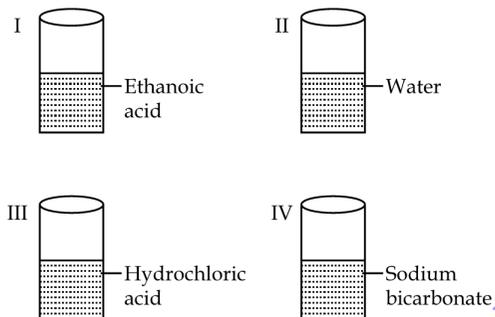


- (a) H<sub>2</sub>O (b) HCl (c) NaOH (d) H<sub>2</sub>SO<sub>4</sub>
27. A student takes some zinc granules in a test-tube and adds dilute HCl to it. He would observe that the colour of the zinc granules changes to:
- (a) Brown (b) Black (c) yellow (d) White
28. Iron filings were added to an aqueous solution of copper sulphate. After some time on observation it was found that the colour of the solution is changed from:
- (a) blue to pale green (b) Blue to dark green  
(c) blue to colourless (D) blue to reddish Brown
29. What did you observe when you mix aqueous barium chloride solution with aqueous sodium sulphate solution in a test-tube?
- (a) a pungent smelling gas is evolved  
(b) the colour of the solution turns blue black  
(c) a white precipitate is formed immediately  
(d) no change in colour even after shaking the mixture well
30. Observe the following figure and choose the correct option



- (a) pH of I is greater than II and IV  
(b) pH of I is less than III and IV  
(c) pH of IV is less than I, II and III  
(d) pH of IV has the highest value among all the four solutions.
31. An ammeter can measure current up to 500 mA. There are 20 equal divisions between 0 and 100 mA marks on its scale. During an experiment to determine the equivalent resistance of the two resistors joined in parallel a student observes ammeter's pointer at 3<sup>rd</sup> graduation mark after zero when the key is off and the pointer at the 17<sup>th</sup> graduation mark after 200 mA when the key is inserted into the plug. The correct value of the current flowing in the circuit is:
- (a) 214 mA (b) 217 mA (c) 270 mA (d) 285 mA
32. If a student while studying the dependence of current on the potential difference keeps the circuit closed for a long time to measure the current and potential difference, then
- (a) ammeters zero error will change.  
(b) ammeter will give more reading

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**Science**

SA - 1 (Sep, 2013)

Mega Test - 1

Class X

Time allowed: 3 hours

Maximum Marks: 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. However, internal choice has been provided in all the five questions of five marks category. Only one option in such questions is to be attempted.
- (iv) All questions of section A and all questions of section B are to be attempted separately.
- (v) Questions 1 to 3 in section A are one mark questions. These are to be answered in one word or in one sentence.
- (vi) Questions 4 to 7 in section A are two marks questions. These are to be answered in about 30 words each.
- (vii) Questions 8 to 19 in section A are three marks questions. These are to be answered in about 50 words each.
- (viii) Questions 20 to 24 in section A are five marks questions. These are to be answered in about 70 words each.
- (ix) Questions 25 to 42 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.

**Marking Scheme:**

Section	A				B
Q. No.	1 - 3	4 - 7	8 - 19	20 - 24	25 - 42
Marks	1	2	3	5	1
Word Limit	1 word or 1 sentence	30	50	70	MCQs

**Section A**

- Which gas is liberated when a metal reacts with an acid? How will you test the presence of this gas?
- What does the direction of thumb indicate in the right-hand thumb rule?
- How opening and closing of stomata takes place?

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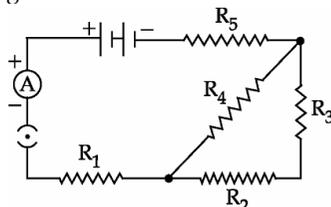
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4. Write the balanced equation for the following reaction and identify the type of reaction in each case.
  - (i) Potassium bromide + barium iodide → Potassium iodide + barium bromide.
  - (ii) Hydrogen (g) + chlorine (g) → Hydrogen chloride (g)
5. What are amphoteric oxides? Explain with examples of amphoteric oxides with a chemical reaction.
6. Differentiate between renewable and non-renewable sources of energy with one example for each.
7.
  - (a) What is solar cell panel?
  - (b) Name any two materials that are used for making solar cells.
8.
  - (a) What is an alkali? Give an example.
  - (b) Why do HCl, HNO<sub>3</sub> etc show acidic characters in aqueous solution while solutions of compounds like alcohol and glucose do not show acidic character.
9.
  - (a) What type of reaction is to be performed to ascertain and verify the position of metals in the reactivity series?
  - (b) If an Iron nail is immersed in the aqueous solution of Copper sulphate, what are the changes happening to the nail and to the solution?
  - (c) Write the balanced chemical equation for the reaction between Iron metal and aqueous Copper Sulphate solution.
10.
  - (i) Write the electron-dot structures for sodium, oxygen and magnesium.
  - (ii) Show the formation of magnesium oxide by transfer of

electrons and name the ions present in it.

11.
  - (a) What are redox reactions?
  - (b) Why is the reaction between manganese dioxide and hydrochloric acid a redox reaction?
  - (c) Identify the substance oxidised and the substances reduced in the above reaction.

12. Consider the following circuit diagram.



If  $R_1 = R_2 = R_3 = R_4 = R_5 = 3 \Omega$

Find the equivalent resistance of the circuit.

13. The charge possessed by an electron is  $1.6 \times 10^{-19}$  coulombs. Find the number of electrons that will flow per second to constitute a current of 1 ampere.
14.
  - (a) Describe an activity to draw the magnetic field line around a bar magnet.
  - (b) Give two characteristics of magnetic field lines.
15. List the factors on which the direction of force on a current carrying conductor kept in a magnetic field depend? Name and state the rule used for determination of direction of this force.
16. Name the enzyme present in saliva. Why is it important? What is emulsification?
17.
  - (a) Give an example of plant hormone that promotes growth.

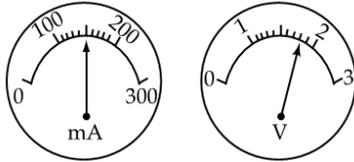
- (b) Name a plant hormone that promotes cell division.
  - (c) Give an example of plant hormone move that inhibits growth.
18.
  - (a) Write two major components of human urine.
  - (b) What is the purpose of sending blood to the kidney's for filtration?
19. Name two types of energy obtained from oceans. Also write one limitation of harnessing each of these.
20.
  - (a) balanced chemical equation:  
 $\text{Fe (s)} + \text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 \text{ (s)} + \text{H}_2 \text{ (g)}$
  - (b) Identify the type of reaction in the equation given below.  
 $\text{Na}_2\text{SO}_4 \text{ (aq)} + \text{BaCl}_2 \text{ (aq)} \rightarrow \text{BaSO}_4 \text{ (s)} + \text{NaCl (aq)}$
  - (c) You could have noted that when copper powder is heated in a China dish, the surface of copper powder becomes coated with black colour substance.
    - (i) Why has this black coloured substance formed?
    - (ii) What is the Black substance?
    - (iii) Write the chemical equation of the reaction taking place.
21.
  - (i) Write the balanced equation for the chemical reactions involved, when
    - (a) Chlorine is passed over dry slaked lime.
- (b) Sodium bicarbonate reacts with dilute hydrochloric acid.
  - (c) Sodium bicarbonate is heated.
- (ii) A gas 'X' reacts with lime water and forms a compound 'Y' which is used as a bleaching agent in chemical industry. Identify 'X' and 'Y'. Give the chemical equation of the reactions involved.
22.
  - (a) What is meant by electric resistance of a conductor?
  - (b) A wire of length L and resistance R is stretched so that the length is doubled and area of cross section halved. How will (i) resistance change and (ii) resistivity change?
23.
  - (a) What is a solenoid?
  - (b) Draw the pattern of magnetic field produced around a current carrying solenoid. Compare this field to that of a bar magnet.
  - (c) What happens to the magnetic field when the current through the solenoid is reversed?
24.
  - (a) Draw a sectional view of the human heart and label on it the following parts:
    - (i) Aorta (ii) Pulmonary arteries (iii) Vena cava from upper body (iv) Left ventricle
  - (b) Why is double circulation of blood necessary in human beings?

### Section B

25. A student adds a few drops of universal indicator to a solution of hydrochloric acid taken in a test tube. He would observe that the solution changes from
  - (a) colourless to blue
  - (b) colourless to violet
  - (c) green to red
  - (d) colourless to red
26. On putting drop of a liquid on a pH paper a student observe a small circular patch of blue colour on the pH paper. The liquid is most probably

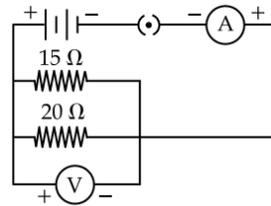
- (c) voltmeter will show constantly higher readings  
(D) resistor will get heated up and its value will change.

33. The current flowing through our resistor connected in a circuit and the potential difference developed across its and are shown in the diagram. The approximate value of the resistor is

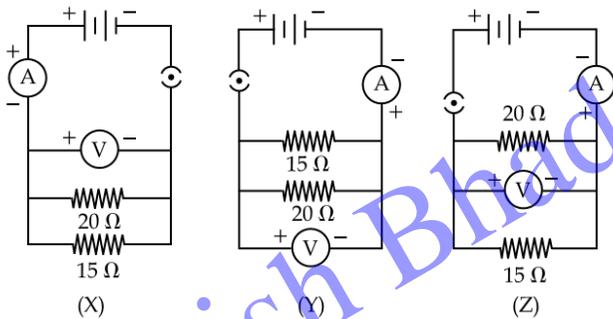


- (a) 2 Ω                      (b) 6 Ω                      (c) 12 Ω                      (d) 15 Ω

34. The voltmeter, ammeter and the two resistors in the circuit have been checked and found correct. On inserting the key in the plug the voltmeter reads 3.0 V but the ammeter reads 150 mA. This could most likely be because the connecting wires joined to the  
(a) ammeter are loose                      (b) 15 Ω Resistor or loose  
(c) 20 Ω Resistor or loose                      (d) voltmeter are loose.

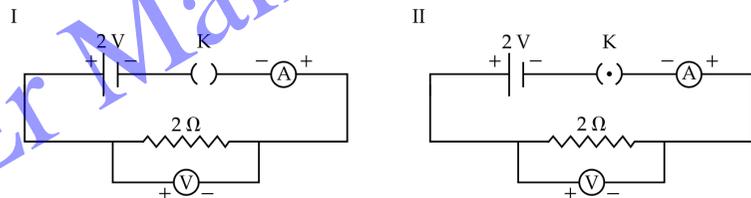


35. In the experiment on finding the equivalent resistance of two resistors of 15 Ω And 20 Ω three circuit diagrams X, Y and Z are available. For getting correct results you would choose:



- (a) only X                      (b) only Y                      (c) only Z                      (d) any one of the three

36. For the circuits shown in figure I and II, the voltmeter reading would be:



- (a) 0 V in circuit I and 2 V in circuit II                      (b) 2 V in circuit I and 0 V in circuit II

- (c) 0 V in both                      (d) 2 V in both

37. To prepare temporary mounts of a leaf peel for observing stomatas the chemicals used for staining and mounting respectively are

- (a) safranin and iodine                      (b) safranin and glycerin  
(c) iodine and safranin                      (d) glycerin and iodine

38. A well restrained leaf peel mount when observing under the high power of a microscope shows nuclei in the

- (a) guards cells only                      (b) epidermal cells only  
(c) guards cells and epidermal cells                      (d) guards cells, epidermal cells and stomata

39. In the experiment to show that CO<sub>2</sub> is given out during respiration the chemical filled in the small test tube is:

- (a) alcohol                      (b) KOH                      (c) lime water                      (d) iodine solution.

40. The four necessary steps for the experiment "to show that light is necessary for photosynthesis" are not given here in proper sequence:

- (i) cover the leaf of the plant with a piece of black paper  
(ii) keep the plant in sunlight for about four hours  
(iii) keep the potted plant in a dark room for about two days  
(iv) pluck the leaf and test it for starch.

The correct sequence of these four steps is:

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

41. In the experiment "to show that CO<sub>2</sub> is given out during respiration" the water level in the bent tube rise after some time because

- (a) the germinating seeds consume all the O<sub>2</sub> and CO<sub>2</sub> in the flask  
(b) the germinating seeds consume O<sub>2</sub> and give out CO<sub>2</sub> which is absorbed by a chemical filled in the small test tube  
(c) CO<sub>2</sub> is given out by the germinating seeds  
(d) seeds need water for germination and grow.

42. In the experiment "light is essential for photosynthesis" to test the presence of starch in the experimental leaf, the leaf is boiled in alcohol for a few minutes in a water bath. The use of water bath is recommended because

- (a) steam from the water bath heats the leaf rapidly  
(b) steam from the water bath dissolves the chlorophyll  
(c) the boiling point of water is less than that of alcohol  
(d) alcohol is flammable.

