Class 10   Time :
3 hrs.
14-9-2015   Summative Assessment I in   SCIENCE
M. Marks : 90
General Instructions :
1.   The question paper comprises of four sections A, B, C and D. You are to attempt
        all the four sections.
2.   All questions are compulsory.
3.   There is no overall choice.
4.   In Section D question numbers from 25 - 34 are the multiple choice questions. For each   question four answers are provided. Write the correct answer in the box provided.   Question numbers 35 & 36 should be answered in brief on the same sheet.
5.   Marks for each question are mentioned against the question.

SECTION - A

1.   Why solar cookers are covered with glass plate and painted black from inside and

outside.   (1)

2.   Define electric potential at a point. A current of 2A passes through circuit for 1 minute.
        If the potential difference between 2 terminals is 3V. Calculate work done in transferring
        charge between two terminals.

(2)

3.   Derive an expression for heat produced in appliance of resistance R when current I is passed
        through it for time T. Find power dissipated across 4 Ω resistor. Is reading of A_1 & A_2
different? (3)
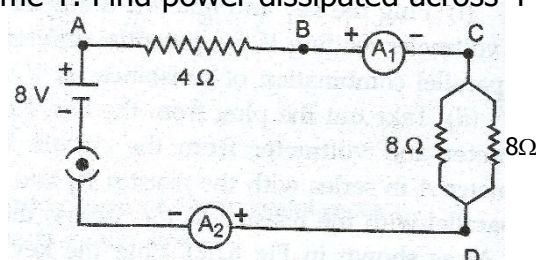
4.   Give reasons:-
        a)   If wire is stretched to double its length then its resistance becomes 4 times

but resistivity remains same.

b)   Cord of heater does not glow while heating element does.

c)   Voltmeter is always connected parallel across the two terminals.

(3)

5.   a)   If magnetic field lines are crossed at a point. What does it indicate?

b)   Draw magnetic field lines of a circular coil carrying current. On what factors does the

strength of field depends.

(3)

6.   Differentiate (two points each) :-

a)   Overloading and short circuiting.

b)   Earth wire and Fuse wire.

c)   A.C & D.C.

(3)

7.   Name three forms in which energy from oceans be used. Explain briefly working of OTEC plant. Mention one of its advantage and disadvantage.

(3)

8.   Department of rural development of state government announced a scheme of 50% subsidy   for installation of bio gas plant by farmers in their village but still many farmers criticize it.   Being a science student, how will you convince them this plant is for their benefit?

Explain in detail.

(3)

9.   Derive an expression for equivalent resistance of three resistors connected in parallel. Draw a schematic diagram of circuit consisting of a battery of three cells of 2 V each 2Ω,

4Ω & 6Ω resistors to have a current of 2 A from circuit.

(5)

10.   What do you mean by EMI. Write an activity to demonstrate phenomena of EMI.

State the rule used to find direction of induced current. What are the factors on which strength of induced current depends?
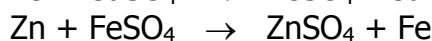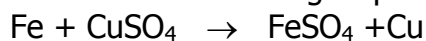
(5)

SECTION - B

11. Explain the term Rancidity.

(1)

12. a)   What is Redox Reaction? Write down a chemical equation representing it.
     b)   Write balanced chemical equation for the following reactions
     (i)   Barium Chloride + Potassium Sulphate $\rightarrow$ Barium Sulphate + Potassium Chloride.
     (ii) Zinc + Silver Nitrate $\rightarrow$ Zinc Nitrate + Silver   (1+2)

13. a)   Consider the following displacement reactions :
          $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
          $Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$
          Arrange the metals involved in increasing order of their reactivity.
     b) Solid Lead Nitrate on heating gives solid Lead Oxide, Nitrogen di oxide and Oxygen gas.
          i)   Write balanced Chemical equation.
          ii)   Mark the state symbols.
          iii) Identify the type of chemical reaction.

(1+2)

14. a)   What is common name of the compound $CaOCl_2$?
     b)   What is baking powder?
     c)   Name the process to prepare sodium hydroxide.
     d)   Write the chemical formula of sodium compound used to remove the permanent hardness of water.

(1/2x2)

15. a)   At what pH in the mouth is tooth decay faster and why?
     b)   Write an equation to show the reaction between Plaster of Paris and water.
     c)   Name the acid present in   (i) Orange   (ii) Ant sting.

(1x3)

16. a)   Solutions A,B,C and D when tested with universal indicator showed pH as 3, 1, 14 and 7 respectively.
          Arrange them in increasing order of Hydrogen ion concentration.

b)   Classify the following salts in to Acidic, Basic or Neutral
    i)   Potassium Sulphate   ii)   Ammonium Chloride
    iii)   Sodium Carbonate   iv)   Sodium Chloride
c)   Give reason :
    i)   A solution of sulphuric acid conducts electricity but alcohol does not.
    ii)   While diluting, it is recommended that the acid should be added to water and not water to acid.

(1+2+2)

17.   Complete and balance the following chemical reactions:
    a) Al_2O_3 + HCl $\rightarrow$
    b)   Na + $H_2O \rightarrow$
    c) $NaHCO_3$ + $H_2SO_4 \rightarrow$ 1x3

18.   a)   What are amphoteric oxides?
    b)   Why do ionic compounds conduct electricity in molten state but not in solid state?
    c)   Show the formation of $MgCl_2$ from its elements by transfer of electrons.   1x3
        (at. no. Mg : 12, Cl :17)

19.   a)   What is thermite reaction? Write its use also.
    b)   Differentiate between Roasting and Calcination. (any two points)
    c)   Name the metal which is (i)Liquid at room temp.   (ii) Poor conductor of heat.
    d) Draw a neat and labelled diagram(ONLY) for the electrolytic refining of impure copper.
                        OR   (1+2+2)
    a)   What are alloys? How are they formed?
b)   Write the equations at Cathode and Anode during electrolysis of molten sodium chloride.
    c)   i)   Name the main ore of mercury   ii) Define metallurgy
    d)   Write the steps for extracting metals in the middle of the reactivity series taking suitable example.   (1+2+2)

SECTION - C

20.   What is the role of saliva in our food? (1)

21.   How is aerobic respiration different from anaerobic respiration? Give two points. (2)

22.   Draw the structure of neuron and explain its function. (3)

23.   Draw a neat and labelled diagram of human heart. Why is double circulation

    necessary?   (5)

24. i)   What is the difference between a reflex action and walking?   (any two)
     ii)   Which part of brain maintains posture and equilibrium of the body?
     iii) How does chemical coordination takes place in humans?
     iv)   Why is the use of iodised salt advisable?   (5)

SECTION - D

25. Ammeter has 20 divisions between 20 mA & 30 mA. Then L.C. of A is
     a)   0.5 mA   b)   1 mA   c)   0.25 mA   d)   0.05 mA

26. For the circuits A and B shown below, the voltmeter readings would be
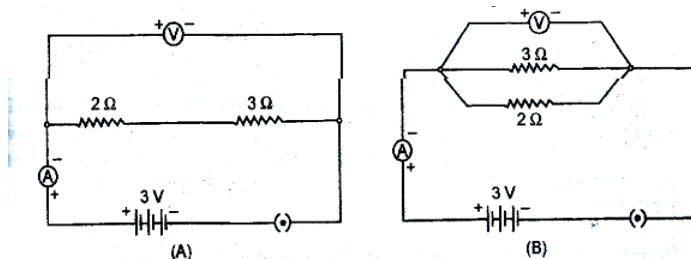

     a)   0.6 V in circuit A and 2.5 V in the circuit B   b)   0V in both circuits
     c)   3V in both circuits   d)   0V in circuit A and 3V in circuit

B

27. The given circuit diagram shows the experimental arrangement of different circuit
     components for determination of equivalent resistance of two resistors connected in series.
     The component   X, Y and Z shown in the circuit respectively represent

          a)   Rheostat, Resistor, Ammeter

          b)   Voltmeter, Ammeter, Rheostat

          c)   Ammeter, Voltmeter, Rheostat

          d)   Rheostat, Ammeter, Voltmeter
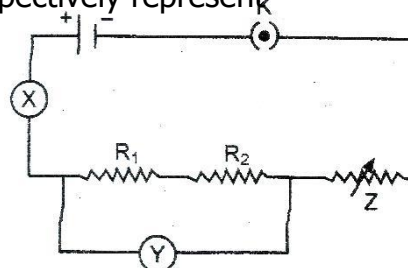
28. The products of reaction between Zn and Sodium hydroxide solution are
          a)   Sodium Carbonate and water   b)   Sodium Zincate and water
          c)   Zinc hydroxide and hydrogen   d) Sodium Zincate and hydrogen

29. Four groups of students were asked to heat crystals of Ferrous Sulphate and report the odou
     and colour of the residue obtained.The reports submitted by the groups are given below

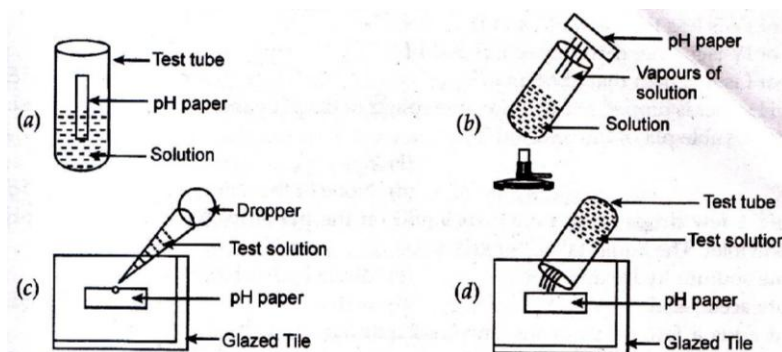   Odour   Colour of residue
          Gp A   burning sulphur   green
          GpB   burning sulphur   reddish brown
          GpC   like vinegar   reddish brown

GpD   sweet smelling   blue

Choose the correct reporting Group

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

30.   The correct method to find the pH of a solution is

i)   a   ii)   b   iii)   c   iv)   d

31.   We put the coverslip on the slide very gently to avoid
       a)   entry of air bubbles   b)   crushing of material
       c)   oozing of glycerine   d)   folding of material

32.   A metallic structure with a specific cut out used in the photosynthetic experiment is called
       a)   Auxanometer   b)   Ganog's light screen
       c)   Potometer   d)   Porometer

       a)   blue and colourless   b)   blue and pale green
       c)   colourless and pale green d)   pale green and blue

33 (ii) When drops of blue litmus solution are added to dil.HCl and aqueous NaOH taken in two
        different test tubes A and B respectively what will be the colour change?
       a)   blue to red in both Aand B   b)   no change in both A and B
       c)   blue to red in A and no change in B   d)   blue to red in B and no change in A

       (1x5)

34.   Which of the following substance is used to make all connections airtight in the experiment
       To show that carbon di oxide is produced during respiration
       a)   oil   b)   Vaseline   c)   Ghee   d)   Wax

Q. No.	25	26	27	28	29	30	31	32	33 (i)	33 (ii)	34

Answers										

35. What is fermentation? Which gas is absorbed by KOH? (2)

36. In an experiment to find relationship between potential difference and current student noted four different sets of readings using the same resistor. These are as given below: (2)

Set of Readings	Voltmeter Reading (volt)	Ammeter reading (ampere)
A	3.2	0.65
B	4.5	0.90
C	5.1	1.00
D	5.5	2.20

Which of the readings is incorrect? How will you find resistance from I-V graph?

-x-x-x-x-x-x-