विद्या सर्वार्थि साधिका

ANANDALAYA

PERIODIC TEST - 3

Class : X

Subject: Science (086) MM :40

Date : 23-12-2023 Time: 1 Hr. 30 min

General Instructions:

(1) All questions are compulsory. There are 17 questions in all.

(2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.

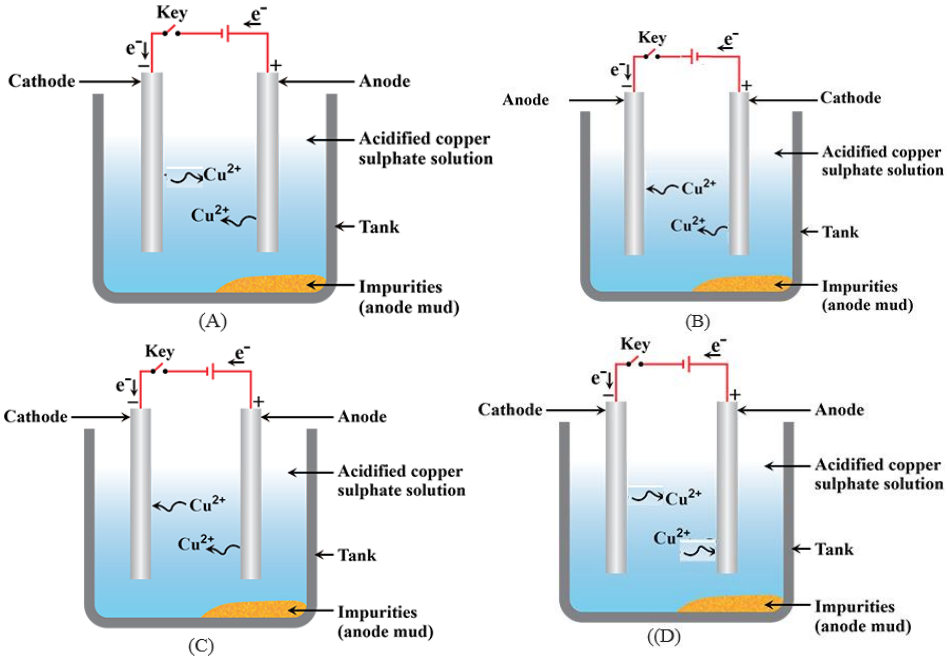
(3) Section A consists of 8 multiple choice questions of 1 mark each, Section B consists of 2 very short questions of 2 marks each, Section C consists of 2 short answer type questions of 3 marks each, section D consists of 2 long answer questions of 5 marks each and Section E consists 3 source-based/case study-based questions of 4 marks each with sub-parts.

SECTION A

1. An electric bulb marked (40W - 200 V) is used in a circuit of supply voltage 100V. The power dissipated now is _____. (1)

(A) 10 W (B) 20 W (C) 40 W (D) 60 W

2. Which one of the following figures correctly describes the process of electrolytic refining? (1)



3. Food cans are coated with tin and not with zinc because: (1)

(A) Zinc is costlier than tin.

(B) Zinc has a higher melting point than tin.

(C) Zinc is less reactive than tin.

(D) Zinc is more reactive than tin.

4. Which of the following metals can evolve dihydrogen gas from nitric acid? (1)

(A) Al (B) Zn (C) Mn (D) Cu

5. Which of the following statements is true for unisexual flowers? (1)
(A) They possess both stamen and pistil.
(B) They possess either stamen or pistil.
(C) They exhibit self pollination.
(D) Unisexual flowers possessing only stamens can produce fruits.

6. Plants respond to light by growing towards it. This growth movement of the plant part is caused by the action of the hormone named _____. (1)
(A) ABA (B) Auxin (C) Ethylene (D) Cytokinins

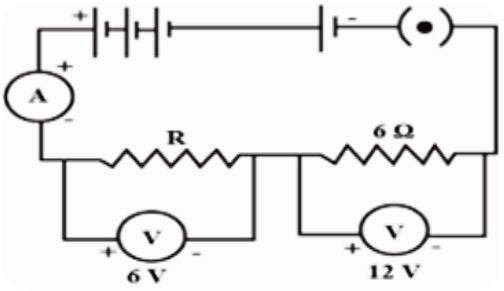
For question numbers 7 and 8, two statements are given labelled Assertion and the other labelled Reason. Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.
(A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion.
(C) Assertion is true but Reason is false
(D) Assertion is false and Reason is also false.

7. Assertion (A): Three resistors, each of resistance 1Ω, 10^3 Ω and 10^6 Ω are connected in parallel. The equivalent resistance of this combination is less than 1Ω. (1)
Reason (R) : In parallel combination, the equivalent resistance is always less than the least resistance of given resistors in the circuit.

8. Assertion (A): Copper does not react with H_2SO_4. (1)
Reason (R) : Copper is one of the most reactive metals.

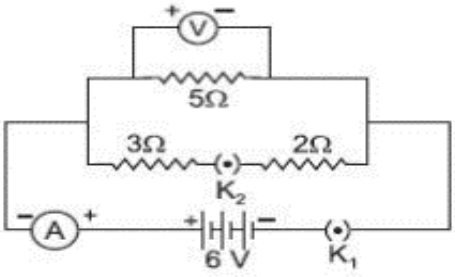
SECTION B

9. In the given circuit, calculate: (2)
(i) the reading of the ammeter.
(ii) the value of resistance R.
(iii) the potential difference across the terminals of the battery.



OR

In the given circuit, calculate:
(i) net resistance of the circuit and
(ii) current through 3 Ω resistor when both the keys are closed.



10. Laxmi added dilute Hydrochloric acid to four metals and recorded her observations as shown in the table given below: (2)

Metal	Gas evolved
Copper	Yes
Iron	Yes
Magnesium	No
Zinc	Yes

Select the correct observation(s) and give the chemical equation(s) of the reaction involved.

SECTION C

11. Consider the following elements: (3)

$_4Be$, $_9F$, $_{19}K$, $_{20}Ca$

(a) Select the element having one election in the outermost shell.
(b) Write the formula and state the nature of the Compound formed when the element K reacts with an element Chlorine (Cl) of electronic configuration 2, 8, 7.
(c) Show the formation of the above compound by the transfer of electrons.

12. (a) Why are budding, fragmentation and regeneration, all considered as various types of asexual reproduction? (3)
(b) Draw labelled diagrams and explain the process of regeneration in Planaria.

SECTION D

13. (a) State Ohm's law. Write the necessary condition for its validity. (5)
(b) How is Ohm's law verified experimentally? Explain.
(c) What will be the nature of the graph between potential difference and current for a conductor?
(d) Name the physical quantity that can be obtained from this graph.

14. (a) List two differences between voluntary and reflex actions. Write an example for both actions. (5)
(b) What is neuromuscular junction?
(c) Which part of the brain controls salivation and vomiting?

SECTION E

Questions 15 and 17 are Source-based/Case study based questions of 4 marks with sub-parts.

15. In an electric circuit, the amount of current depends not only on the magnitude of the voltage, but also on the characteristics of the conductor that the current is flowing through. Resistance is a property of the conductor to resist the flow of charges whereas electrical resistivity is the characteristics of the material. Electrical and electronic systems use electrical resistivity as a key parameter for material selection. This enables designers to determine the right material to be used for a given application. Electrical resistivity of some materials at 20^o C is given below.

Silver	Copper	Tungsten	Iron	Nichrome
1.60×10^{-8} Ωm	1.62×10^{-8} Ωm	5.2×10^{-8} Ωm	10^{-7} Ωm	100×10^{-6} Ωm

Answer the following questions based on electrical resistance and electrical resistivity of a material.

(i) Among Silver and Copper, which one is a better conductor and why? (1)
(ii) Out of five materials given in the table, which one is preferred as a heating element and why? (1)
(iii) Why does the connecting cord of an electric heater not glow while the heating element does? (2)

OR

(iii) A copper wire of 2Ω resistance and 10 cm in length is stretched to 30 cm length. Find resistance and resistivity of the stretched wire.

16. The earth's crust is the major source of metals. Seawater also contains some soluble salts such as sodium chloride, magnesium chloride, etc. The elements or compounds, which occur naturally in the earth's crust, are known as minerals. At some places, minerals contain a very high percentage of a particular metal and the metal can be profitably extracted from it. These minerals are called ores. Having this knowledge of reactivity series, you can easily understand how a metal is extracted from its ore. Some metals are found in the earth's crust in the free state. Some are found in the form of their compounds. The metals at the bottom of the activity series are the least reactive. They are often found in a free state.

(i) An ore on treatment with dilute hydrochloric acid produces brisk effervescence with evolution of CO_2 gas. Name the process required to obtain metal from the enriched ore. (1)

(ii) Carbon cannot be used as a reducing agent to obtain Mg from MgO. Why? (1)

(iii) Write two differences between calcination and roasting. (2)

OR

(iii) Copper is available in nature in its copper (I) sulphide ore. Write down the reactions involved in the extraction of Copper from this ore?

17. India is a country with a large population. Large families add to our already exploding human population. Thus, there is an urgent need to have a general awareness in our society regarding the advantage of small families, keeping sufficient space between successive birth and prevention of unwanted pregnancies. Frequent pregnancies and childbirth also affect the mental and physical health of the mother.

Based on the above information, answer the questions below:

(i) Give two examples of permanent methods of contraception. (1)

(ii) Other than preventing pregnancy what other benefit is gained by using certain contraceptives? (1)

(iii) Which is the best method of contraception, if a couple wants to space two pregnancies? Explain the method. (2)

OR

(iii) Can abortion of embryos be used as a method of contraception? Justify your answer.