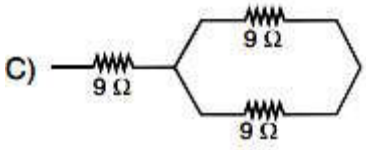
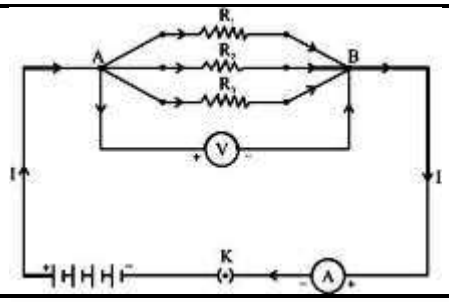
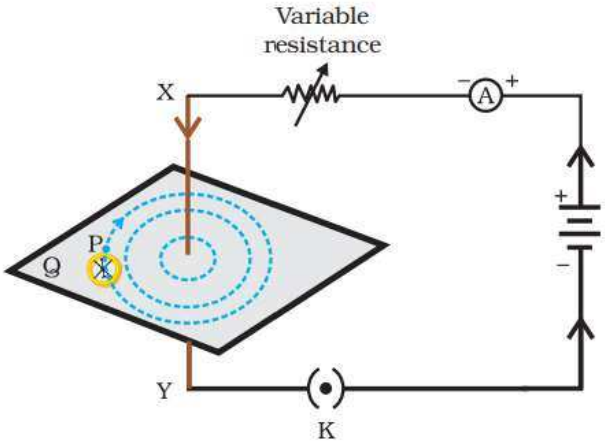
SSLC MID TERM EXAMINATION SEPTEMBER 2024

SUBJECT: SCIENCE

ANSWER KEY

	PHYSICS	
I.	**CHOOSE THE CORRECT ANSWER :**	**MARKS**
1.	B) Volt	1
2.	A) Magnetic field	1
3.	C) 	1
II.	**ANSWER THE FOLLOWING QUESTIONS:**	
4.	Because cross section of the conductor inversely proportional to the resistance of conductor. **OR** If Cross section of conductor increase then resistance of the conductor decreases.	1
5.	Magnetic field produced by a current-carrying wire at a given point depends directly on the current passing through it.	1
6.	The current drawn by the heater can be calculated using the formula $I = \frac{P}{V}$ $I = \frac{2000W}{220V}$ = 9.09 A The current drawn by the electric oven is 9.09 A which exceed the safe limit of the circuit. This causes the fuse to melt and break the circuit.	1

III.	**ANSWER THE FOLLOWING QUESTIONS:**	
7.		2
8.		2
IV.	**ANSWER THE FOLLOWING QUESTIONS :**	
9.	1) Total Resistance = 25 + 5 = 30Ω II) current = $\frac{V}{R} = \frac{5}{30} = \frac{1}{6} = 0.17A$ III) potential difference across the lamp : $V = 0.17 \times 25 = 4.2\,V$ Potential difference across the conductor : $V = 0.16 \times 5 = 0.8V$ **OR** Solution H = 50 J, R = 2Ω, t = 1 s, V =? $H = I^2RT$ $50 = I^2 \times 2 \times 1$ $I^2 = \frac{50}{2} = 25$ $I = \sqrt{25} = 5A$ Thus the potential difference across the resistor is V = IR = 5 A × 2 Ω = 10 V.	3

10.	a) • Connecting too many appliances to a single socket • When live wire and neutral wire come into direct contact. b) • 15 A current rating for appliances with higher power ratings such as geysers, air coolers, • The other circuit is of 5 A current rating for bulbs, fans, etc.	3
11.	• Turn on the circuit, allowing current to flow through the resistor. Record the readings on ammeter. • Replace the Resistor with the Bulb: Turn the circuit on again and observe the current reading on the ammeter. • Replace the Bulb with a Motor (or LED): Record the ammeter reading. • You will notice that the current measured for the resistor, bulb, and motor (or LED) will be different. • The resistor might have the least current, as it restricts the flow more. • The bulb may show a higher current depending on its power rating. • This activity demonstrates that the flow of current in a circuit changes based on the component used. • Each component offers different resistance or impedance, which affects the current flow.	3
V.	**ANSWER THE FOLLOWING QUESTIONS :**	
12.	Drawing magnetic field lines around a bar magnet using a compass needle : • Place a bar magnet on a white paper and mark the boundary of the magnet • Place the compass needle near the north pole of the magnet. The south pole of the compass needle directs towards the north pole of the magnet. Mark it with a point. • Move the needle to a new position such that it's south pole	4

occupies the position previously occupied by its north pole. Mark it with a point.

- In this way proceed step by step till you reach the south pole of the magnet.
- Join the points marked on the paper by a small curve.
- This curve represents a field line.

Properties of filed lines.

- ❖ Filed lines arise from North pole and end into south pole of the magnet
- ❖ Field lines are closed curves.
- ❖ Magnetic field is stronger where the field lines are crowded.
- ❖ Field lines are never intersecting each other

OR

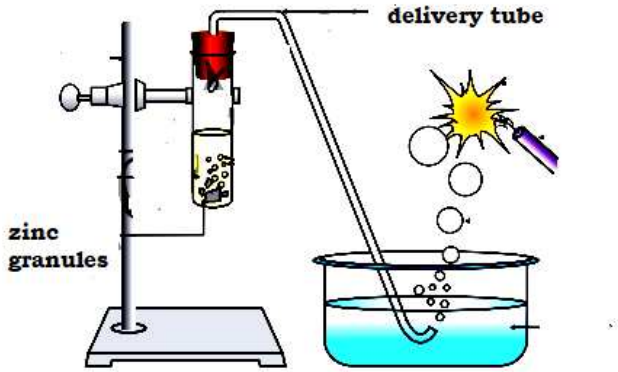
- Take a small metal rod and suspend it from a stand with the help of two connected wire.
- Put the rod in between the horse shoe magnet in such a way that rod remains in between the two poles.
- Pass the current in the rod through the rod.
- The rod displaces towards one side.
- Reverse the direction of current flowing through the rod.
- The rod displaces towards the opposite side.

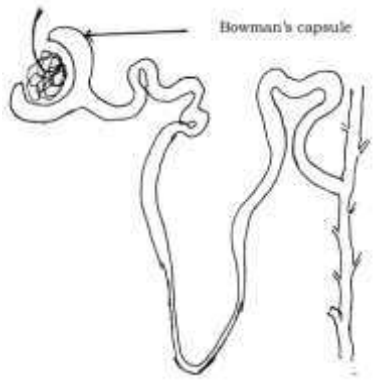
Fleming's left hand rule

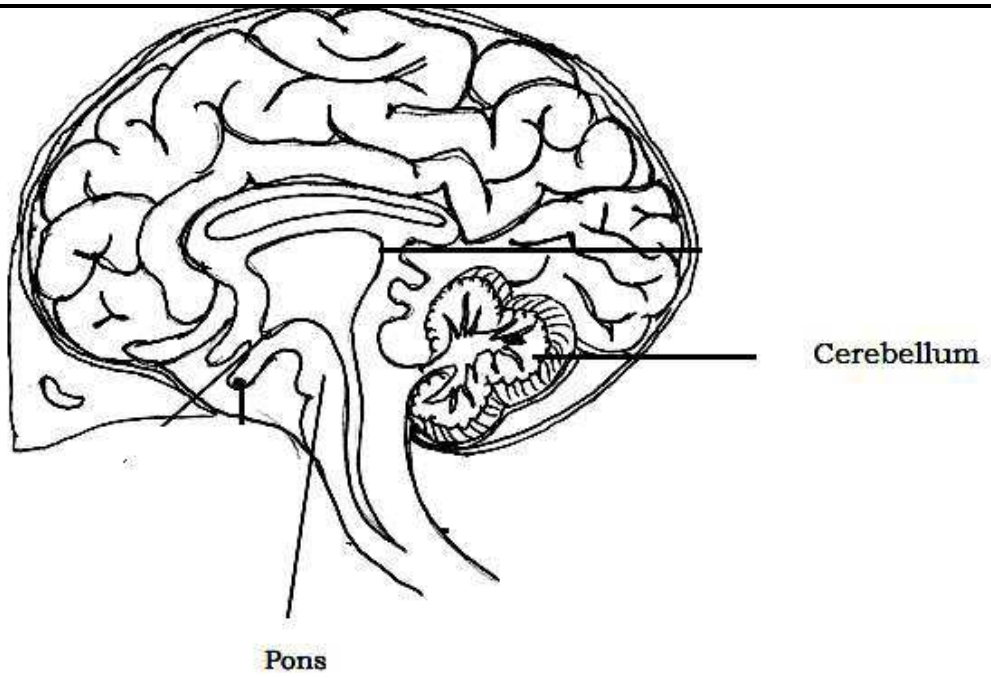
- Stretch the thumb, fore finger and middle finger of left hand such that they are mutually perpendicular.
- fore finger indicates magnetic field,

	• Middle finger indicates direction of current then • Thumb will point the direction of motion.	
13.	"B' can be used as Conductor because they have low resistivity. 'C' can be used as Insulator because they have high resistivity. b) The heating element of an electric heater made of chrome glows because it becomes red-hot due to the large amount of heat. But the cord of the electric heater made of copper does not glow because negligible heat is produced in it.	4

	CHEMISTRY	
VI.	**CHOOSE THE CORRECT ANSWER :**	**MARKS**
14.	B) Heating of lead nitrate	1
15.	A) wet Blue litmus paper	1
16.	C) oxidation of copper	1
VII.	**ANSWER THE FOLLOWING QUESTIONS:**	
17.	Bases which are soluble in water are called alkalis.	1
18.	It prevents food by getting rancidity.	1
19.	Because it neutralise the excess acid and prevent tooth decay	1
VIII.	**ANSWER THE FOLLOWING QUESTIONS:**	
20.	a. $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + 2\,HCl$ b. $2Al + 3\,CuCl_2 \rightarrow 2AlCl_3 + 3Cu$ **OR** $H_2S + 3O_2 \rightarrow SO_2 + 2H_2O$	2
21.	Set 1 glows the bulb. Because HCL is strong acid. The electric current is carried through the acidic solution by ions. **OR** a) X-chlorine Y- Hydrogen Z - sodium hydroxide. b) Bleaching powder.	2

22.	P is slaked line / $Ca[OH]_2$ Q is Calcium carbonate. / $CaCO_3$/Lime stone B) it decomposes into calcium oxide and carbon dioxide	
IX.	**ANSWER THE FOLLOWING QUESTIONS:**	
23.		3
24.	a) • Change in state • Change in colour • Evolution of gas • Change in temperature b) cathode : Hydrogen Anode : Oxygen	3
25.	• Honey bee sting releases methanoic acid. • Baking soda is a mild base. • It neutralises the acid stung by the honeybee. And provides relief. **OR** • B and C are acids. Because its pH value less than 7 • A is base because its pH value more than 7 • D is neutral solution. Because its pH is 7	3
X.	**ANSWER THE FOLLOWING QUESTIONS:**	
26.	• Displacement reaction • $Fe + CuSO_4 \longrightarrow FeSO_4 + Cu$ • Iron displaces copper from copper sulphate solution.	4

	BIOLOGY	
XI.	**CHOOSE THE CORRECT ANSWER :**	**MARKS**
27.	D) Cytoplasm	1
28.	A) Vomiting	1
XII.	**ANSWER THE FOLLOWING QUESTIONS:**	
29.	Arteries have thick, elastic walls to withstand high blood pressure, while veins have valves to prevent blood from flowing backward:	1
30.	Junction X is Neuromuscular junction. This junction converts the electrical impulses into electrical activity in the muscle fibres.	1
XIII.	**ANSWER THE FOLLOWING QUESTIONS:**	
31.	• It regulates metabolism for body growth. • Goitre	2
32.		2
33.	• The parts of the plants that are being touched use electro-chemical impulses for a movement • For this movement plant cells change their shape by changing the amount of water in them. • As a result of this change plant cells either swells or shrinks and therefore change the shape of leaves. **OR** • The glucose produced during photosynthesis is stored in the plant generally in the form of starch. • In the absence of sunlight, the starch will be used up by the plants to obtain the nutrients.	

	This helps maintain the life processes in plant even in the absence of light where photosynthesis does not occur.	
XIV.	**ANSWER THE FOLLOWING QUESTIONS :**	
34.	• The separation of the right side and the left side of the heart is useful to keep oxygenated and deoxygenated blood from mixing. • Such separation allows a highly efficient supply of oxygen to the body. • This is useful in animals that have high energy needs, such as birds and mammals, which constantly use energy to maintain their body temperature.	3
35.		3
36.	• Adrenaline is directly secreted into the blood. The blood to the skin is reduced due to contraction of muscles around small arteries. • The breathing rate increases because of the contractions of the diaphragm and the rib muscles. • The heart beats faster, resulting in supply of more oxygen to the muscles	3

XV.	**ANSWER THE FOLLOWING QUESTIONS :**	
37.	Methods to get rid of excretory products in plants : • Excess of water removed by transpiration • Remove oxygen and carbon dioxide gases through stomata • Resins and gums get store in old xylem • Diffusing certain wastes into surrounding soil.	4
	function of guard cell • The opening and closing of the pore is a function of the guard cells. • The guard cells swell when water flows into them, causing the stomata pore to open. • Similarly the pore closes if the guard cells shrink. **OR** • Salivary amylase: breakdown starch which is complex molecule to give simple sugar. • Pepsin: enzyme which breaks down protein. • Trypsin for digesting proteins. b) The lining of canal has muscles that contract rhythmically in order to push the food forward. This movement is called peristaltic movement.	4
XVI.	**ANSWER THE FOLLOWING QUESTIONS :**	
38.	a) Conversion of solar energy into food. • During Photosynthesis, chlorophyll absorbs sunlight and uses it to convert carbon dioxide and water into glucose which serves as food for the plant.	

	b) Creation of suction pressure during inorganic translocation: • Suction pressure is generated during the movement of water and dissolved inorganic nutrients from the roots to the leaves through the xylem. • As water evaporates from the leaves in a process called transpiration, it creates a negative pressure (suction) that pulls water upward from the roots, facilitating the upward translocation of inorganic substances. c) Translocation of food to the tissues that have less pressure • Phloem tissue helps in the translocation of photosynthetic products. • Phloem tissue with the help of sieve tubes and companion cells transport food both in upward and downward direction. • Materials like sucrose enter the phloem and exert pressure. • This pressure causes the moment of food to low pressure region.	