

**KENDRIYA VIDYALAYA SANGATHAN, HYDERABAD REGION**  
**SAMPLE PAPER 05 FOR SA - I (2016-17)**

**SUBJECT: SCIENCE**

**BLUE PRINT : SA-I CLASS X**

<b>Unit/Topic</b>	<b>VSA/MCQ (1 mark)</b>	<b>Short answer (2 marks)</b>	<b>Short answer (3 marks)</b>	<b>Long answer (5 marks)</b>	<b>Total</b>
Chemical Reactions and Equations	1(1)	2(1)	3(1)	-	<b>06(3)</b>
Acids, Bases and Salts	3(3)	2(1)	6(2)	5(1)	<b>16(7)</b>
Metals and Non-metals	1(1)	2(1)	3(1)	5(1)	<b>11(4)</b>
Life Processes	3(3)	4(2)	3(1)	5(1)	<b>15(7)</b>
Control and coordination	-	-	6(2)	-	<b>06(2)</b>
Electricity	2(2)	2(1)	9(3)	5(1)	<b>18(7)</b>
Magnetic Effects of Electric current	1(1)	-	-	10(2)	<b>11(3)</b>
Sources of Energy	1(1)	-	6(2)	-	<b>07(3)</b>
<b>Total</b>	12(12)	12(6)	36(12)	30(6)	<b>90(36)</b>

**MARKING SCHEME FOR SA – I**

<b>SECTION</b>	<b>MARKS</b>	<b>NO. OF QUESTIONS</b>	<b>TOTAL</b>
<b>VSA</b>	1	3	03
<b>SA – I</b>	2	3	06
<b>SA – II</b>	3	12	36
<b>LA</b>	5	6	30
<b>Practical based MCQs</b>	1	9	09
	2	3	06
<b>GRAND TOTAL</b>			<b>90</b>

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**SUBJECT: SCIENCE**

**MAX. MARKS : 90**

**CLASS : X**

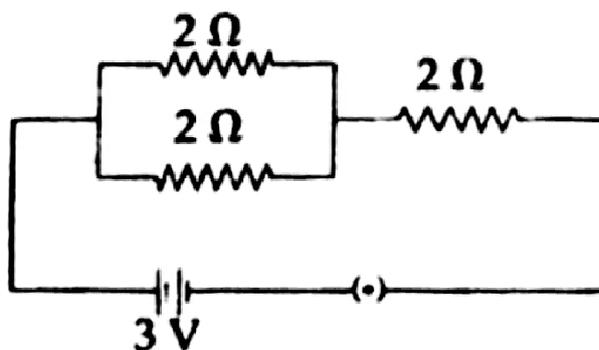
**DURATION : 3 HRS**

**General Instructions:**

1. All questions are compulsory.
2. The question paper comprises of **two Sections, A and B**. You are to attempt both the sections.
3. All questions of **Section-A** and **Section-B** are to be attempted separately.
4. Question numbers **1 to 3** in **Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
5. Question numbers **4 to 6** in **Section-A** are **two marks** questions. These are to be answered in about **30 words** each.
6. Question numbers **7 to 18** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
7. Question numbers **19 to 24** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
8. Question numbers **25 to 33** in **Section-B** are multiple choice questions based on practical skills. Each question is a **one mark** question. You are to select one most appropriate response out of the four provided to you.
9. Question numbers **34 to 36** in **Section-B** are questions based on practical skills and are **two marks** questions.

**SECTION – A**

1. Name the two combustible components of biogas gas.
2. Draw a diagram to show uniform magnetic field in a given region.
3. Mention the raw materials required for photosynthesis.
4. Explain the following terms: (i) hydrotropism (ii) geotropism
5. Consider the following chemical reaction:  
 $x + \text{water} \rightarrow \text{Slaked lime}$ 
  - (a) Write the chemical name of 'x' and the type of reaction that occurs.
  - (b) Write chemical equation of the reaction.
6. Differentiate between roasting and calcination processes by giving one example of each.
7. Three resistors of  $2\Omega$  each are connected to a battery of 3 V as shown. Calculate the current drawn from the battery the battery and voltage across the  $2\Omega$  resistor.

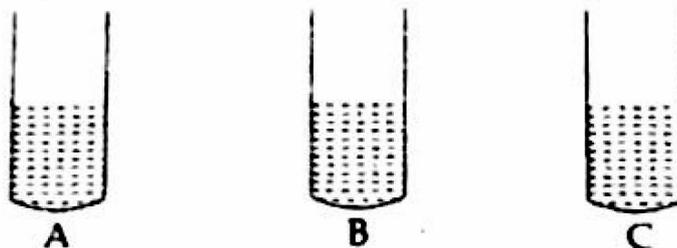


8. A circuit has a line of 5 A. How many lamps of rating 40W; 220V can simultaneously run on this line safely?
9. A metal wire has diameter of 0.25 mm and electrical resistivity of  $0.8 \times 10^{-8} \Omega\text{m}$ .  
(a) What will be the length of this wire to make a resistance 5  $\Omega$ ?  
(b) How much will the resistance change if the diameter of the wire is doubled?
10. Aditya's father is a builder. While working on a project of developing a residential complex he ensured that the surrounding was made green by planting trees. Also he installed solar water heaters on the roof tops and solar panel for lighting streets of the complex at night.  
(a) Explain two values exhibited by Aditya's father.  
(b) By opting for solar panel and solar geysers in the residential complex how has Aditya's father made all the future residents of the complex contribute to save energy crises.
11. Define fuel. List any two characteristics that you would look for in a good fuel.
12. Give one example each of the following decomposition reactions. Write one balanced chemical equation in each case:  
(a) The reaction which occurs on passing electric current.  
(b) The reaction which occurs in the presence of sunlight.  
(c) The reaction which occurs on heating of a substance.
13. A compound 'X' is a constituent of baking powder. It is used as an antacid. When 'X' is heated it gives out a gas 'Y' which, when passed through lime water turns it milky and salt 'Z' is formed which is the main constituent of washing powder. Identify X, Y and Z. Write the balanced chemical equations for the reactions involved.
14. Name two metals in each of the following cases:  
(a) Metals that are stored in kerosene  
(b) Metals that are alloyed with iron to make stainless steel
15. (a) A solution turns red litmus paper to blue. What can be pH of this solution?  
(b) 10mL of sodium hydroxide solution is completely neutralized by 8 mL of solution of hydrochloric acid. If we take 20 mL of the same sodium hydroxide solution, what will be the amount of hydrochloric acid solution required to neutralize it?  
(c) What type of medicine is used for the treatment of indigestion?
16. State reason for the following:  
(a) The inner wall of the alimentary canal is not digested.  
(b) Valves are present between the left atrium and left ventricle as well as right atrium and right ventricle.
17. Draw a neat diagram of human brain and label on it the following parts: (i) Midbrain (ii) Pituitary gland (iii) Cerebellum (iv) Cerebrum
18. "As the blood sugar level in our body falls insulin secretion is reduced". Justify this statement in the reference of feedback mechanism that regulates the timing and amount of hormone released.
19. (a) In a tabular form write the colours of the following indicators in presence of acid and base:  
Litmus solution, phenolphthalein solution, methyl orange solution  
(b) Classify the following given solution A and B in acidic and basic, giving reason.  
Solution A :  $[\text{H}^+] < [\text{OH}^-]$   
Solution B :  $[\text{H}^+] > [\text{OH}^-]$

20. Write the electronic configuration of magnesium (atomic no. 12) and oxygen (atomic no. 8) and explain the formation of magnesium oxide by electrons transfer. State the type of bond formed. Explain with reason two physical properties of compounds formed by this bonding.
21. Describe the mechanism of breathing in humans. How does the exchange of gases occur in tissues? What happens to the carbon dioxide which is collected in human tissues?
22. State Ohm's law. Write the necessary condition for its validity. How is this law verified experimentally? What will be the nature of graph between potential difference and current for a conductor? Name the physical quantity that can be determined from this graph.
23. (a) A positively charged particle (alpha) projected towards west is deflected towards north by a magnetic field. State the direction of magnetic field. State the rule used by you to find the direction.
- (b) Mention the factors on which the strength of forces experienced by a current carrying conductor placed in a magnetic field depend.
- (c) Under what condition is the force experienced by a current carrying conductor placed in a magnetic field maximum?
24. What is meant by electromagnetic inductions? How will you demonstrate this phenomenon with the help of an experiment? State the factors on which the strength the induced current depends.

### SECTION – B

25. Which of the following is correct about the colour obtained on pH values in the solution taken in test tubes A, B and C respectively?



**A**  
Dil. Sodium hydrogen carbonate solution

**B**  
Dil. hydrochloride acid

**C**  
Water

	<b>A</b>	<b>B</b>	<b>C</b>
(a)	Blue, 10	Red, 2	Green, 7
(b)	Red, 2	Blue, 10	Green, 7
(c)	Green, 7	Red, 2	Blue, 10
(d)	Blue, 2	Red, 10	Green, 7

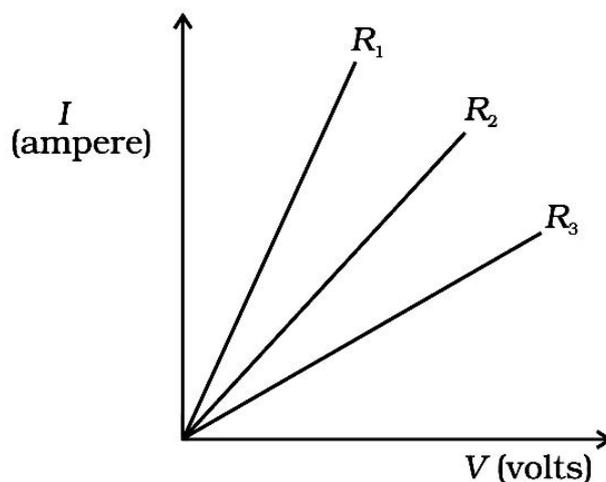
26. A student studied reaction of HCl with zinc and of HCl on  $\text{Na}_2\text{CO}_3$  and compared the properties of  $\text{CO}_2$  and  $\text{H}_2$ . Correct observation should be that both  $\text{CO}_2$  and  $\text{H}_2$  are:
- pungent in odour
  - non flammable
  - colourless
  - heavier than air

27. A student determined the pH of the solutions of samples dil. hydrochloric acid, lemon juice, water and dil. sodium hydroxide. He made the following observations:
- (1) Dil. hydrochloric acid changed the colour pH paper red and it's approximate pH value is 2.
  - (2) Lemon juice changes the colour pH paper into orange and its approximate pH value is 4.
  - (3) Water changes the colour of pH paper blue and its approximate pH value is 9.
  - (4) Dil. sodium hydroxide changes the colour of pH into deep blue and approximate pH value is 14.

The incorrect observation is:

- (a) 1                      (b) 2                      (c) 3                      (d) 4

28. A student carries out an experiment and plots the V-I graph of three samples of nichrome wire with resistances  $R_1$ ,  $R_2$  and  $R_3$  respectively(see below Figure). Which of the following is true?



- (a)  $R_1 = R_2 = R_3$                       (b)  $R_1 > R_2 > R_3$   
(c)  $R_3 > R_2 > R_1$                       (d)  $R_2 > R_3 > R_1$

29. Two resistors of resistance  $2\ \Omega$  and  $4\ \Omega$  when connected to a battery will have
- (a) same current flowing through them when connected in parallel
  - (b) same current flowing through them when connected in series
  - (c) same potential difference across them when connected in series
  - (d) different potential difference across them when connected in parallel

30. The following reaction is used for the preparation of oxygen gas in the laboratory



Which of the following statement(s) is(are) correct about the reaction?

- (a) It is a decomposition reaction and endothermic in nature
- (b) It is a combination reaction
- (c) It is a decomposition reaction and accompanied by release of heat
- (d) It is a photochemical decomposition reaction and exothermic in nature

31. Chaitra took two iron nails and put them in aluminium sulphate solution. After sometimes she observed that:

- (a) the solution becomes warm
- (b) grey-metal is deposited on the iron nail
- (c) the colourless solution changes to light green
- (d) solution remains colourless and no deposition is observed on the iron nail.

32. When air is blown from mouth into a test-tube containing lime water, the lime water turned milky due to the presence of
- oxygen
  - carbon dioxide
  - nitrogen
  - water vapour
33. Which of the following statement(s) is (are) true about respiration?
- During inhalation, ribs move inward and diaphragm is raised
  - In the alveoli, exchange of gases takes place i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from blood into alveolar air
  - Haemoglobin has greater affinity for carbon dioxide than oxygen
  - Alveoli increase surface area for exchange of gases
- (i) and (iv)
  - (ii) and (iii)
  - (i) and (iii)
  - (ii) and (iv)
34. When an iron nail, rubbed with sand paper, is dipped in copper sulphate solution, what two observations would you make after some time?
35. Identify the observed various parts of temporary mount of well stained leaf peel, when focussed under the high power of a microscope.
36. A child has drawn the electric circuit to study Ohm's law as shown in below Figure. His teacher told that the circuit diagram needs correction. Study the circuit diagram and redraw it after making all corrections.

