

निर्धारित समय : 3 घण्टे

अधिकतम अंक : 90

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) Question numbers 1 to 3 in Section-A are one mark questions. These are to be answered in one word or in one sentence.
- (vi) Question numbers 4 to 7 in Sections-A are two marks questions. These are to be answered in about 30 words each.
- (vii) Question numbers 8 to 19 in Section-A are three marks questions. These are to be answered in about 50 words each.
- (viii) Question numbers 20 to 24 in Section-A are five marks questions. These are to be answered in about 70 words each.
- (ix) 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. विद्युत हीटर के तापन अवयव के तार तथा फ्यूज के तार में एक अन्तर लिखिए।
State a difference between the wires used in the element of an electric heater and in a fuse wire. 1
2. Give one example each of a plant hormone that
(a) Promotes cell division
(b) Inhibits growth 1
3. बायोगैस के दो ज्वलनशील अवयवों के नाम लिखिए। 1
4. Name two combustible components of biogas.
When lead nitrate solution and potassium iodide solution are mixed together, we get lead iodide and potassium nitrate solution. Write balanced chemical equation for the reaction involved. 2
5. Describe briefly the method to obtain mercury from cinnabar. Write the chemical equation for the reactions involved in the process. 2

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6. State the physical quantity which is equal to the ratio of potential difference and current. Define its SI unit. 2
7. Name and state the rule which determine the direction of magnetic field around a straight current carrying conductor. 3
8. A student takes 2g of Ferrous sulphate crystal in a dry test tube and heats the test tube. Answer the following questions on the basis of the observations made by the student.
 - Write an observation about colour of residue or smell of gas involved.
 - Name the type of chemical reaction.
 - Write balanced chemical equation for the reaction involved.
9. When food containing fat or oil is not used and left for a long time, their smell and taste changes. Name the process and state responsible for this change. List two methods to prevent or slow down the above change. 3
10. What is meant by water of crystallization? How many molecules of water are present in hydrated copper sulphate? Write its formula. What colour change do you observe when it is heated? 3
11. Name two metals which are purified by electrolytic refining. Mention the anode, cathode and the electrolyte used in the refining process. At which electrode would the pure metal be deposited? 3
12. A wire of resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is R^1 , calculate the ratio R/R^1 . Draw a circuit diagram to show two resistors R_1 and R_2 connected in parallel along with a battery, key, ammeter and voltmeter. 3
13. Amongst iron, silver, nichrome, tungsten, copper which metal/alloy should be used to make the
 - Heating element of electric geysers
 - filament of incandescent bulbs
 An electric iron has rating of 750 W, 220 V. Calculate
 - current required and
 - its resistance when it is in use.
14. Explain briefly two different ways to induce current in a coil. State the rule which determines the direction of induced current. 3
15. With the help of a schematic flow chart show the breakdown of glucose in a cell to provide energy -
 - in the presence of oxygen
 - in the absence of oxygen
 - when there is lack of oxygen
16. (a) What happens at the synapse between two neurons?
 (b) How is brain protected? 3
17. हॉर्मोनों के मुक्त होने का समय और मात्रा किस प्रकार नियंत्रित होती है? कोई उदाहरण देकर व्याख्या किजिए।
 How the timing and amount of hormone released is regulated? Explain with the help of an example. *by Pancreas* 3
18. What is a solar cell? Why and how is a solar cell applications and panel prepared? List two limitations of these panels. 3

prepared? List two limitations of these panels.

19. What is geothermal energy? How can it be used commercially? List in tabular form three distinguishing features between a thermal power plant and a geothermal power plant. 3

20. (a) What is an alloy? How is an alloy made? Write the components of (i) solder (ii) brass 5
(b) How does galvanization protect iron or steel from rusting? Explain. 5
अथवा / OR

A divalent metal 'X' occurs in nature in the form of carbonate ore. The metal 'X' is also used in galvanization. Name the metal and write the formula for its carbonate ore. State the steps of extraction of the metal from this ore and give chemical equation for the reactions involved.

21. (a) A metal compound 'A' reacts with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. If one of the compounds formed is calcium chloride then identify 'A' and the gas evolved? Also write a balanced chemical equation for the reaction which occurred. 5
(b) (i) Name an antacid. How does its chemical nature help to relieve from stomach indigestion? 5
(ii) A farmer treats the soil of his fields with quick lime or calcium carbonate. What information do you get about the nature of the soil, from this treatment? State the purpose of the farmer served by treating the soil with quick lime/calcium carbonate.
अथवा / OR

(a) State the chemical name and formula of bleaching powder. Write the chemical equation for its preparation. List its two uses other than bleaching.
(b) You are provided with three test tubes. One of them contains an acidic solution, the other has a basic solution and the third test tube has distilled water. How will you identify the contents of each test tube, if you are given only blue litmus paper?

22. (a) In a house hold 5 tube lights of 40 W each are used for 5 hours and an electric press of 500W for 4 hours everyday. Calculate the total electrical energy consumed by these appliances in a month of 30 days. 5
(b) Find the value of 1kwh in joules. 5
(c) State a difference between kilowatt and kilowatt hour.
अथवा / OR

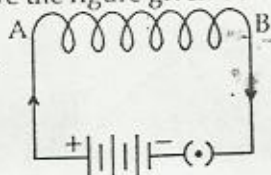
(a) Two identical resistors each of resistance 10 ohm are connected in (i) in series and (ii) in parallel in turn to a battery of 6V. Calculate the ratio of power consumed by the combination of resistor in the two cases.

(b) List two factors on which the resistance of a conductor depends.
(c) Write a difference between an ammeter and voltmeter.

23. (a) घरेलू परिपथों में : 5
(i) विद्युत मीटर।
(ii) भूसम्पर्कण का महत्व लिखिए।
(b) अतिभारण से बचने के दो उपायों की सूची बनाइए।
(c) सामान्य घरेलू परिपथ का व्यवस्था आरेख खींचिए।
(a) Give the significance of the following in a domestic circuit- 5
(i) electric meter
(ii) earthing
(b) List two precautions that should be taken to avoid over loading.
(c) Draw a schematic diagram to show a common domestic circuit.

अथवा / OR

Observe the figure given below and answer the following questions -



- Write the special name given to the coil AB which has many circular turns of insulated copper wire.
- State the nature of magnetic field inside AB when a current is passed through it.
- Re-draw the diagram and sketch the pattern of magnetic field lines through and around AB.
- List two factors on which the strength of the magnetic field produced by AB depends.
- What is the effect of placing an iron core in the coil AB?

24.

- Draw diagrams to show nutrition in Amoeba.
- Give one difference between autotrophic and heterotrophic nutrition.
- What is the mode of nutrition in
 - fungi
 - Amarbel (cuscuta)

अथवा /OR

- Draw a sectional view of the heart and label -
 - Blood vessel which carries deoxygenated blood from heart to lungs.
 - Blood vessels which brings oxygenated blood from lungs to the heart.
 - Chamber of the heart which receives deoxygenated blood.
 - largest blood vessel
- Why do arteries have thick elastic walls?

भाग - ब / SECTION - B

25.

When we add water to quick lime we observe some changes. On the basis of those changes we may conclude that the reaction between quick lime and water is a -

- combination reaction as well as endothermic reaction
- combination reaction as well as exothermic reaction
- displacement reaction
- double displacement reaction

26.

When we heat Ferrous sulphate crystals we observe that

- no gas is evolved
- a brown coloured gas is evolved
- a gas having smell of burning sulphur is evolved
- no residue is left after heating

27.

Bottle A contains dilute ethanoic acid and Bottle B contains dilute sodium bicarbonate solution. When pH paper is dipped in each of the solutions, the colour seen in A and B respectively are:

- orange and blue
- blue and orange
- green and blue
- green and orange

28.

The pH values of four solutions A, B, C and D as determined by a student are 4, 7, 12, and 8 respectively. Arrange the four solutions in the decreasing order of their hydrogen ion concentration:-

of their hydrogen ion concentration:-

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

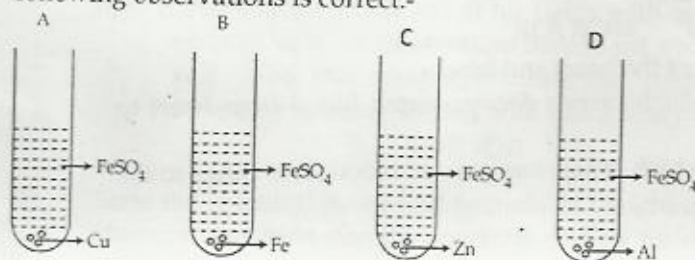
29. If we bring a match stick near the mouth of the test tube in which a reaction between zinc metal and dilute HCl is taking place we observe that

- (a) the match stick burns faster
- (b) a gas evolves which burns with a pop sound
- (c) the match stick extinguishes
- (d) a gas evolves which turns lime water milky

30. Freshly prepared aqueous solutions of zinc sulphate and iron sulphate respectively appear:

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

31. Study the reactions taking place in the following test tubes. Which of the following observations is correct:-



- (a) The solution become colourless in C and D
- (b) No change takes place in A and B
- (c) The surface of the metal turns greyish black in C and D
- (d) All are correct.

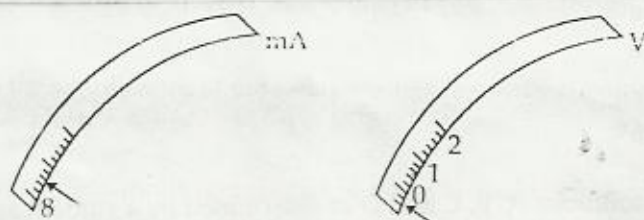
32. In an ammeter there are 20 divisions between 0 A marks and 0.5 A mark. The least count of the ammeter is:

- (a) 0.005 A
- (b) 0.01 A
- (c) 0.05 A
- (d) 0.025 A

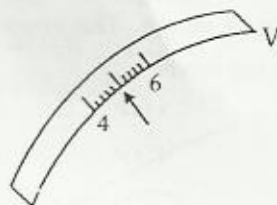
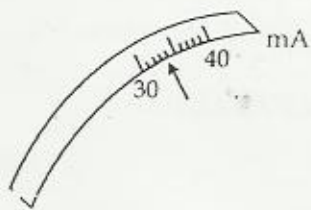
33. We use thick copper wires as connecting wires for studying the dependence of current on the potential difference across a resistor. The reason of using thick copper wire is its

- (a) easy availability
- (b) low cost
- (c) high resistance
- (d) low resistance

34. The rest positions of the needle in a milliammeter and volt meter when no current flows are shown in figure A. When a student used these in his experiments, the final readings of the needle were in the position shown in figure B.



(A)



(B)

The correct readings of the two instruments are

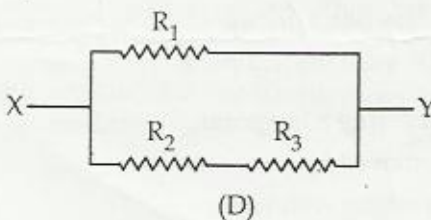
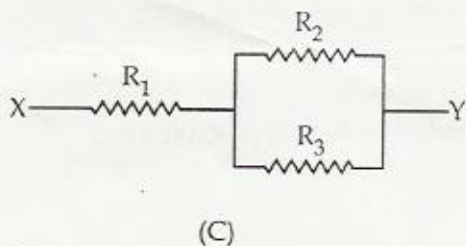
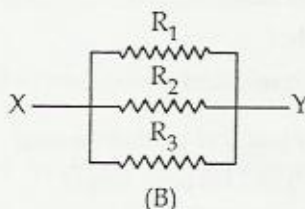
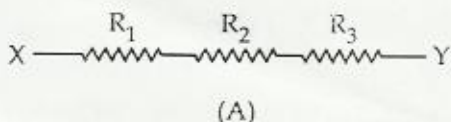
- (a) 34m A and 4.7V respectively
- (b) 37m A and 4.8V respectively
- (c) 31m A and 4.8V respectively
- (d) 31m A and 4.7V respectively

0.0.5
x

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

Q35.

To determine the equivalent resistance of three resistors R_1 , R_2 and R_3 which connected in parallel arrangement, four students, A, B, C and D connected the resistors as follows:-

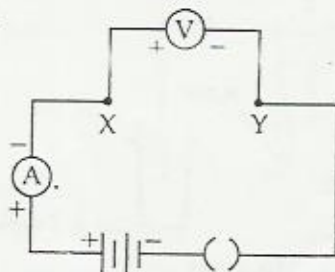
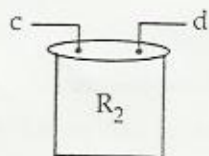
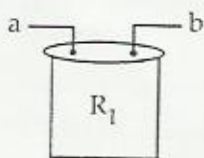


The correct arrangement of the resistors is that of student

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

36.

You have two resistors R_1 and R_2 with their terminals marked a, b, c and d as shown:



In order to find the equivalent resistance of series combination of the two resistor R_1 and R_2 how would you connect the terminals of the resistors R_1 and R_2 to the terminals X and Y in the circuit shown in the figure.

- (a) X to a; b to c and d to Y
- (b) X to a; b to d and c to Y
- (c) X to b; a to d and c to Y
- (d) In any of the three manners given above

37.

A star shaped black paper was used to cover an experimental leaf in a destarched plant as shown below. The plant was left in sunlight for four hours

and then the leaf was plucked. The black paper was removed and the leaf was tested for the presence of starch. The areas which turned blue-black when iodine solution was added were:-



- (a) I, II, III, IV
- (b) I, III, IV
- (c) only II
- (d) only IV

38. Which of the following solvent is used in school laboratories to decolourise the experimental leaf before conducting starch test?

- (a) Water
- (b) Iodine solution
- (c) Alcohol
- (d) Starch solution

glucose → pyruvate

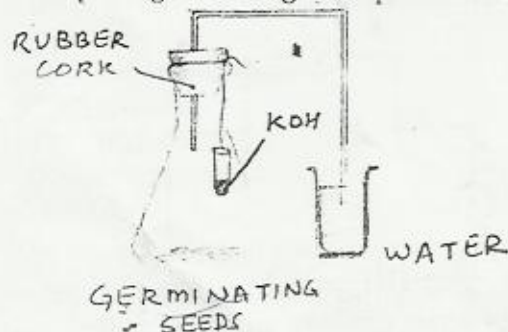
39. Why do we place leaf peels in water?

- (a) Guard cell become turgid
- (b) Peels remain green
- (c) Peels don't dry up
- (d) To wash the leaf peels

40. While preparing a temporary stained mount of a leaf epidermal peel, the extra stain is removed by:

- (a) Washing with water
- (b) Washing with sodium chloride solution
- (c) Soaking with filter paper
- (d) Absorbing with cotton wool

41. In the experimental set up shown below the water level rises in the bent tube because the germinating seeds present in the conical flask



- (a) take up O_2 from the KOH in the test tube
- (b) take up CO_2 from the atmosphere
- (c) release O_2 into the air which is absorbed by KOH
- (d) release CO_2 into the air in the flask which is absorbed by KOH

42. Before setting up an experiment to show that CO_2 is released by seeds during respiration the seeds should be-

- (a) dried completely
- (b) boiled to make them soft
- (c) soaked in vinegar
- (d) kept moist till they germinate