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SAMPLE QUESTION PAPER - 6

Self Assessment

Time : 3 Hours **Maximum Marks : 90**

General Instructions :

1. The question paper comprises of two sections, A and B. You have to attempt both the sections.
2. All questions are compulsory.
3. All questions of Section A and all questions of 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 one sentence.
5. Question numbers ***4 to 6 in Section A are two marks questions***, to be answered in about 30 words.
6. Question numbers ***7 to 18 in Section A are three marks questions***, to be answered in about 50 words.
7. Question numbers ***19 to 24 in Section A are five marks questions***, to be answered in about 70 words.
8. Question numbers ***25 to 36 in Section B are based on practical skills***. Question 25 to 33 carry one mark each and Question numbers 34 to 36 carry two marks each.

SECTION 'A'

1. List two sources of magnetic fields. **1**
2. What happens to resistance of a conductor when its area of cross section is increased ? **1**
3. A student constructed a box-type solar cooker and covered it with a glass plate. Write the purpose served by the glass plate in the cooker. **1**
4. Mention the colour of $FeSO_4.7H_2O$ crystals. How does this colour change upon heating ? Give balanced chemical equation for the change. **2**
5. (a) List any two change which take place when oily food gets oxidized.

   (b) Mention a measure which prevents or slows down its oxidation. **2**
6. Define '1 Volt'. State the relation between work, charge and potential difference for an electric circuit. Calculate the potential difference between two terminals of the battery if 100 joules of work is required to transfer 20 coulombs of charge from one terminal of the battery to the another terminal. **2**

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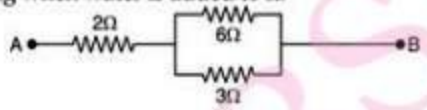
7. (a) Giving reason for each, state which of the following will conduct electricity and which will not :
   (i) A solution of glucose
   (ii) Dil. Hydrochloric acid ?
   (b) If acetic acid and hydrochloric acid of same concentration are taken, which of the two is a stronger acid and why ?
   (c) How is the strength of an acid affected when some water is added to it ? 3

8. State what happens when :
   (a) Gypsum is heated at 373 K.
   (b) Blue crystals of copper sulphate are heated.
   (c) Excess of carbon dioxide gas is passed through lime water. 3

9. Write balanced chemical equations for the following reactions :
   (a) dilute sulphuric acid reacts with aluminium powder.
   (b) dilute hydrochloric acid reacts with sodium carbonate.
   (c) Carbon Di-oxide is passsed through lime water. 3

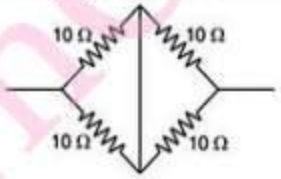
10. Give reasons for the following :
   (a) Aluminium is a reactive metal but is still used for packing food articles.
   (b) Calcium starts floating when water is added to it. 3

11. 

   Find the effective resistance between the points A and B in the network shown in the figure. 3

12. Distinguish between alternating current and direct current. Explain why alternating current is preferred over direct current for transmission over long distances. 3

13. Find the current drawn from the battery by the network of four resistors shown in the figure. 3



14. Give reasons for :
   (i) Oxygenated and deoxygenated bloods are separate in the heart of mammals.
   (ii) Ventricles are thick walled.
   (iii) Herbivores have longer small intestine as compared to carnivores. 3

15. Electrical resistivities of some substances, in ohm-meter, at 20°C are given as follows :

Silver	1.60×10^{-8}
Copper	1.62×10^{-8}
Tungsten	5.2×10^{-8}
Mercury	94×10^{-8}
Iron	10×10^{-8}
Nichrome	10×10^{-6}

   (a) Out of the silver and copper, which is a better conductor of electric current and why ?
   (b) Which substance is preferred to be used for electrical transmission lines ? Give reason.
   (c) Name the material that you would advise to be used in the heater elements of electric heating device and why ? 3

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16. In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion. 3

17. It has been observed that the construction of big dams have certain problems associated with them. List three problems. 3

18. Draw schematic labelled diagram of box type solar cooker. Name two components of solar cooker which are responsible to increase the temperature inside the solar cooker. Explain their function. 3

19. In the formation of a compound XY_2, atom X denotes one electron to each Y atom. Show the electron dot structure of X and Y and the formation of XY_2. What is the nature of bond in XY_2 ? Write any three properties of XY_2. The electronic configurations of three elements X and Y are as follows :

X – 2, 8, 2 Y – 2, 7 5

20. (a) List any three observations that determine that a chemical reaction has taken place. Also list three informations that cannot be obtained about a chemical reaction, merely by its chemical equation.

(b) Balance the following chemical equations.

(i) $Fe + H_2O \longrightarrow Fe_3O_4 + H_2$

(ii) $CO_2 + H_2O \longrightarrow C_6H_{12}O_6 + O_2$ 5

21. (a) Draw the diagram of cross section of a leaf and label the following parts :

(i) Chloroplast (ii) Cuticle

(b) (i) A gas is released during photosynthesis. Name the gas and also state the way in which this gas is evolved.

(ii) In certain group of plants, stomata remains closed during day. How is food synthesized by such plants. Also name them. 5

22. What constitutes the central and peripheral nervous system ? How are the components of central nervous system protected ? 5

23. (i) What is meant by the statement that the resistance of a wire is 1 Ω ?

(ii) Two identical resistors each of resistance 12 Ω are connected (i) in series (ii) in parallel, inturn to a battery of 6 V.

Calculate the ratio of power consumed in the combination of resistors in the two cases.

(iii) What combination is used for connecting the circuit to measure the potential difference across two points ? 5

24. (a) In the above circuit connect a nichrome wire of length 'L' between points X and Y, and note the ammeter reading.

(i) When this experiment is repeated by inserting another nichrome wire of the same thickness, but twice the length (2L), what changes are observed in the ammeter reading ?

(ii) State the changes that are obeserved in the ammeter reading if we double the area of cross section without changing the length in the above experiment.

Justify your answer in both the cases.

(b) "Potential difference between points A and B in an electric field is IV". Explain the above statement. 5

SECTION 'B'

25. **To study the reaction between $BaCl_2$ and Na_2SO_4, the two compounds are mixed in the form of :1**

(A) dry powders

(B) molten liquids

(C) aqueous solution

(D) $BaCl_2$ in solid and Na_2SO_4 in aqueous solution form

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26. **When water is added in a vessel containing lumps of quick lime, it is observed that :** 1

(A) The vessel becomes hot

(B) A hissing sound is produced

(C) Lump of quick lime breaks and dissolves partially in water

(D) All the above take place

27. **A student, while studying the dependence of current flowing in a resistor on the potential difference across its ends, keeps the circuit closed for a long time to measure the current and potential difference. His observation will be that :** 1

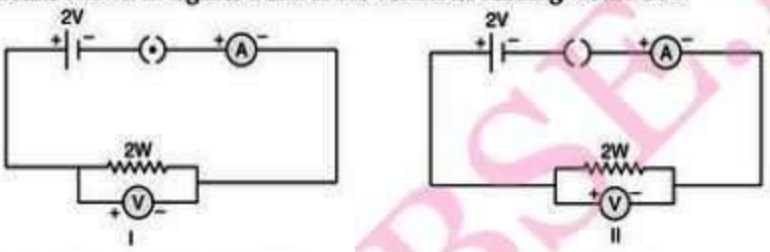
(A) Ammeter's zero error will change

(B) Ammeter will give more reading

(C) Voltmeter will show constantly high readings.

(D) Resistor will get heated up and its value will change

28. **For the circuits shown in figures I and II the voltmeter reading would be :** 1



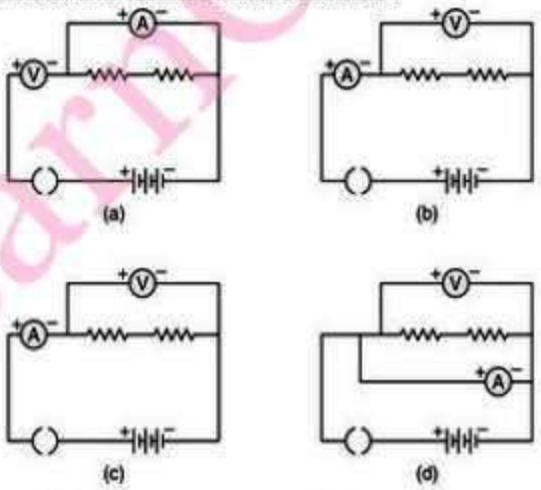
(A) 2 V in circuit I and 0 V in circuit II

(B) 0 V in both circuits

(C) 2 V in both circuits

(D) 0 V in circuit I and 2 V in circuit II

29. **To determine the equivalent resistance of two resistors, when connected in series, the correct way of connecting the ammeter and voltmeter in the circuit is :** 1



(A) a (B) b (C) c (D) d

30. **An ammeter has a range of (0 – 3) amperes and there are 20 divisions on its scale between 0 and 1 ampere mark. The least count of the ammeter will be :** 1

(A) 0·3 ampere

(B) 0·15 ampere

(C) 0·1 ampere

(D) 0·05 ampere

31. **Teacher asked Roma to arrange an experimental set-up to demonstrate that carbon dioxide is evolved during respiration. The set-up arranged by her is shown below. This set-up did not yield expected result because :** 1

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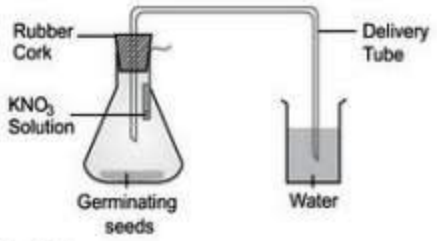


(A) The apparatus is not air tight.
(B) Seeds are not submerged in water.
(C) KNO_3 solution is used instead of KOH pellets in the small test-tube.
(D) lime water should have been used instead of water.

32. What are the precautions that should be taken in the experiment to show that CO_2 is produced during respiration ? 1

(A) Apparatus should be airtight and end of the delivery tube in the flask should not touch the germinating seeds.
(B) The other end of the delivery tube should dip into the water.
(C) The germinating seeds should be kept moist and should not be left dry.
(D) All the above.

33. Which of the following precautions are to be taken to perform the experiment to show that CO_2 is given out during respiration ? 1

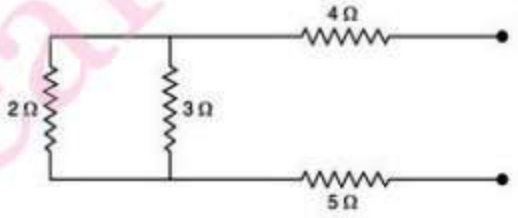
(i) Conical flask should be air right.
(ii) Seeds in the flask should be totally dry.
(iii) A small tube with freshly prepared KOH solution should be placed in the flask.
(iv) The end of the delivery tube should be above the water level.

The correct answer is :

(A) (i) and (ii) (B) (i) and (iii)
(C) (i), (ii) and (iii) (D) (i), (ii) and (iv)

34. What precautions should be taken to study the liberation of carbon dioxide gas during aerobic respiration ? 2

35. Which of the two resistors are in parallel combination in the given figure :



2

36. What is the theory behind the chemical reaction of zinc with sulphuric acid ? 2

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