CBSE
Class X Science
Board Paper – 2013 (Set 2)
Term II

Total time: 3 hrs **Total marks: 90**

General instructions:

1. The question paper comprises of **two sections, A and B**. You are to attempt both the sections.
2. 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 question is to be attempted.
3. All the questions of **Section-A** and **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 **7** in **section - A** are **two marks** questions, to be answered in about **30 words each**.
6. Question number **8** to **19** in **section-A** are **three marks** questions, to be answered in about **50 words**.
7. Question number **20** to **24** in **section-A** are **five marks** questions, to be answered in about **70 words**.
8. Question numbers **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.

SECTION - A

1. Whenever there is relative motion between a magnet and a coil, a current is induced in the coil. Name this phenomenon? [1]

2. Name the major parts of the brain. [1]

3. Mention the limitations in exploiting geothermal energy. [1]

4. What type of a reaction is respiration? Explain the process of respiration with the help of a chemical equation. [2]

5. Giving a chemical equation answer the following [2]

(a) What happens when copper is heated in air?

(b) What happens when the product obtained in above reaction is heated in hydrogen?

6. Compute the heat generated while transferring 96000 coulombs of charge in one hour through a potential difference of 50 V between two ends of a conductor. Also calculate the power input by the source. [2]

7. An electric bulb is connected to a 220 V generator. The current flowing is 2 A. Find the power of the bulb and resistance of its filament. [2]

8. Zinc is a metal found in the middle of the activity series of metals. In nature, it is found as a carbonate ore, $ZnCO_3$. Mention the steps carried out for its extraction from the ore. Support with equations. [3]

9. Answer the following question: [3]

(a) Are all pure liquids bad conductors of electricity? Justify your answer with one example.

(b) Why are ionic compounds always hard?

(c) Name the cathode and anode in the electrolytic refining of copper.

10. Giving one example of each, define the following terms: [3]

i. Corrosion

ii. Rancidity

11. Write the chemical equation for the preparation of [3]

(a) Bleaching powder

(b) Plaster of Paris

(c) Caustic soda

12. Calculate which one uses more energy, a 250 W TV set in 1 hr or a 1200 W toaster in 10 minutes. (Both are connected to the same source of electricity) [3]

13. An electric kettle of 2 kW works for 2 h daily. Calculate the [3]

i. energy consumed in S.I. and commercial unit

ii. cost of running it in the month of June at the rate of Rs. 3.00 per unit.

14. Why does a current-carrying solenoid, when suspended freely, rest along a particular direction? Explain. [3]

15.

(a) Explain the events which take place during photosynthesis.

(b) Which test is carried out to prove the presence of starch in leaves? [3]

16. Name the products formed after complete digestion of carbohydrates, proteins and fats in the small intestine. [3]

17. Give reasons: [3]

i.

(a) Pituitary is often termed as master endocrine gland.

(b) Pancreas helps in digestion and also regulates blood sugar level.

(c) Adrenals are known as emergency glands.

ii. Name the part of the hind brain which controls involuntary actions.

18. List any three ways in which construction of dams for production of electricity adversely affects the environment of that place. [3]

19. Aditya suggests to his family to install a solar water heater at their residence. But some family members were in a favour of installing an electric geyser. [3]

(a) Who according to you is taking a correct decision? Mention the value exhibited by Aditya.

(b) Also give reasons (at least 2) for your answer.

20.

(a) Acids as well as bases ionise in water. Name the ions produced by each in water.

(b) If we have hydrochloric acid and acetic acid of equal concentration, which will be a stronger acid and why?

(c) How will the concentration of hydrogen ions be affected if an acid is diluted? [5]

21. Explain the following: [5]

(a) Metals like Na, Ca and Mg are never found in a free state in nature.

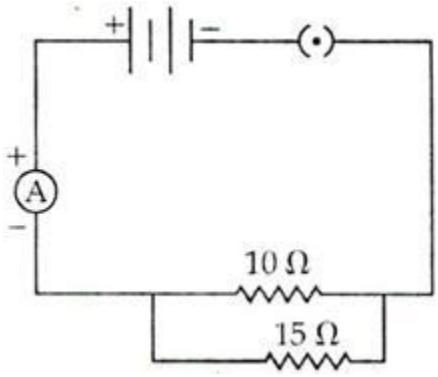
(b) Solder is used for welding electrical circuits.

(c) Silver ornaments turn blackish after some time.

(d) Gold is used for making jewellery.

(e) Gallium will melt if you keep it on your palm.

22. Study the following circuit and answer the questions that follow. [5]



(a) State the type of combination of the two resistors in the circuit.
(b) How much current is flowing through the
  i. 10 ohm resistor
  ii. 15 ohm resistor
(c) What is the ammeter reading?
(d) Define the S.I. unit of current.

23.

(a) What is an electric circuit?
(b) Calculate the number of electrons that flow per second to constitute a current of one ampere. Charge on an electron is 1.6×10^{-19}C.
(c) Draw an electric circuit for studying Ohm's law. Label the circuit component used to measure electric current and potential difference. [5]

24.

(a) Write three main steps which take place in the chloroplast during photosynthesis.
(b) How do stomata open and close?
(c) Which raw material is made available to plants for photosynthesis when stomata are open? [5]

SECTION-B

25. A drop of colourless liquid is poured over blue litmus paper and it turns to red. The colourless liquid is [1]

(a) Potassium hydroxide solution
(b) Sodium chloride solution
(c) Pure water
(d) Dilute hydrochloric acid

26. A student uses lime water to test the gas evolved as a result of action of dilute HCl on solid sodium carbonate. The chemical compound present in lime water is [1]

(a) Calcium chloride
(b) Calcium sulphate
(c) Calcium nitrate
(d) Calcium hydroxide

27. A student heated ferrous sulphate crystals in a test tube. He would observe that [1]

(a) The crystals start melting
(b) The crystals evaporate
(c) A very pungent gas is given out
(d) The crystals catch fire

28. The action of water on quicklime is classified as a combination reaction as [1]

(a) A precipitate is formed.
(b) Only one product is formed
(c) Heat is evolved.
(d) Sound and heat are evolved

29. Name the precipitate formed when aqueous solutions of sodium sulphate and barium chloride are mixed. [1]

(a) Barium sulphide
(b) Barium hydroxide
(c) Sodium chloride
(d) Barium sulphate

30. Aradhita added zinc granules in an iron sulphate solution and made a few observations. Identify the incorrect observation. [1]

i. Pale green solution becomes colourless
ii. Black deposit seen on zinc granules
iii. Red deposit seen on zinc granules
iv. Colourless solution becomes pale green

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

31. The precautions to be taken while performing the experiment for testing the reactivity of metals are [1]

(a) Use the same piece of metal in each test tube.
(b) Clean each metal piece with sand paper before use.
(c) Use the same test tube for all the solutions.
(d) Use the chemicals in excess to get good results.

32. A voltmeter had graduations 0, 0.5, 1.0, 1.5, 2.0 and 2.5. A student noticed that the pointer of the voltmeter was indicating the third graduation mark after 0 mark even when the circuit was open. The space between 2.0 and 2.5 was divided into 10 equal divisions. The zero error in the voltmeter was [1]

(a) + 0.3 V
(b) + 0.15 V
(c) −0.15 V
(d) −0.3 V

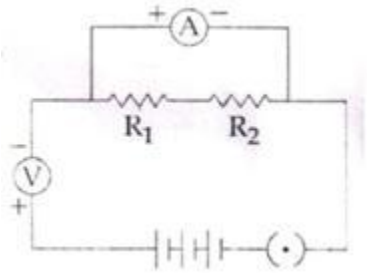
33. In a voltmeter there are 20 divisions between the 0 mark and 0.5 V mark. The least count of the voltmeter is [1]

(a) 0.020 V
(b) 0.025 V
(c) 0.50 V
(d) 0.250 V

34. The potential difference which is required to cause 4.00 A current to flow through a resistor of 330 Ω is [1]

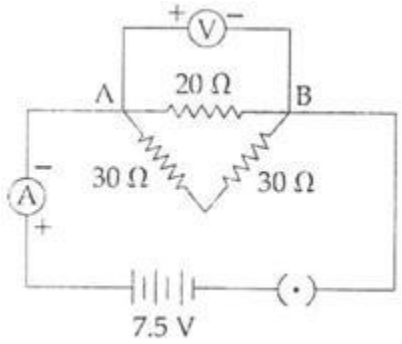
(a) 334 V
(b) 12.1 V
(c) 1320 V
(d) 82.5 V

35. To find the equivalent resistance of two resistors R_1 and R_2 connected in series, Rahul prepared a circuit as shown below. Another student Mohit observed the circuit and said that the circuit is not correct. The mistake in the circuit is [1]



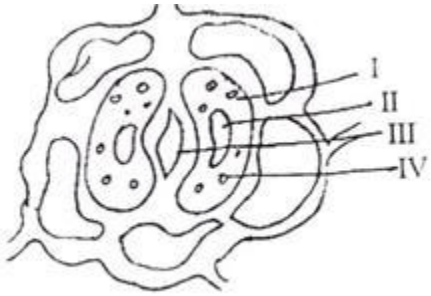
(a) The two resistors and the ammeter have been connected correctly but not the voltmeter.
(b) The two resistors, the voltmeter and the ammeter all have been connected correctly.
(c) The two resistors have been connected correctly but not the voltmeter and the ammeter.
(d) The two resistors and the voltmeter have been connected correctly but not the ammeter.

36. A student joined three resistances as shown in the circuit below. The current recorded by the ammeter (A) is: [1]



(a) 0.25 A
(b) 0.5 A
(c) 0.75 A
(d) 1 A

37. In the following sketch of the stomata the parts I, II, III and IV were labeled differently by four students: [1]



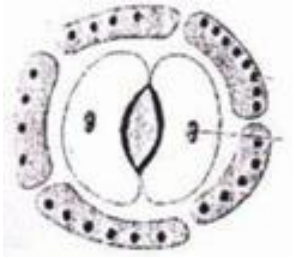
The correct labeling, out of the following is

(a) I - Guard cell, II - stomata, III - starch granule, IV – nucleus
(b) I - Cytoplasm, II - chloroplast, III - stomata, IV – nucleus
(c) I - Guard cell, II - starch, III - nucleus, IV – stomata
(d) I - Cytoplasm, II - nucleus, III - stomata, IV – chloroplast

38. A student had drawn the diagram of stomata from the temporary stained mount of leaf peel. Below are given some corrections needed in the diagram. [1]

(a) Shape of guard cells needs correction.
(b) Epidermal cells should have one nucleus only.
(c) Chloroplasts should be drawn in the guard cells.
(d) More nuclei are to be drawn in the guard cells.

Actually needed corrections in the diagram are:



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

39. To get result as shown in Fig.2, the leaf should be covered on: [1]

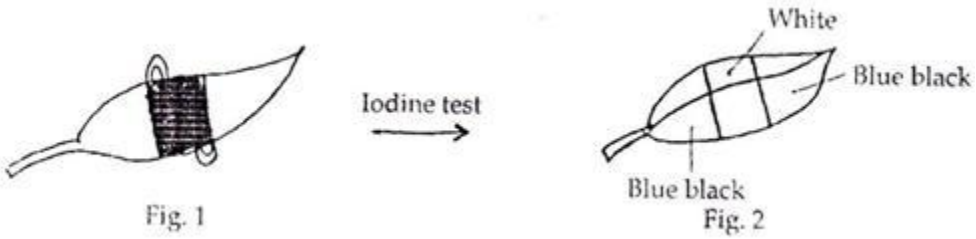
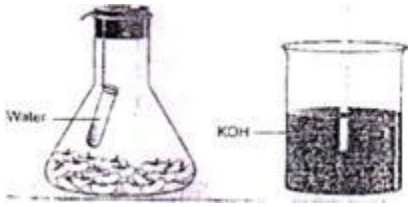


Fig. 1 Fig. 2

(a) Upper side
(b) Lower side
(c) Partially covered on both sides
(d) Both sides

40. At very high intensities, green plants show [1]
(a) High rate of photosynthesis
(b) High rate of respiration
(c) Low rate of respiration
(d) Low rate of photosynthesis

41. A student while setting up the experiment to show that CO_2 is evolved during respiration committed some errors shown in the figure. [1]



The changes which should be made in the set up to get the desired results is
(a) KOH should be taken in the small test tube inside the flask and germinating seeds in beaker.
(b) Water should be taken in the beaker and KOH solution in the flask.
(c) Water should be taken in the flask and KOH solution in the small test tube.
(d) KOH solution should be taken in the small test tube inside the flask and water should be taken in the beaker.

42. In the experiment to show that CO_2 is released during respiration, the solution in the test tube is chemically: [1]
(a) NaOH
(b) NaCl
(c) KCl
(d) KOH