Kavya
Mohan
X - B.
R.N. 23

CONVENT OF JESUS AND MARY

2014-15

SCIENCE **CLASS X** **SA1**

TIME: 3 HOURS **MM: 90**

GENERAL INSTRUCTIONS

i. The question paper comprises of two sections. A and B. You are to attempt both the sections.
ii. All questions are compulsory.
iii. There is no overall choice.
iv. Question numbers 1 to 3 in section A are one mark questions. These are to be answered in one word each.
v. Question numbers 4 to 6 in section A are two marks questions. These are to be answered in about 30 words each.
vi. Question numbers 7 to 18 in section A are three marks questions. These are to be answered in about 50 words each.
vii. Question numbers 19 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
viii. 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.
ix. Question numbers 34 to 36 in section B are two marks questions based on practical skills. These are to be answered in about 30 words each.

PHYSICS 3,11,12,13,14,17,18,22,23,29,30,31,35
CHEMISTRY 1,4,5,6,7,8,9,10,20,21,25,26,27,28,36
BIOLOGY 1,15,16,19,24,32,33,34

SECTION A

1. Give one example each of a plant hormone that (1)
   a. Promotes cell division
   b. Inhibits growth
2. Write a balanced chemical equation for the following: (1)
   Calcium ~~hydroide~~ hydroxide + carbon dioxide ⟶ calcium carbonate + water
3. Why is mangnin used for making standard resistarices? (1)
4. a. When lead nitrate is heated, brown fumes of substance X are evolved.
   Name this substance and what is the type of reaction? (2)

b. What is the compound present in Plaster of Paris?

5. a. Solution A and Solution B when tested with a pH paper developed red and violet colours respectively. What colour will be observed when phenolphthalein indicator is put in these solutions?

b. Write the chemical equation of the reaction between sodium hydrogen carbonate and dilute hydrochloric acid. (2)

6. Give four advantages of biogas. (2)

7. a. What are amphoteric oxides? Give one example.

b. Name two substances which can be used as antacids. (3)

8. a. What is the name given to the highly exothermic displacement reaction between ferric oxide and aluminium? Write one practical application of this. Also write the chemical equation for this reaction.

b. Name two metals that react violently with cold water. (3)

9. a. Name the substance formed on corroded copper and silver articles.

b. Balance the following chemical equation and identify the reducing agent and oxidizing agent:

$MnO_2 + Al \longrightarrow Mn + Al_2O_3$

10. a. Will the salt zinc sulphate be acidic, basic or neutral? Give reasons. What can you say about its pH?

b. Solutions X and Y have pH 2 and 6 respectively. Which solution will have higher hydronium ion concentration? How is a hydronium ion represented? (3)

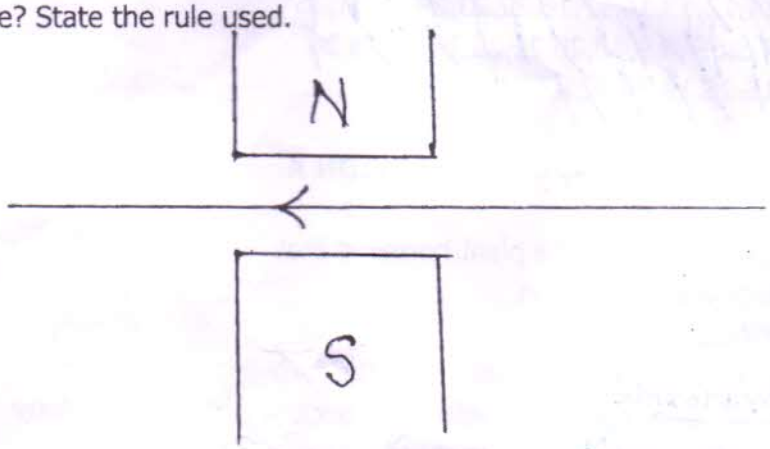
11. (i) What is meant by 'electric resistance' of a conductor? (3)

(ii) A wire of length L 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?

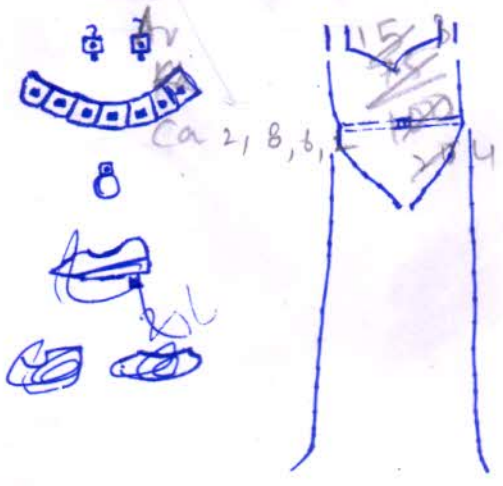
b) Resistivity change?

12. A wire is placed between N and S poles of a magnet as shown in the figure. If the current is allowed to flow in the direction shown, in which direction does the wire tend to move? State the rule used. (3)



13. Why is it not possible to make use of solar cells to meet all our energy needs? State at least three reasons to support your answer. (3)

14. Define SI unit of magnetic field. Under what condition does the moving charge experience (3)
    i. Maximum force
    ii. Minimum force
15. Give reasons for the following: (3)
    i. The muscular walls of ventricles are thicker than the walls of atria
    ii. Arteries have thick elastic walls
    iii. Veins have valves
16. An endocrine gland 'A' is located below the stomach in the human body. The gland 'A' secretes hormone 'B'. The deficiency of hormone 'B' in the body leads to blood sugar due to which disease 'C' is caused. (3)
    a. Name the gland 'A' and hormone 'B'
    b. State the function of hormone 'B'
    c. Name the disease 'C'
    d. Suggest 2 precautions that need to be taken by the person who is suffering from disease 'C'.
17. Three 250 watt heaters are connected in parallel to a 100 v supply. Calculate (3)
    i. Total current drawn from the supply
    ii. Resistance of each heater
    iii. The total energy supplied in kwh to the three heaters in 5 hours.
18. The global climate has always fluctuated. What is new, however, is that the current and future climate change will be caused not just by natural events but also by the activities of human beings. Suggest three simple ways to help save our planet. (3)
19. a. What is reflex action? (5)
    b. Describe the mechanism of reflex action with the help of suitable diagram.
    c. What is the significance of reflex action?
20. a. Write the two chemical equations to show the extraction of mercury metal from its ore cinnabar. Name the metallurgical step or process taking place in each of these two reactions. (3)
    b. Draw a labeled diagram to show the electrolytic refining of copper. (2)
21. a. Using electron dot representation, show the bond formation in the following compounds. (5)
    i. Calcium chloride
    ii. Magnesium oxide.
    b. What can you say about the conduction of electricity of such type of compounds?
22. What is a magnetic field? How can the direction of magnetic field lines at a place be determined? Draw a sketch of the pattern of field lines due to a current flowing through a straight conductor. What is the nature of the field at the centre of the loop and how can the strength of its magnetic field by changed? (5)



23. Explain briefly (5)

1) Short circuiting and
2) Earthing of the circuits.
3) How is a fuse connected in a circuit?

A circuit has a fuse of 5A. What is the maximum number of 100 watt (220 v) bulbs which can be safely used in the circuit?

24. a. Explain the process of normal functioning of nephron. (5)
b. What happens when kidneys do not filter blood properly? Name and explain the process involved in rectifying this condition.

SECTION B

25. A few drops of liquid X were added to distilled water. It was observed that pH of the water increased. The liquid X is (1)

a. Lemon juice
b. NaCl solution
c. Na_2CO_3 solution
d. dil. HCl solution

26. When ferrous sulphate crystals are strongly heated the residue obtained is (1)

a. red in colour
b. blue in colour
c. green in colour
d. white in colour

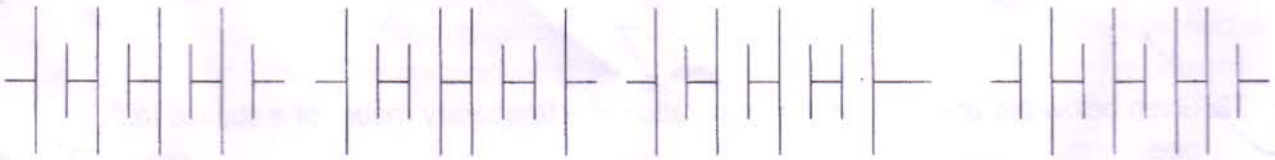
27. When barium chloride solution and sodium sulphate solution are mixed together an insoluble substance is formed, which is (1)

a. barium sulphate and it is yellow in colour
b. sodium chloride and it is white in colour
c. barium sulphate and it is white in colour
d. barium sulphate and it is green in colour

28. Four students performed the reactions of dil. HCl and a solution of NaOH with zinc metal and solid sodium carbonate separately. They reported the possible reaction by (✓) and no reaction by (X). in which of the following sets all observations are correct? (1)

Set	HCl + Zn	HCl + Na_2CO_3	NaOH + Zn	NaOH + Na_2CO_3
A	✓	✓	✓	✓
B	X	X	✓	✓
C	✓	✓	X	X
d	✓	✓	✓	X

29. A student has to connect 4 cells of 1.5 V each, to form a battery of 6 V. the correct way of connecting these cells is shown in figure (1)

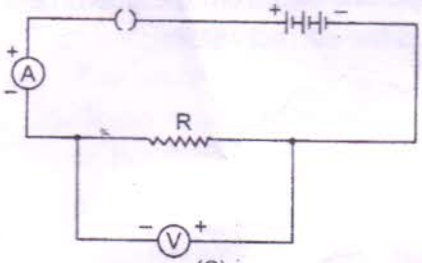


A B C D

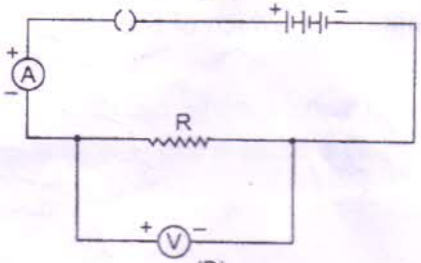
a. A
b. B
c. C
d. d

30. Out of four circuits shown for studying the dependence of the current on the potential difference across a resistor, the correct circuit is: (1)

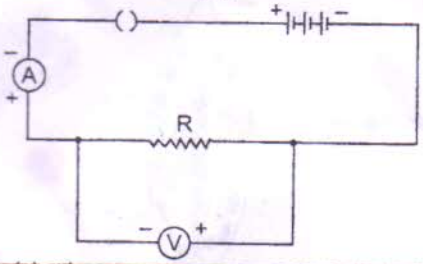
(A)



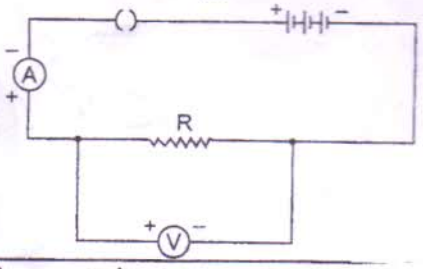
(B)



(C)



(D)



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

31. In an ammeter there are 19 additional divisions marks between O A and 1 A marks. The least count of the ammeter is (1)

a. $\frac{1}{19}A$
b. $\frac{1}{20}A$
c. $\frac{1}{21}V$
d. $\frac{1}{22}A$

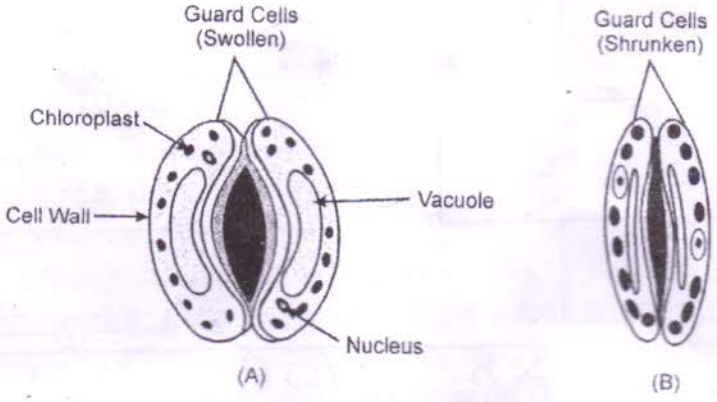
32. Given below are the steps in the preparation of a temporary mount of a stained leaf peel. (1)

i. Cover the material with the cover slip.
ii. Transfer the stained peel to the clean glass slide and add a drop of glycerine.
iii. Remove the peel from the ventral surface of the leaf.
iv. Drop it in the water in a petri dish and add a drop of safranin stain.

The correct sequence of steps is

a. (iii),(iv),(ii),(i)
b. (i),(ii),(iii),(iv)
c. (ii),(iii),(iv),(i)
d. (iii),(iv),(i),(ii)

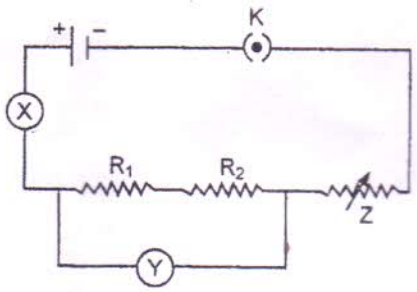
33. The guard cells in diagram 'A' are different in shape and size from the guard cells in diagram 'B'. which of the following sentences gives the correct reason: (1)



a. Guard cells swell up during the day and shrink at night.
b. Guard cells swell when water flows into them causing the stomatal pore to open. They shrink when water moves out and the stomatal pore closes.
c. The uneven thickness of cell wall of the guard cells enables them to open and close at regular intervals.
d. Guard cells become flaccid during night.

34. Give appropriate reason for your answer in the experiment to show that 'CO_2 is given out during respiration'. Why are only germinating seeds used? Why does the water level rise in the delivery tube? (2)

35. 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 (2)



a. Rheostat, Resistor, Ammeter
b. Voltmeter, Ammeter, Rheostat
c. Ammeter, Voltmeter, Rheostat

Explain briefly.

36. Green colour of ferrous sulphate solution is discharged when a zinc rod is dipped into it, but there is no effect when a copper rod is dipped in the same solution. Explain your observations. (2)