**KENDRIYA VIDYALAYA GACHIBOWLI, GPRA CAMPUS, HYD-32**
**SAMPLE PAPER 04 (2019-20)**

**SUBJECT: SCIENCE (086)**

**BLUE PRINT : CLASS X**

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<th>UNIT</th>
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<th>VSA (1 mark)</th>
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Note: * - Internal Choice Questions of same chapter.
AR – Assertion, Reason based question
SECTION – A

1. Which of the following statements about the given reaction are correct?
   \[ 3\text{Fe(s)} + 4\text{H}_2\text{O(g)} \rightarrow \text{Fe}_3\text{O}_4(\text{g}) + 6\text{H}_2(\text{g}) \]
   (i) Iron metal is getting oxidised
   (ii) Water is getting reduced
   (iii) Water is acting as reducing agent
   (iv) Water is acting as an oxidising agent
   (a) (i), (ii) and (iii)       (b) (iii) and (iv)       (c) (i), (ii) and (iv)       (d) (ii) and (iv)

2. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
   (a) Baking power       (b) Lime
   (c) Ammonium hydroxide solution       (d) Hydrochloric acid

3. Which of the following elements will form an acidic oxide?
   (a) An element with atomic number 7
   (b) An element with atomic number 3
   (c) An element with atomic number 12
   (d) An element with atomic number 19
   OR
   The element with atomic number 14 is hard and forms acidic oxide and a covalent halide. To which of the following categories does the element belong?
   (a) Metal       (b) Metalloid       (c) Non-metal       (d) Left-hand side element

4. Refraction of light by the earth's atmosphere due to variation in air density is called
   (a) atmospheric reflection       (b) atmospheric dispersion
   (c) atmospheric scattering       (d) atmospheric refraction
   OR
   One cannot see through the fog, because
   (a) refractive index of the fog is very high       (b) light suffers total reflection at droplets
   (c) fog absorbs light       (d) light is scattered by the droplets

5. If P and V are the power and potential of device, the power consumed with a supply potential \( V_1 \) is
   \[ \frac{V_1^2}{V^2} P \]
   \[ \frac{V^2}{V_1^2} P \]
   \[ \frac{V}{V_1} P \]
   \[ \frac{V_1}{V} P \]
   (a)       (b)       (c)       (d)
6. Out of the three elements P, Q and R having atomic numbers 11, 17 and 19 respectively, which two elements will show similar properties and why?

7. Biogas is a better fuel than animal dung cake because
   (a) biogas has lower calorific value.
   (b) animal dung cake has high calorific value
   (c) biogas burns smoke and leaves no residue
   (d) biogas is used as a fuel for cooking only whereas dung cake can be used for cooking, illuminant the lanterns.

8. How much work is done in moving a charge of 2 C from a point of 118 V to a point of 128 V?
   (a) 20 J  
   (b) 30 J  
   (c) 40 J  
   (d) 10 J

9. Among the statements given below select the ones that correctly describe the concept of sustainable development
   (i) Planned growth with minimum damage to the environment
   (ii) Growth irrespective of the extent of damage caused to the environment
   (iii) Stopping all developmental work to conserve the environment
   (iv) Growth that is acceptable to all the stakeholders
   (a) (i) and (iv)  
   (b) (ii) and (iii)  
   (c) (ii) and (iv)  
   (d) (iii) only

   OR

   Expand the abbreviation GAP
   (a) Governmental Agency for Pollution Control
   (b) Gross Assimilation by Photosynthesis
   (c) Ganga Action Plan
   (d) Governmental Agency for Animal Protection

10. Select saturated hydrocarbons from the following: C₃H₆, C₅H₁₀, C₆H₁₀, C₆H₁₄, C₂H₄.

    Answer question numbers 11(i) - 11(iv) on the basis of your understanding of the following paragraph and the related studied concepts.

11. (a) Aditya’s father works in a nuclear power reactor. He asked his father to take him for a visit to nuclear power reactor. But his father was not keen to take him there. Now answer the following questions:
   11(i) What could be the possible reason of Aditya’s father not taking him to the nuclear power reactor?
   11(ii) Write one advantage of setting up a nuclear power reactor.
   11(iii) Which effect of electricity is used in cranes ?
   11(iv) How electromagnet is formed ?

    Answer question numbers 12(i) - 12(iv) on the basis of your understanding of the following Activity and the related studied concepts.

12. ACTIVITY
   ➢ Fill a conical flask with water.
   ➢ Cover the neck of the flask with a wire mesh.
   ➢ Keep two or three freshly germinated bean seeds on the wire mesh.
   ➢ Take a cardboard box which is open from one side.
Keep the flask in the box in such a manner that the open side of the box faces light coming from a window (See the below figure).

After two or three days, you will notice that the shoots bend towards light and roots away from light.

Now turn the flask so that the shoots are away from light and the roots towards light. Leave it undisturbed in this condition for a few days.

12(i) Which will change the directions that plant parts grow in?

12(ii) How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light?

12(iii) Which of the following is not associated with growth of plant?
- (a) Auxin
- (b) Gibberellins
- (c) Cytokinins
- (d) Abscisic acid

12(iv) The movement of shoot towards light is ______.
- (a) hydrotropism
- (b) chemotropism
- (c) phototropism
- (d) none of these

For question numbers 13 and 14, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below

i) Both A and R are true and R is correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion.
iii) A is true but R is false.
iv) A is false but R is true.

13. Assertion (A): Steel core is used as an electromagnet.
   Reason (R): Steel gets permanently magnetised when the current flows through the coil wound around.

   Reason (R): This reaction is saponification.

SECTION – B

15. (a) A solution of Potassium chloride when mixed with silver nitrate solution, an insoluble white substances is formed. Write the chemical reaction involved and also mention the type of the chemical reaction
(b) Ferrous sulphate when heated, decomposes with the evolution of a gas having a characteristic odour of burning sulphur. Write the chemical reaction involved and identify the type of reaction.

16. Explain how the tendency to gain electrons change on moving down a group?

17. (a) Label any 4 parts in the given diagram.
(b) What are the two functions represented in this diagram?

18. What is tooth enamel chemically? State the condition when it starts corroding. What happens when food particles left in the mouth after eating degrade? Why do doctors suggest use of tooth powder/toothpaste to prevent tooth decay?

OR

Answer the following questions:
(i) State the colour of phenolphthalein in soap solution.
(ii) Name the by-product of chlor-alkali process which is used for the manufacture of bleaching powder.
(iii) Name one indicator which specifies the various levels of $\text{H}^+$ ion concentration.

19. What is meant by reflex-action? With the help of a labelled diagram trace the sequence of events which occur when we touch a hot object.

20. A student using a convex lens of focal length 20 cm, formed image of an object placed in front of the lens on one side a screen placed on the other side of the lens. He noted the following reading for object distance ($u$) and image distance ($v$) from lens.

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<th>S.No</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<td>60</td>
<td>45</td>
<td>40</td>
<td>32</td>
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<td>$v$ (cm)</td>
<td>30</td>
<td>36</td>
<td>45</td>
<td>53</td>
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Without using lens formula, comment, which of these observations are wrong. Justify your answer.

21. What is an ecosystem? List its two main components. We do not clean natural ponds or lakes but an aquarium needs to be cleaned regularly. Why is it so? Explain.

OR

How is ozone formed in the upper atmosphere? Why is the damage of ozone layer a cause of concern to us? State a cause of this damage.
22. Explain why?
(a) A myopic person prefers to remove his spectacles while reading a book.
(b) A hypermetropic person prefers to remove his spectacles while looking at the sky.

OR
Explain giving reason why the sky appears blue to an observer from the surface of the earth? What will the colour of the sky be for an astronaut staying in the international space station orbiting the earth? Justify your answer giving reason.

23. Explain the underlying principle and working of an electric generator by drawing a labelled diagram.

24. Give reasons for the following:
(a) Traits acquired during lifetime of an individual are not inherited.
(b) All the human beings belong to a single species.
(c) Variations keep on accumulating during reproduction, and do not disappear in next generation.

SECTION – C

25. Give reasons for the following:
(a) Silver and copper lose their shine when they are exposed to air. Name the substance formed on their surface in each case.
(b) Tarnished copper vessels are cleaned with tamarind juice.
(c) Aluminium is more reactive than iron yet there is less corrosion of aluminium as compared to iron when both are exposed to air.

OR
Draw a schematic diagram of the various steps involved in the extraction of metals from ores for metals of medium reactivity and for metals of low reactivity.

26. (a) Under what condition will a glass lens placed in a transparent liquid become invisible?
(b) Describe and illustrate with a diagram, how we should arrange two converging lenses so that a parallel beam of light entering one lens emerges as a parallel beam after passing through the second lens.
(c) An object is placed at a distance of 3 cm from a concave lens of focal length 12 cm. Find the (i) position and (ii) nature of the image formed.

OR
(a) Define optical centre of a spherical lens.
(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 in above situation.

27. (a) Draw a labelled diagram of the respiratory system of human beings with diaphragm at the end of expiration.
(b) List four conditions required for efficient gas exchange in an organism.

28. Describe in brief the role of (i) testis (ii) seminal vesicle, (iii) vas deferens, (iv) ureter and (v) prostate gland in human male reproductive system.

OR
(a) What is pollination? How does it occur in plants?
(b) How does pollination lead to fertilisation? Explain.
(c) Draw a diagram showing germination of pollen on stigma of a flower.
29. Soaps and detergents are both types of salts. State the difference between the two. Write the mechanism of the cleansing action of soaps. Why do soaps not form lather (foam) with hard water? Mention any two problems that arise due to the use of detergents instead of soaps.

30. What does the electric circuit mean? Study the circuit shown:

A current of 0.6 A is shown by ammeter in the circuit when the key $K_1$ is closed. Find the resistance of the lamp $L$. What change in current flowing through the 5 Ω resistor and potential difference across the lamp will take place, if the key $K_2$ is also closed. Give reason for your answer.