

GRADE: X Date:08/11/2024	Monthly Test 3 (2024-25) SCIENCE (MS)	Marks: 20 Time: 50 mins
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General Instructions:

1. There are 9 questions in the question paper.
2. All questions are compulsory.
3. Draw diagrams, wherever necessary.

Q.No.	Questions	Mark
SECTION A		
1	The electrical resistivity of a given metallic wire depends upon (a) Its length (b) Its thickness (c) Nature of the material (d) Its length, thickness and nature of the material Ans: (c) Nature of the material	1
2	The number of pairs of sex chromosomes in the zygote of a human being is (a) 2 (b) 3 (c) 1 (d) 4	1
3	Two pink coloured flowers on crossing resulted in 1 red, 2 pink and 1 white flower progeny. The nature of the cross will be (b) self pollination	1

SECTION B		
4	<p>State Joules law of heating and write its mathematical expression.</p> <p>Ans: The law implies that heat produced in a resistor is (i) directly proportional to the square of current for a given resistance, (ii) directly proportional to resistance for a given current, and (iii) directly proportional to the time for which the current flows through the resistor</p> $H = I^2Rt$	2
5	<p>What is a homologous series? Write an example.</p> <p>Ans. A group of compounds having same molecular formula but differing by CH₂ group.</p> <p>Eg. CH₄, C₂H₆</p>	2
6	<p>a. Write any 2 properties of carbon by which it forms large number of compounds.</p> <p>b. Explain roasting and calcination .</p> <p>Ans. a) catenation b) carbon having valency 4 can link with many elements .</p>	2
SECTION C		
7	<p>Draw a schematic diagram of a circuit consisting of a battery of five 2 V cells, a 5 ohm resistor, a 10 ohm resistor and a 15 ohm resistor, an ammeter and a plug key, all connected in series.</p> <p>Find (i) the total resistance in the circuit. (ii) the electric current passing through the circuit.</p> <p>Diagram i) 30 ohm ii) 0.33 volt</p>	3

8	<p>Explain the refining of copper using electrolytic method with the help of a diagram.</p> <p>Copper is refined through a process called electrolytic refining, which uses electrolysis to purify the metal:</p> <p>Here's how the process works:</p> <p>Set up</p> <p>An impure copper block is used as the anode, and a thin strip of pure copper is used as the cathode. The electrolyte is an acidified copper sulfate solution.</p> <p>Pass current</p> <p>When electricity is passed through the electrolyte, the impure copper from the anode dissolves into the electrolyte.</p> <p>Deposit pure copper</p> <p>An equal amount of pure copper is deposited on the cathode.</p> <p>Separate impurities</p> <p>Soluble impurities enter the solution, while insoluble impurities settle at the bottom of the anode as anode mud.</p>	3
SECTION D		
9	<p>a) Why is variation beneficial to the species but not necessarily for the individual?</p> <p>Variations are beneficial to the species than individual because sometime for a species, the environmental conditions change so drastically that their survival becomes difficult. During that period, only few variants that are resistant would be able to survive. Thus, variants</p>	5

help in survival of the species. However, all variations are not necessarily beneficial for the individual organisms.

b)How does reproduction help in providing stability to populations Of species?

Definition of Reproduction:

- Reproduction is the biological process through which organisms produce new individuals (offspring) of their own kind. This can occur through various

methods, including sexual and asexual reproduction.

2. Importance of Reproduction:

- Reproduction is essential for the continuation of a species. It ensures that the genetic material is passed on to the next generation, allowing for the survival of the species over time.

3. Aging and Mortality:

- As organisms age, they become less capable of surviving due to factors such as old age, disease, or environmental challenges. This leads to a decrease in the population as individuals die.

4. Maintaining Population Stability:

- To counterbalance the loss of individuals due to aging and mortality, reproduction allows for the birth of new individuals. This process helps maintain a stable population size by replacing those that have died.

5. Constant Population Size:

- Through continuous reproduction, the number of individuals in a population can remain relatively constant, even as some individuals die. This stability is crucial for the survival of the species and the ecosystem.

c)How are the modes for reproduction different in unicellular and multicellular organisms ?

The unicellular organisms have only one cell. There is no separate tissue for reproduction. So, they can reproduce asexually by the process of fission (binary or multiple) or budding as in yeast. On the other hand, the multicellular organisms, contain various cells and have separate systems for reproduction. So, they can reproduce by both sexual and asexual reproduction

