cause for such a defect?
- Explain with reason if a concave lens can be used to correct the defect. **[3 Marks]**

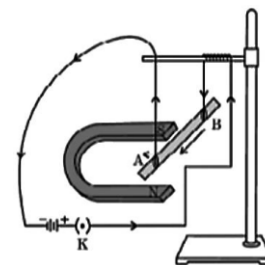


**For visually impaired students**

- What is the fundamental difference between hypermetropia and myopia in terms of the optical experience of a person?
- What are the causes of myopia in the human eye?

- Calculate the resistance of a metal wire of length 2 m and area of cross-section  $1.55 \times 10^{-6} \text{ m}^2$  (Resistivity of the metal is  $2.8 \times 10^{-8} \times \Omega\text{m}$ )
  - Why are alloys preferred over pure metals to make the heating elements of electrical heating devices? **[3 Mark]**
- An electric lamp of 100 ohms, a toaster of resistance 50 ohms and a water filter of resistance 500 ohms are connected in parallel to a 220V source. what is the resistance of the electric iron connected to the same source that takes as much current as all the three appliances and what is the current through it?
  - Which uses more energy, a 250 W TV set for 1 hour or a 1,200 W toaster for 10 minutes? **[3 Marks]**

- Read the text carefully and answer the questions: **[4 Marks]**



[6]

A student was asked to perform an experiment to study the force on a current carrying conductor in a magnetic field. He took a small aluminum rod AB, a strong horse shoe magnet, some connecting wires, a battery and a switch and connected them as shown. He observed that on passing current, the rod gets displaced. On reversing the direction of current, the direction of displacement also gets reversed. On the basis of your understanding of this phenomenon, answer the following questions:

- (A) State the condition under which the displacement of the rod is largest for the same magnitude of current flowing through it.
- (B) State the rule that determines the direction of the force on the conductor AB.
- (C)
- If the U shaped magnet is held vertically and the aluminum rod is suspended horizontally with its end B towards due north, then on passing current through the rod from B to A as shown, in which direction will the rod be displaced?
  - Name any two devices that use current carrying conductors and magnetic field.

**OR**

Draw the pattern of magnetic field lines produced around a current-carrying straight conductor held vertically on horizontal cardboard. Indicate the direction of the field lines as well as the direction of the current flowing through the conductor.

**For visually impaired students**

Prabha wants to project the image of a candle flame on screen 60 cm in front of a mirror by keeping the flame at a distance of 15 cm from its pole.

- (A) What type of mirror must be used?
- (B) What is the linear magnification of the image produced?
- (C) What does the value linear magnification indicate about the image?

**OR**

How much is the distance between the object and its image in the given case?

39. An object 4.0 cm in size, is placed 25.0 cm in front of a concave mirror of focal length 15.0 cm.
- [5 Marks]**
- At what distance from the mirror should a screen be placed in order to obtain a sharp image?
  - Find the size of the image.
  - Draw a ray diagram to show the formation of image in this case.

**OR**

- One half of a convex lens of focal length 10 cm is covered with a black paper. Can such a lens produce an image of a complete object placed at a distance of 30 cm from the lens? Draw a ray diagram to justify your answer.
- A 4 cm tall object is placed perpendicular to principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 15 cm. Find the nature, position and the size of the image.

**For visually impaired students**

- (A) What type of image is formed by a convex lens when the object is placed between the optical centre and the focus?
- (B) What is the nature of reflection when a parallel beam of light falls on a smooth and highly polished surface?
- (C) Why are concave mirrors used as shaving mirror?

**OR**

- (A) What are the advantages of having two eyes instead of one?
- (B) What role does the iris play when the eye is exposed to bright light?
- (C) A person wearing spectacles of power (below mentioned cases) is likely suffering from which condition?
- (i) +1D
- (ii) -1D