

**J B Academy, Ayodhya**  
**Half Yearly Examination, Class-X**  
**Science (Subject Code – 086)**

**Max. Marks: 80**

**Time Allowed: 3 hours**

**General Instructions:**

- i. This question paper consists of 39 questions in 5 sections.
- ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii. Section A consists of 20 objective type questions carrying 1 mark each.
- iv. 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.
- v. 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.
- vi. 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.
- vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-part.

**Section-A**

Select and write the most appropriate option out of the four options given for each of the questions 1 - 20. There is no negative mark for incorrect response.

1. The products obtained after the decomposition of Ferrous sulphate are
  - a)  $\text{Fe}_2\text{O}_3$  and  $\text{SO}_2$
  - b)  $\text{Fe}_3\text{O}_4$  and  $\text{SO}_3$
  - c)  $\text{Fe}_2\text{O}_3$ ,  $\text{SO}_2$  and  $\text{SO}_3$
  - d) None of the above
2. Chemical formula of quick lime is -
  - a)  $\text{Ca}(\text{OH})_2$
  - b)  $\text{CaO}$
  - c)  $\text{CaCO}_3$
  - d)  $\text{CaSO}_4$
3. Colour of Zinc in copper sulphate solutions after 30 minutes turns
  - a) Blue
  - b) Colourless
  - c) Dull green
  - d) Reddish brown
4. Which of the following statements about the reaction below is correct  
 $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$ 
  - a)  $\text{CuO}$  is oxidised
  - b)  $\text{H}_2$  is reduced
  - c)  $\text{H}_2$  is oxidised
  - d)  $\text{H}_2$  is oxidising agent
5. Identify the product formed when excess of carbon dioxide is passed through limewater
  - a.  $\text{CaCO}_3$
  - b.  $\text{CaSO}_4$
  - c.  $\text{CaO}$
  - d.  $\text{Ca}(\text{HCO}_3)_2$
6. The pH of our blood is
  - a) Highly acidic
  - b) Slightly basic
  - c) Highly basic
  - d) Slightly acidic
7. Baking powder is made up of
  - a) Baking soda and a mild base
  - b) Baking soda and a mild acid
  - c) Washing soda and a mild acid
  - d) Washing soda and a mild a base.

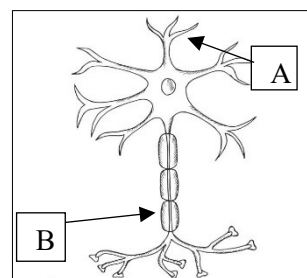


19. Assertion – The near point of a hypermetropic eye is more than 25 cm away.  
Reason- Hypermetropia is corrected using spectacles containing concave lenses.
20. Assertion: Human heart does not allow mixing of oxygen rich blood with carbon di oxide rich blood.  
Reason: Human heart has four different chambers.

### Section-B

#### Question No. 21 to 26 are very short answer questions

21. What is Plaster of Paris. Write it's chemical formula and chemical name. How is it prepared?
22. Describe the various respiratory pathways in living organisms.
23. a) Explain giving any two reasons the significance of transpiration in plants.  
b) Explain why plants have low energy requirements as compared to animals.
24. Define dispersion of light through a prism and also draw the diagram.
25. An object is placed at 20cm in front of concave mirror whose focal length is 25 cm. find the distance of image formed and also the magnification by the mirror.
26. a) Name A and B in the diagram  
b) Which part acquires the information in the neuron?  
c) Through which part does the information travel?  
d) In what form does the information travel?



### Section-C

#### Question No. 27 to 33 are short answer questions

27. What happens when Electricity is passed through brine? What is the process called? write the chemical equation involved here. Name the gases evolved at (i) Cathode (ii) Anode. List one important uses of these gases.
28. What happens when-
- (i) Copper metal is added to silver nitrate solution.
  - (ii) Aqueous solution of lead nitrate is mixed with aq. solution of Potassium iodide.
  - (iii) Baking soda is heated
29. Draw excretory system in human beings and label the following organs of the excretory system which performs following functions.
- a) forms urine
  - b) is a long tube which collects urine
  - c) stores urine until it is passed out.
  - d) Artery that carries blood in the kidneys.

30. What is reflex action? Explain with a reflex arc. Write two significances of reflex action.
31. a) Bile juice does not contain any digestive enzyme, yet it is essential for digestion. Explain.  
b) How do saprophytes obtain their nutrition from their food?
32. Define unit of power of lens. A doctor has prescribed a corrective lens of power +1.5 D. Find the focal length of the lens. Is the prescribed lens diverging or converging?
33. Draw ray diagram and list the characteristics of image when;  
(i) Object placed at 'C' in front of concave mirror  
(ii) Object is placed in front of convex mirror

### Section-D

#### **Question No. 34 to 36 are long answer questions**

34. What are Decomposition Reactions ? With suitable reactions explain the types of Decomposition reactions.

**OR**

35. A Salt of calcium has a remarkable property of setting into hardness when mix with water. Identify the salt what is it's chemical name and formula? Write a balanced chemical reaction of it's preparation method. List two uses of this salt.
35. a) Breathing cycle is rhythmic whereas exchange of gases is a continuous process. Justify the statement.  
b) State the function of guard cells. What will happen to guard cells and stomatal pore when water flows to guard cells?  
c) Where is blood oxygenated in fishes?

**OR**

- a) Explain the functioning of heart with diagram.  
b) What is double circulation and write it's significance.
36. a. State the law of refraction of light with well labelled diagram.  
b. A divergent lens has a focal length of 20 cm. at what distance should an object of height 4 cm from the optical centre of the lens be placed so that its image is formed 10 cm away from the lens. Find the size of the image also.  
c. Draw a ray diagram to show the formation of image when object is placed between focus and optical centre, also list the characteristics of image formed.

### Section - E

#### **Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts.**

37. The teacher while conducting experiments in the Laboratory gave various samples to the students to find out their pH and classify them according to their nature.

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Sample solutions - Tomato juice, Coffee, sodium hydroxide, Sodium chloride, water

A. For the solutions provided, which is likely to have pH value

(i) less than 7 and (ii) greater than 7.

B. What is the Hydrogen ion concentration of lemon juice and sodium hydroxide

solutions.

C. What is the nature of coffee and Sodium chloride?

D. Do basic solutions also have  $H^+$  and  $OH^-$  ions? If yes, then why are the basic?

38. Some plants like the pea plant climb up on other plants or fences by means of tendrils. These tendrils are sensitive to touch or contact. When they come in contact with the support, the part of the tendril in contact with the object does not grow as rapidly as the part of the tendril away from the object. This causes the tendril to circle around the object and thus cling to it more commonly. Plants respond to stimuli slowly by growing in a particular direction. Because this growth is directional, it appears as if the plant is moving.

Answer the following base on the above information.

a) Name the tropic growth movements shown by plants.

b) Give one example of chemotropism.

c) Name the hormone which promotes cell division.

d) Name the plant hormone that helps in the growth of tendril.

39. With the help of mirror, we can form a variety of images. For example, in plane mirrors, images are the same size as the object and are located behind the mirror. Dental mirror may produce a magnified image while security mirror in shops on the other hand form images that are smaller than the object. These images can be either real or virtual depending upon the position of object. The real image can be obtained by the screen only when the reflected rays meet actually. Virtual image does not form on the screen because after reflection the reflected ray appears to meet.

a. What are the advantages and disadvantages of using a convex mirror for seeing traffic at the rear?

b. Name the mirror can give an erect an enlarged image of the object.

c. An object is placed at distances of 10 cm, 20 cm, 30 cm and 40 cm respectively from a concave mirror of focal length 15 cm with Which position of the object will produce.

i. Virtual image

ii. an image of same size