

This Question Paper contains 4 Printed Pages.

19E(A)

GENERAL SCIENCE, Paper - I

(English version)
Parts A and B

Time : 2 hours 45 min.]

[Maximum Marks : 40

Instructions :

- Read the whole question paper and understand every question thoroughly without writing anything and 15 minutes of time is allotted for this.
- Answer the question under **Part-A** on a separate answer book.
- Write the answers to the questions under **Part-B** on the question paper itself and attach it to the answer book of **Part-A**.

Part - A

Time : 2 Hours

Marks : 35

Instructions :

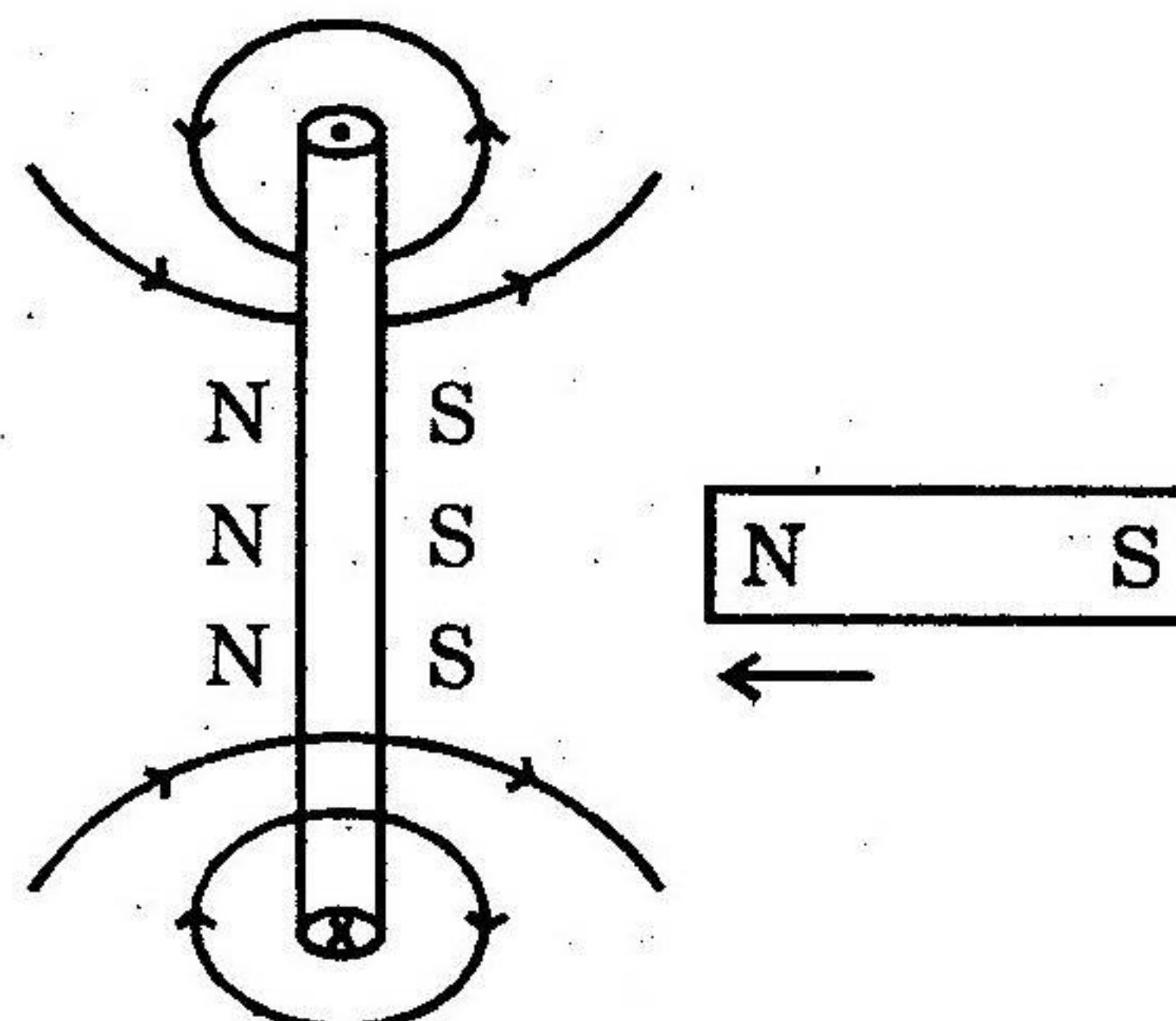
- Answer all questions from the given **three** sections I, II and III of **Part-A**.
- In Section III, every question has internal choice, answer any **one** alternative.

SECTION - I

7×1=7

- Note :**
- Answer **all** questions.
 - Each question carries **one** mark.
 - Write the answers in 1 to 2 sentences.

- Arrange the metals Fe, Na, Ag and Zn in increasing order of their chemical reactivity.
- Correct the diagram according to Lenz law and draw it again.



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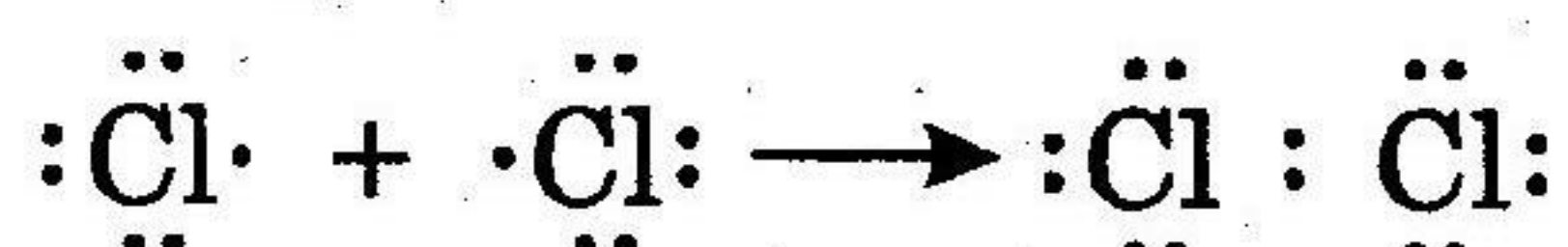
P.T.O.

The four quantum number values of the 21st electrons of scandium (Sc) are given in the following table.

n	l	m_l	m_s
3	2	-2	$+\frac{1}{2}$

Write the values of the four quantum numbers for the 20th electron of scandium (Sc) in the form of the table.

4. What happens if the eye lens of a person cannot accommodate its focal length more than 2.4 cm ?
5. Show the formation of HCl molecule with Lewis dot structures using the information given below.



6. What happens if we use a fuse made up of same wire which is used to make the electric circuit ?
7. Draw the ray diagram to show the formation of image for the object of height 1 cm. placed at 5 cm. distance, in front of a convex mirror having the radius of curvature $R = 5$ cm.

SECTION - II

$6 \times 2 = 12$

Note :

- (i) Answer **all** questions.
 - (ii) Each question carries **TWO** marks.
 - (iii) Write the answers in 4 to 5 sentences.
8. Give an example with the chemical equation for the reduction of ores using more reactive metals.
9. Write the electronic configuration of the atom of an element having atomic number 11. Write the names of the rules and the laws followed by you in writing this electronic configuration.

10. Draw the diagram to show the formation of Oxygen molecule by Valence bond theory.
11. Observe the information given in the table and answer the questions given below the table.

Substance (in aqueous solution)	Colour change with Blue Litmus	Colour change with Red Litmus
A	Red	No change
B	No change	Blue
C	No change	No change

- (i) Which one of them may be the neutral salt among A, B, C ?
- (ii) What may happen when some drops of phenolphthalein is added to the substance B ?
12. How can you find out the focal length of concave mirror experimentally when there is no sunlight ?
13. Two convex lenses of same focal length are fixed in a PVC pipe at a distance double to their focal length. What happens if a boy sees the moon with that arrangement ?

SECTION - III

4×4=16

- Note :**
- (i) Answer **all** questions.
 - (ii) Each question carries **FOUR** marks.
 - (iii) There is internal choice for each question, only one option from each question is to be attempted.
 - (iv) Write the answers in 8 to 10 sentences.

14. Write the equation for the reaction of zinc with hydrochloric acid and balance the equation. Find out the number of molecules of hydrogen gas produced in this reaction, when 1 mole of HCl completely reacts at S.T.P.
[Gram molar volume is 22.4 liters at S.T.P.,
Avogadro's number is 6.023×10^{23}]

OR

Explain any four factors which influence the electron affinity (Electron Gain Enthalpy).

15. How will you calculate the focal length of a biconvex lens that is used to correct the defect of Hypermetropia? Explain it mathematically.

OR

Why the current carrying straight wire which is kept in a uniform magnetic field, perpendicularly to the direction of the field bends aside? Explain this process with a diagram showing the direction of forces acting on the wire.

16. List out the materials required to test whether the solutions of given acids and bases contain ions or not. Explain the procedure of the experiment.

OR

List out the materials required to conduct the experiment to understand the esterification reaction. Explain the procedure of the experiment. How can you identify that an ester is formed in this reaction?

17. A double concave lens with the refractive index (n) = 1.5 is kept in the air. Its two spherical surfaces have radii $R_1 = 20$ cm and $R_2 = 60$ cm. Find the focal length of the lens. Write the characteristics of the lens.

OR

Find the resultant resistance for the following given arrangement. Find the current, when this arrangement is connected with 9 V battery.

