Series: RLH/1

Code No. **32/1/2**

Roll No. | | | | | | | |

Candidate must write the code on the title page of the answer-book.

- Please check that this question paper contains **11** printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **27** questions.
- **Please write down the Serial Number of the question before attempting it.**

SCIENCE

Time allowed: 2 1/2hours] [Maximum marks: 60

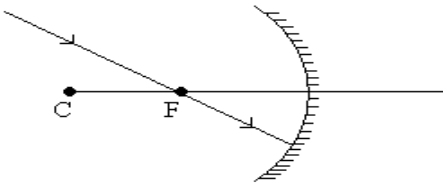
General Instructions:

1. The question paper comprises of **two** Sections A and B. You are to attempt both the sections.
2. All questions are compulsory.
3. There is no overall choice. However, internal choice has been provided in all the three questions of five marks category. Only one option in such questions is to be attempted.
4. All questions of Section A and all questions of Section B are to be attempted separately.
5. Questions **1** to **6** in Section A and **17** to **19** in Section B are short questions. These questions carry one mark each.
6. Questions **7** to **10** in Section A and **20** to **24** in Section B are short answer type questions and carry two marks each.
7. Questions **11** to **14** in Section A and **25** to **26** in Section B are also short answer type questions and carry three marks each.
8. Questions **15** and 16 in Section A and question **27** in Section B are long answer type questions and carry five marks each.

Q1. Why does the Sun appear reddish at Sunrise?

Q2. The refractive index of diamond is 2.42. What is the meaning of this statement in relation to speed of light?

Q3. Copy this figure in your answer-book and show the direction of the light ray after reflection:



Q4. From amongst the metals sodium, calcium, aluminum, copper and magnesium, name the metal
(i) Which reacts with water only on boiling, and
(ii) Another which does not react even with steam.

Q5. Name the gas evolved when dilute HCl reacts with sodium hydrogen carbonate. How is it recognized?

Q6. What happens chemically when quick lime is added to water?

Q7. What is a solenoid? Draw field lines of the magnetic field through and around a current carrying solenoid.

Q8. Explain with the help of a diagram, why a pencil partly immersed in water appears to be bent at the water surface.

Q9. What is meant by water of crystallisation in a substance? How would you show that blue copper sulphate crystals contain water of crystallisation?

Q10. What is an oxidation reaction? Identify in the following reaction
(i) The substance oxidised and (ii) the substance reduced:

$$ZnO + C \rightarrow Zn + CO$$

Q11. (a) Show the formation of Na_2O by the transfer of electrons between the combining atoms.
(b) Why are ionic compounds usually hard?
(c) How is it that ionic compounds in the solid state do not conduct electricity and they do so when in molten state?

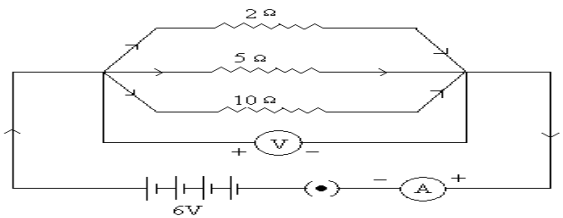
Q12. What physical and chemical properties of elements were used by Mendeleef in creating his periodic table? List two observations which posed a challenge to Mendeleef's Periodic Law.

Q13. (a) Draw a diagram to show the formation of image of a distant object by a myopic eye. How can such an eye defect be remedied?

(b) State two reasons due to which this eye defect may be caused

(c) A person with a myopic eye cannot see objects beyond a distance of 1.5m. What would be the power of the corrective lens used to restore proper vision?

Q14. In the circuit diagram given below:



Calculate:

(a) the current through each resistor

(b) the total current in the circuit

(c) the total effective resistance of the circuit.

Q15. (a) What is meant by saying that the potential difference between two points is 1 volt? Name a device that helps to measure the potential difference across a conductor.

(b) Why does the connecting cord of an electric heater not glow hot while the heating element does?

(c) Electrical resistivities of some substances at 20°C are given below:

Silver	$1.60\times10^{-8}\,\Omega\,m$
Copper	$1.62\times10^{-8}\,\Omega\,m$
Tungsten	$5.20\times10^{-8}\,\Omega m$
Iron	$10.0\times10^{-8}\,\Omega m$
Mercury	$94.0\times10^{-8}\,\Omega m$
Nichrome	$100\times10^{-6}\,\Omega m$

Answer the following questions in relation to them:

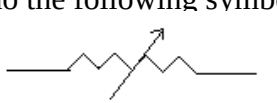
(i) Among silver and copper, which one is a better conductor? Why?

(ii) Which material would you advise to be used in electrical heating devices? Why?

OR

(a) Name and instrument that measures electric current in a circuit. Define the unit of electric current.

(b) What do the following symbols mean in circuit diagrams?

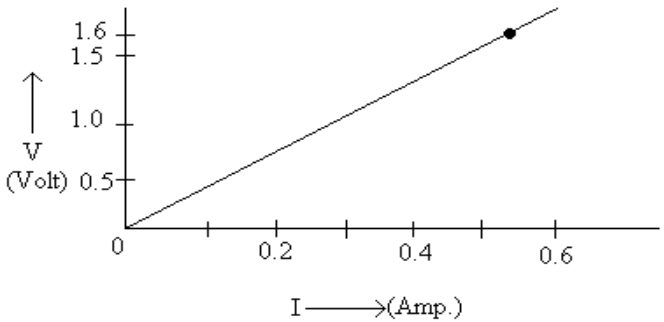
(i) 

(ii) 

(c) An electric circuit consisting of a 0.5m long Nichrome wire XY, and ammeter, a voltmeter, four cells of 1.5 V each and a plug key was set up.

(i) Draw a diagram of this electric circuit to study the relation between the potential difference maintained between the points 'X' and 'Y' and the electric current flowing through XY.

(ii) Following graph was plotted between V and I values:



What would be the values of $\frac{V}{I}$ rations when the potential difference is 0.8 V, 1.2 V and 1.6 V respectively? What conclusion do you draw from these values?

Q16. (a) Why does carbon form compounds mainly by covalent bonding?

(b) List any two reasons for carbon forming a very large number of compounds.

(c) An organic acid 'X' is a liquid which often freezes during winter time in cold countries, has the molecular formula, $C_2H_4O_2$. On warming it with ethanol in the presence of a few drops of conscentrated sulphuric acid, a compound 'Y' with a sweet smell is formed.

(i) Identify 'X' and 'Y'.

(ii) Write a chemical equation for the reaction involved.

OR

(a) What is a homologous series of compounds? List any two characteristics of a homologous series.

(b) (i) What would be observed on adding a 5% solution of alkaline potassium permanganate solution drop by drop to some warm ethanol taken in a test tube?

(ii) Write the name of the compound formed during the chemical reaction.

(c) How would you distinguish experimentally between an alcohol and a carboxylic acid on the basis of a chemical property?

Q17. Name the largest cell present in the human body.

Q18. Name the tissue which transports soluble products of photosynthesis in a plant.

Q19. How is the increase in demand for energy affecting our environment adversely?

Q20. What is the impotence in India of hydropower plants? Describe how electric energy is generated in such plants.

Q21. Write two advantages of classifying energy sources as renewable and non-renewable.

Q22 List any two differences between pollination and fertilisaation.

Q23. A man blood group A marries a woman with blood group O and their daughter has blood group O. Is this information enough to tell you which of the traits – blood group A or O is dominant? Why?

Q24. Define variation in relation to a species. Why is variation beneficial to the species?

Q25. Define 'hormones'. Name the humane secreted by thyroid. Write its function. Why

Q26. Distinguish between biodegradable and non-biodegradable substances. List two effects of each of them on our environment.

Q27. (a) Draw a diagram depicting Human limitary Canal and label on it, Gall Baldder, Liver and Pancreas.
(b) State the roles of Liver and Pancreas.
(c) Name the organ which performs the following functions in humans:
(i) Absorption of digested food.
(ii) Absorption of water

OR

(a) Draw a sectional view of the human heart and label on it, Aorta, Right Ventricle and Pulmonary Veins.
(b) State the functions of the following components of transport system:
(i) Blood (ii) Lymph