



INDIAN SCHOOL SOHAR
PERIODIC TEST III 2024-25
Science (086)

Max. Marks: 80

Time: 3 hours

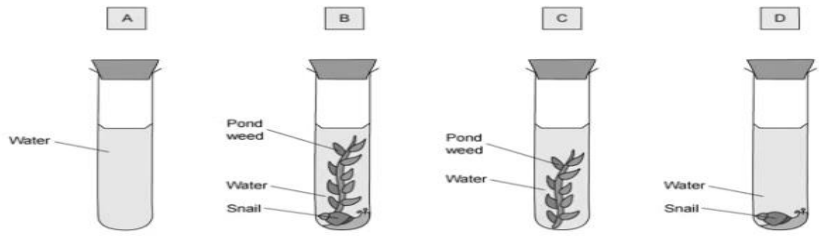
General Instructions:

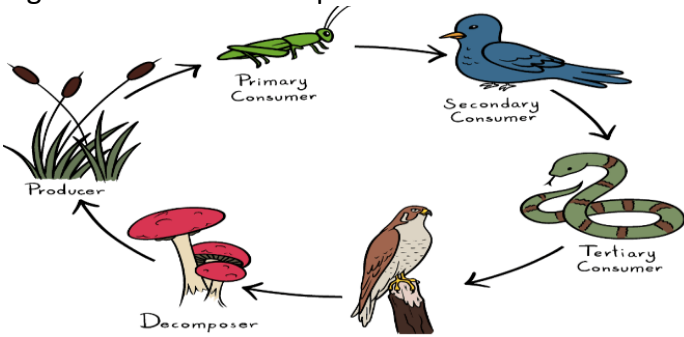
1. All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.
2. Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.
3. Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.
4. Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.
5. Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.
6. Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1/2/3 marks.

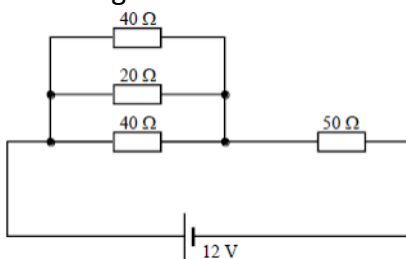
SECTION A

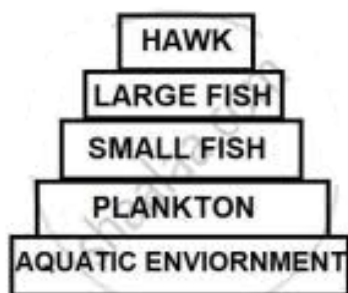
Question 1 to 16 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.

1	Which of the following statements about the given reaction are correct? $3\text{Fe (s)} + 4\text{H}_2\text{O (g)} \rightarrow \text{Fe}_3\text{O}_4 \text{(s)} + 4 \text{H}_2 \text{(g)}$ (i) Iron metal is getting oxidised (ii) Water is getting reduced (iii) Water is acting as reducing agent (iv) Water is acting as oxidising agent A. (i), (ii) and (iii) B. (iii) and (iv) C. (i), (ii) and (iv) D. (ii) and (iv)	1
2	When hydrogen chloride gas is prepared on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to A. absorb the evolved gas B. moisten the gas C. absorb moisture from the gas D. absorb Cl^- ions from the evolved gas	1
3	The condition produced by aerial oxidation of fats and oils in foods marked by unpleasant smell and taste is called: A. antioxidation B. reduction C. rancidity D. corrosion	1
4	The chemical formula for Plaster of paris is A. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ B. $\text{CaSO}_4 \cdot 4\text{H}_2\text{O}$ C. $\text{CaSO}_4 \cdot 1/2\text{H}_2\text{O}$ D. $2\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$	1
5	Pick the statement which is incorrect about the non-metal. A. Br is an example of a liquid non-metal. B. Graphite is a good conductor of electricity C. Most of the non-metal oxides are acidic D. All non-metals are sonorous	1

6	The highly reactive metals like Sodium, Potassium, Magnesium, etc. are extracted by the A. electrolysis of their molten chloride B. electrolysis of their molten oxides C. reduction by aluminium D. reduction by carbon	1															
7	The IUPAC name of $\text{CH}_3 - \overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}} - \text{CH}_2 - \text{CH}_3$ is A. 2-ethyl-2-methyl propane B. 2, 2-dimethyl butane C. 1,1,1-trimethyl propane D. 2, 2-methyl butane	1															
8	If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected? A. Proteins breaking down into amino acids. B. Starch breaking down into sugars. C. Fats breaking down into fatty acids and glycerol. D. Absorption of vitamins.	1															
9	In which of the following groups of organisms, food material is broken down outside the body and absorbed? A. Mushroom, green plants, amoeba B. Yeast, mushroom, bread mould C. Paramecium, amoeba, cuscutea D. Cuscutea, lice, tapeworm	1															
10	An experiment is set up with four test tubes as shown in the diagram below. All the four test tubes are left in sunlight for 6 hours. Which test tube would contain the least amount of dissolved carbon dioxide after 6 hours?  A. A B. B C. C D. D	1															
11	Select the correct statement about tropic movement in plants. A. It is due to stimulus of touch and temperature. B. It does not depend upon the direction of stimulus. C. It is observed only in roots and not in stems. D. It is a growth related movement.	1															
12	The progeny of two black female mice and a black male was as follows. i) First female had nine offsprings, all of which were black. ii) Second female had six black and two white offsprings. Which cross represents the parents of the all black offsprings? <table border="1"> <thead> <tr> <th></th><th>female</th><th>male</th></tr> </thead> <tbody> <tr> <td>A</td><td>bb</td><td>Bb</td></tr> <tr> <td>B</td><td>Bb</td><td>Bb</td></tr> <tr> <td>C</td><td>Bb</td><td>BB</td></tr> <tr> <td>D</td><td>BB</td><td>Bb</td></tr> </tbody> </table> key B = allele for black b = allele for white		female	male	A	bb	Bb	B	Bb	Bb	C	Bb	BB	D	BB	Bb	1
	female	male															
A	bb	Bb															
B	Bb	Bb															
C	Bb	BB															
D	BB	Bb															
13	Which one of the following statements is correct?	1															

	A. The rainbow is produced by the reflection of white sunlight by water drops in the atmosphere. B. The blue colour of the sky is due to scattering of light. C. The stars appear higher in the sky than they actually are due to the scattering of light. D. The planets twinkle at night due to atmospheric refraction of light.	
14	Magnification produced by a rear view mirror fitted in vehicles A. is less than one. B. is more than one. C. is equal to one. D. can be more than or less than one depending upon the position of the object in front of it.	1
15	At which level of the food chain does conversion of organic substances into simple inorganic substances take place?  A. Decomposers B. Primary consumers C. Secondary consumers D. Producers	1
16	In the following groups of materials, which group (s) contains only non-biodegradable items? (i) Wood, paper, leather (ii) Polythene, detergent, PVC (iii) Plastic, detergent, grass (iv) Plastic, bakelite, DDT A. (iii) B. (iv) C. (i) and (iii) D. (ii) and (iv)	1
	<i>Direction: Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</i> (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true	
17	Assertion (A): Sodium carbonate pentahydrate is also known as washing soda. Reason (R): Chief raw materials for the manufacture of washing soda are NH_3, NaCl, H_2O and CO_2.	1
18	Assertion (A): The fungal spores are covered by thick walls. Reason (R): The thick walls protect them until the spores come into contact with another moist surface and can begin to grow.	1
19	Assertion (A): When light travels from one medium to another the direction of propagation of light in the second medium changes. Reason (R): Light travels with different speeds in different mediums.	1

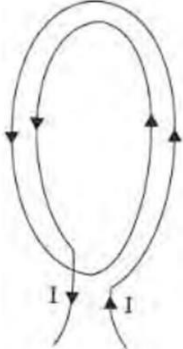
20	Assertion (A): Food chains generally consist of only three or four steps. Reason (R): Loss of energy at each step is so great that very little usable energy remains after four trophic levels	1																
SECTION B																		
Question No.21 to 26 are very short answer questions.																		
21	A. Write a balanced equation for the reaction between Ferric oxide and Aluminium. B. Write the type of chemical reaction in the following: (i) Reaction between an acid and a base (ii) Burning of fuels	2																
22	When some particles (like sand or dust) fall into our eyes, our eyes start to water on their own and we blink to get the particle out of our eyes. This is a type of reaction to a stimulus that human body shows. (i) Is the above-mentioned reaction involuntary or voluntary? (ii) What is the specific name given to the pathway that brings about this immediate reaction to a stimulus?	2																
23	<u>Attempt either option A or B.</u> A. Bile juice does not have any digestive enzyme but still plays a significant role in the process of digestion. Justify the statement. OR B. Explain the role of the following enzymes in the process of digestion of food in humans: (i) Salivary amylase (ii) Pepsin (iii) Trypsin (iv) Lipase	2																
24	Study the data given below showing the focal length of three concave mirrors A, B and C and the respective distances of objects placed in front of the mirrors: <table border="1"><thead><tr><th>Case</th><th>Mirror</th><th>Focal Length (cm)</th><th>Object Distance (cm)</th></tr></thead><tbody><tr><td>1</td><td>A</td><td>20</td><td>45</td></tr><tr><td>2</td><td>B</td><td>15</td><td>30</td></tr><tr><td>3</td><td>C</td><td>30</td><td>20</td></tr></tbody></table> In which one of the above cases will the mirror form a diminished image of the object? Draw a ray diagram to justify your answer.	Case	Mirror	Focal Length (cm)	Object Distance (cm)	1	A	20	45	2	B	15	30	3	C	30	20	2
Case	Mirror	Focal Length (cm)	Object Distance (cm)															
1	A	20	45															
2	B	15	30															
3	C	30	20															
25	A battery of potential difference 12 V is connected to a resistor network as shown in the circuit diagram.  A. Calculate the total resistance of the circuit. B. Calculate the current through the 50 Ω resistor. OR Draw the patterns of magnetic field lines due to a bar magnet. The magnetic field lines are closed curves. Why?	2																
26	DDT was sprayed in a lake to regulate the breeding of mosquitoes. How would it affect the trophic levels in the following food chain associated with a lake? Justify your answer.	2																

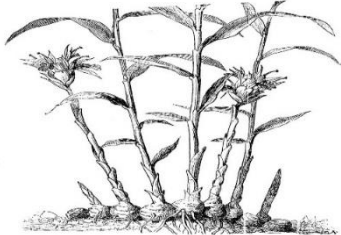
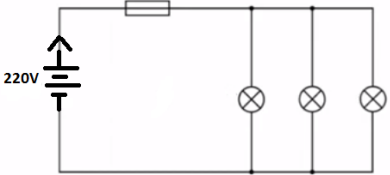


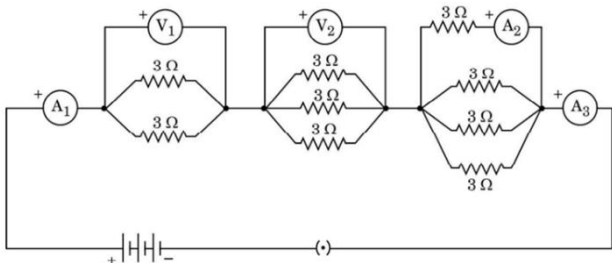
SECTION C

Question No. 27 to 33 are short answer questions.

27.	A. In the preparation of hydrogen chloride gas in laboratory, the gas evolved is tested with dry and then with wet litmus paper. In which of the two cases, does the litmus paper show change in colour? B. (i) Name the salt which is used in the removal of hardness of water. (ii) State the nature of the salt. C. Write the chemical reaction involved in the preparation of Bleaching powder?	3
28.	A. Compare the reactivities of the following metals with cold and hot water with their equations in tabular form: (i) Sodium (ii) Magnesium B. Show the electron transfer between the atoms in the formation of MgO diagrammatically.	3
29	A student measured the uptake and release of carbon dioxide from a plant during 24 hours. It was a very bright, sunny day between sunrise and sunset. The graph shows the student's results. i) Analyse the graph and state the times when there is no uptake or release of carbon dioxide. ii) State why plants release carbon dioxide at night and take carbon dioxide during day time.	3
30	How many pairs of chromosomes are present in human beings? Out of these how many types of sex chromosomes are found in human beings?	3

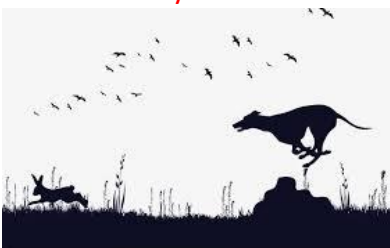
	"The sex of a new born child is a matter of chance and none of the parents may be considered responsible for it". Draw a flow chart showing determination of sex of a new born to justify this statement.	
31	(A) The near point of a hypermetropic person is at 75 cm from the eye. What is the power of the lens required to enable him to read clearly a book held at 25 cm from the eye? (B) In what way does the corrective lens help the person above? (C) The person above prefers to remove his spectacles while looking at the sky. Explain why.	3
32	Rohan conducted an experiment to study the energy efficiency of different bulbs. She connected a bulb A having a resistance of 100 ohms to a 240 V power supply in a laboratory. (A) How much energy will be consumed by the bulb if it is kept ON for 4 hours each day for a week? Express your answer in kJ. (B) Rohan connects another similar bulb B in series with bulb A and connects the combination to a 240 V supply. Will there be any change in the brightness with which bulb A glows now? Explain mathematically.	3
33	A. The diagram given below shows a circular loop of wire lying on the plane of the paper. Let the current pass through the loop anti-clockwise. Draw the pattern of lines of force due to a magnetic field through and around the loop. Show in the diagram which of its faces behaves as North Pole and which face as the South Pole.  B. How does the strength of the magnetic field at the centre of a circular coil of wire depend on: (i) the radius of the coil (ii) the number of turns of wire in the coil (iii) the strength of the current flowing in the coil?	3
<u>SECTION D</u> Question No. 34 to 36 are long answer questions.		
34	A. What happens when a small piece of sodium is dropped into ethanol? B. Write down the equation for the reaction: when ethanol is warmed with ethanoic acid in the presence of few drops of conc. H_2SO_4. C. What is the role of conc. H_2SO_4 in making ethene from ethanol? D. Draw the structure of a cyclic unsaturated carbon compound with 6 carbon. E. Write the molecular formula of first two members of homologous series having functional group -OH. OR A. Draw the structure for the (i) 2nd member of homologous series having Ketone as functional group. (ii) 2nd member of homologous series having aldehyde as functional group. B. (i) Define the term homologous series. (ii) Identify the functional group present in the following	5

	$\begin{array}{c} \text{O} \\ \parallel \\ \text{H}-\text{C}-\text{H} \end{array}$ (i) $\begin{array}{c} \text{H} \quad \text{OH} \\ \quad \\ \text{H}-\text{C}-\text{C}=\text{O} \\ \\ \text{H} \end{array}$ (ii) (iii) Draw the electron dot structure for the next higher homologue of $\text{C}_2\text{H}_5\text{OH}$	
35	<u>Attempt either option A or B.</u> A. The image below shows a ginger plant which is growing with the help of suckers. These suckers are small plant stem outgrowths which can be separated from the main plant and planted separately and they will grow into a new plant subsequently.  (i) Give the name and type of reproduction that is shown in the image above. (ii) List two advantages the farmer will have on using the type of reproduction mentioned above. (iii) List any two methods of artificial propagation that can be used in plants. Name the method used in propagating (i) Rose and (ii) Sugarcane (iv) Why is the offspring of this ginger plant identical to its parent plant? OR B. Answer the given questions on the basis of your understanding of the following paragraph. Pregnancy places significant demands on a woman's body and mind. During pregnancy, her body undergoes substantial physiological and hormonal changes to support the growth and development of the fetus and if she is not ready for it, her health will be adversely effected. Therefore, many ways have been devised to avoid unwanted pregnancies. (i) Name any two STDs caused by bacteria. (ii) How do oral contraceptive pills help in avoid pregnancies? (iii) What is vasectomy? (iv) List down the complications in surgical contraceptive measures. (v) What is sex selective abortion?	5
36	Figure shows three lamps and a fuse connected to a power supply. The potential difference of the supply is 220 V. Each lamp rated 220, 40 W. The rating of the fuse is 2 A.  A. Calculate: (i) the resistance of each lamp (ii) the current in each lamp (iii) the total current flowing through the fuse. B. The rating of the fuse is 2 A. What result do you expect when current flows through the fuse wire? C. Which effect of the electric current is utilized in the working of an electrical fuse?	5

	D. State the function of 'a fuse' in an electric circuit. How is it connected in the domestic electric circuit? OR Consider the following electrical circuit diagram in which nine identical resistors of $3\ \Omega$ each are connected as shown in figure. If the reading of the ammeter A_1 is 1 ampere, answer the following questions :  A. What is the relationship between the readings of A_1 and A_3? Give reasons for your answer. B. What is the relationship between the readings of A_2 and A_3? C. Determine the reading of the voltmeter V_1. D. Find the total resistance of the circuit.	
--	--	--

SECTION-E

Question No. 27 to 33 are short answer questions.

37	Some metals are chemically very reactive, whereas others are less reactive or unreactive. On the basis of their reactions of various metals with oxygen, water and acids, as well as displacement reactions, the metals have been arranged in a group or series according to the chemical reactivity. The arrangement of metals in a vertical column in the decreasing order of their re-activities is called the reactivity series or activity series of metals. The most reactive metal is at the top position of the reactivity series. The least reactive metal is at the bottom of the reactivity series. Hydrogen, though a non-metal, has been included in the activity series of metals only for comparison. Apart from it, the hydrogen atom also has tendency to lose its valence electron and form cation like the behaviour shown by metals. A. An element 'X' after reacting with acids liberate hydrogen gas and can displace lead and tin from their salt solution. Write down the name of metal 'X' and its reaction with any acid. B. Which metallic container is suitable to store copper sulphate solution. Why? OR B. (i) How would you detect the evolution of hydrogen gas from a reaction mixture? (ii) Name two metals that can be extracted by reduction with carbon.	4
38	A rabbit was grazing peacefully in a meadow when it suddenly noticed a pack of dogs approaching. Instantly, the rabbit felt an intense burst of energy and dashed away at full speed, leaping and dodging obstacles to escape. Despite the danger, it managed to stay ahead and finally reached a safe hiding spot where it rested, exhausted but safe.  A. Name the hormone which could have helped the rabbit to escape from the hungry dogs.	4

	B. List down the changes that occurs in animal body when the particular hormone is secreted during an emergency situation. (Any four) OR C. (i) Why hormone secreting glands are known as endocrine glands? (ii) Mention the mechanism which regulate the timing and amount of hormone released. D. What is the advantage of chemical coordination over nervous coordination?	
39	Shalini is fascinated by the world of microorganisms, so she builds a simple microscope to observe small objects like leaves and insects. She uses a convex lens with a short focal length to magnify these objects. When she places the object within the focal length of the lens, the lens produces a virtual, upright, and enlarged image of the object, allowing her to see tiny details. A. Write the differences in the characteristics of the image formed by a converging lens when the object is placed within the focal length and twice the focal length. B. Define the following terms related to spherical lenses: (i) Optical centre (ii) Principal axis C. A thin converging lens forms a (i) real magnified image and (ii) virtual magnified image of an object placed in front of it. Write the positions of the object in each case. Draw labelled ray diagram to show the image formation in case (ii). OR C. A converging lens forms a real and inverted image of an object at a distance of 100 cm from it. Where should an object be placed in front of the lens so that the size of the image is twice the size of the object? Also, calculate the power of a lens.	4