Time: 3 hours   M. Marks: 90

General Instructions:

- The question paper comprises of two sections, A and B. You are to attempt both the sections.
- All questions of section A and all questions of section B are to be attempted separately.
- Question numbers 1 to 3 in section A are 1 mark questions. These are to be answered in one word or one sentence.
- Question numbers 4 to 6 are 2 mark questions, to be answered in about 30 words each.
- Question numbers 7 to 18 are 3 mark questions, to be answered in about 50 words each.
- Question numbers 18 to 24 are 5 marks each, to be answered in about 70 words each.
- Question numbers 25 to 36 in section B are practical based questions. Question numbers 25 to 33 are MCQs carrying 1 mark each. question numbers 34 to 36 are short answer type questions carrying 2 marks each.

SECTION- A

1. Name a device that helps to maintain a potential difference across a conductor   cell / battery (1)

2. Name the device which directly converts solar energy into electrical energy.   (1)   Solar cell

3. 'Use of iodised salt is essential' justify this statement.   (1)

4. A solution of a substance 'X' is used for white washing.   (2)
   (i)   Name the substance 'X' and write its formula.
   (ii)   Write the reaction of the substance 'X' named in (i) above with water.

5. Explain the formation of an ionic compound sodium oxide by electron transfer method.(Atomic number of Na=11,O=8) Na_2O (2)

6. Write what is short circuiting and overloading in an electric supply? explain.   (2)

7. Sonu's younger brother was suffering from the problem of acidity. Sonu gave his brother baking soda solution to drink. His brother felt better after drinking it. He thanked Sonu for the help given to him.
   (i)   How is baking soda useful in curing the problem of acidity?
   (ii)   Write a chemical equation involved in the preparation of baking soda from sodium chloride.
   (iii) What are the two values shown by Sonu?   (3)

8. (i) Write the chemical equation used in the thermit reaction .
   (ii) Consider the following chemical reaction :

$$3MnO_2(s) + 4Al(s) \longrightarrow 3Mn(l) + 2Al_2O_3(s) + heat$$

Identify the substances getting oxidised and reduced in this reaction . (3)

(iii) What is the composition of the alloy brass ?

9. (a) Write the chemical formula of the following compounds :

    (i) Plaster of Paris .

    (ii) Bleaching powder.

(b) Write the reasons for the following :

    (i) Dry HCl gas does not change the colour of the dry litmus paper .

    (ii) While diluting an acid , the acid should be added to water and not water to the acid . (3)

10. (a) Define the term rancidity .

(b) Write the balanced chemical equations for the following chemical reactions:

    (i) Ferrous sulphate (s) $\xrightarrow{\text{Heat}}$

    (ii) Barium chloride(aq) + Sodium sulphate(aq)----->

(3)

11. Explain the breakdown of glucose by various pathways. (3)

12. What do you understand by plant hormone? Give one example each of plant hormone that:

    (a) Stimulate the cells to grow longer

    (b) Promotes cell division

    (c) Inhibits growth.

    (d) Helps in the growth of stem (3)

13. In the given circuit, calculate :

    (i) The total resistance of the circuit,

    (ii) Current flowing through the circuit

    (iii) Potential difference across the lamp and the resistor (3)

$R_1 = 6\,\Omega$
$R_2 = 18\,\Omega$
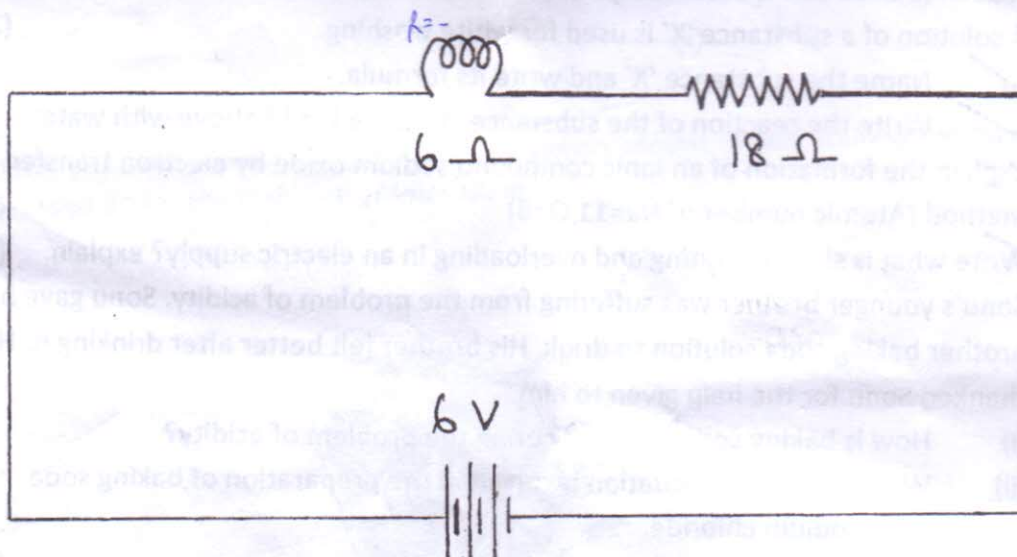
14. What is bio gas? How is it obtained ? why is bio gas considered as an ideal fuel for domestic use? (3)

15. How will the magnetic field produced at a point P by a current carrying circular coil change if we increase the :

    (i)   Value of current flowing through the coil.

    (ii)   Distance of the point P from the coil.

    (iii)   Number of turns of the coil.   (3)

16. (i) What is meant by electric resistance of a conductor?

    (ii) A wire of length I and resistance R is stretched so that its length is doubled and the area of cross section is halved. How will its:

    (a) Resistance change?

    (b) Resistivity change?   (3)

17. How is nuclear energy generated? What are the major hazards of nuclear power generation? What makes large scale use of nuclear energy prohibitive?   (3)

18. An electric bulb is rated as 240V and 40 W.

    (i) Find the resistance of the filament and current through it when used at the rated voltage.

    (ii) Find the power consumed by it.   (3)

19.   (i)   Write a chemical equation for the reaction between iron and steam .

    (ii) Aluminium is a highly reactive metal , yet it is used to make utensils for cooking . Why ?

    (iii) Write the name of a non-metal having lustrous appearance.

    (iv) Explain with the help of chemical equations , the extraction of Zn metal from zinc carbonate .   (5)

20.   (a) Explain neutralisation reaction with the help of a chemical equation .

    (b) Fresh milk has a pH of 6 . What is the effect on pH value as the milk turns into curd ?

    (c) Complete the following chemical equations :

    (i) $2NaOH + Zn \xrightarrow{\text{heat}}$

    (ii) . $2NaCl(aq) + 2H_2O(l) \xrightarrow{\text{Electrolysis}}$ (5)
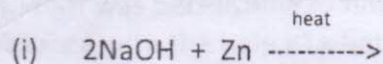
21. (i) What is a reflex action? Describe the steps involved in a reflex action.

   (ii) How is protein in our food digested?   (5)

22. (i) Draw a neat diagram of excretory system of human beings and label the following:

    (a) kidney   (b) ureter

   (c) urinary bladder   (d) urethra

    (ii) Explain the excretion in plants.   (5)

23. (i) Name an instrument that measures electric current in a circuit. Define the unit of electric current.

    (ii)An electric circuit consists of a 0.5m long nichrome wire XY, an ammeter, a voltmeter, four cells of 1.5 V each and a plug key was set up.
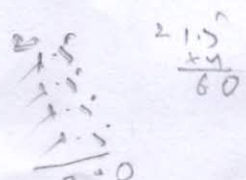
(a) Draw a diagram of this circuit to study the relation between the potential difference between the points X and Y and the electric current flowing through XY.

(b) Following graph was plotted between V and I. What conclusion do you draw about the relation between V and I from this graph? State the relation in your words. (5)
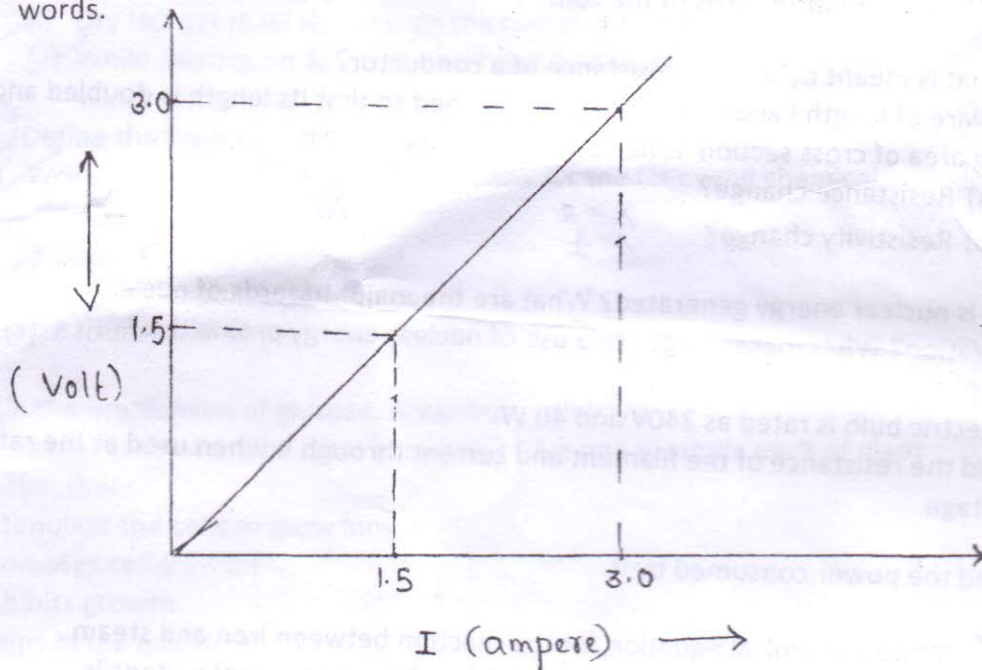
24. (i) What is a solenoid? Draw a sketch of the pattern of field lines of a magnetic field through and around a current carrying solenoid.

(ii)Consider a circular loop of wire lying in the plane of the table. Let the current pass through the loop clockwise. Apply the right hand rule to find out the direction of the magnetic field inside and outside the loop. (5)

SECTION -B

25. The addition of sodium carbonate to dilute HCl produces a gas. The gas evolved is :
   (a) H_2 and it turns lime water milky .
   (b) CO_2 and it smells like burning sulphur .
   (c) CO_2 and it turns lime water milky .
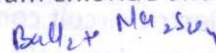   (d) H_2 and it burns with a pop sound . (1)

26. A few drops of a liquid are put on the pH strip , the colour of the pH strip changed to red . The liquid is :
   (a) HCl .
   (b) NaOH .
   (c) Na_2CO_3.
   (d) distilled water. (1)

27. A white precipitate is formed on mixing the solutions of barium chloride and sodium sulphate . The nature of the reaction is :
   (a) combination reaction .

(b) displacement reaction .
(c) decomposition reaction .
(d) double displacement reaction . (1)

28. An iron nail is kept in a solution of copper sulphate for some time .
The nail gets covered with :
(a) green deposit .
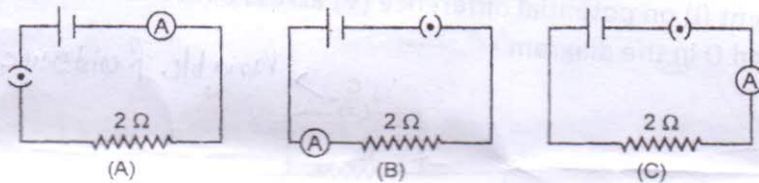(b) black deposit .
(c) brown deposit .
(d) grey deposit. (1)

29. The pH value of three solutions A,B,C are 4 , 7 , 9 . The nature of the
solutions A , B , C are :
(a) acidic , neutral ,basic .
(b) acidic , acidic , neutral .
(c) neutral , acidic , basic .
(d) acidic , basic , basic . (1)

30. A cell, a resister, an ammeter and a key are arranged in the circuit diagram as shown
below. The current recorded in the ammeter will be maximum in:

(a) A
(b) B
(c) C
(d) Same in all the cases. (1)

31. A student was performing to find equivalent resistance of a parallel combination of two
resistance with the help of a battery of 6 V as per the circuit given below. He should
choose a voltmeter to measure potential difference across the combination of range:
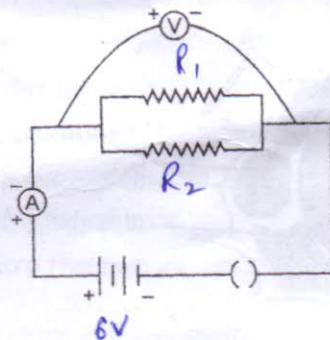
(a) 0-2V
(b) 0-6V
(c) 0-3V

(d) 0-1V $\circlearrowleft$ (1)

32. In the experiment to show that 'light is necessary for photosynthesis', the reason for boiling the leaf in alcohol is to:
    (a) kill its cells and make it soft.
    (b) remove the chlorophyll as it interferes with the iodine test.
    (c) bleach it so that it stops photosynthesising.
    (d) activate chlorophyll. (1)

33. In the experiment to show that carbondioxide is released during respiration, KOH solution is used to:
    (a) absorb carbondioxide and release oxygen.
    (b) absorb oxygen and release carbondioxide.
   (c) absorb Carbondioxide .
    (d) absorb oxygen. (1)

34. A test tube contains light green coloured solution. A piece of Zn metal is put in the solution. The light green colour of the solution becomes colourless and a black coloured coating is observed on the Zn metal.
    (a) What type of chemical reaction is involved between Zn and the green coloured solution? Also define the chemical reaction involved.
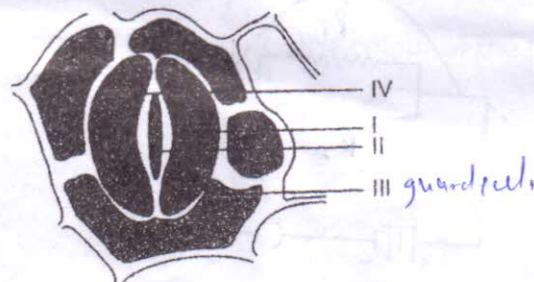   (b) Write the chemical equation involved in the above reaction. (2)

35. A student draws the following circuit diagrams for the experiment on studying the dependence of current (I) on potential difference (V) across a resister. Name the parts labelled as A, B, C and D in the diagram.
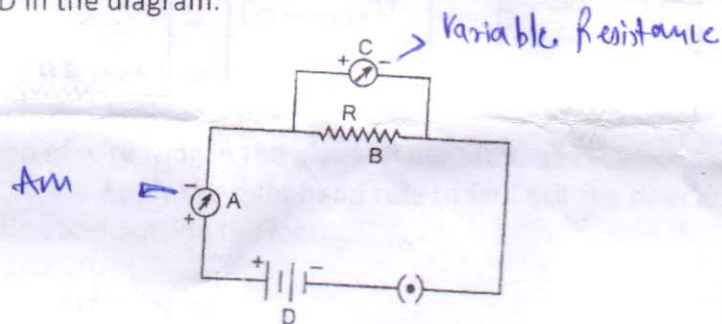
(2)

36. Identify the observed various parts of temporary mount of well stained leaf peel, when focussed under the high power microscope.

(2)