

This Question Paper contains 4 printed pages.

NEW SYLLABUS

19E (A)

GENERAL SCIENCE, Paper-I

(Physical Sciences)

(English Version)

Parts A and B

Time : 2½ Hours

Maximum Marks : 50

Instructions :

1. Answer the questions under **Part 'A'** on a separate answer book.
2. 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

SECTION I

5 × 2 = 10

- Note :**
1. Answer **any five** questions, choosing at least **two** from each group.
 2. Each question carries **two** marks.

Group - A

1. Why is condensation called a warming process? Explain.
2. Write the important role of total internal reflection in the medical field.
3. What are the most common defects of vision? How are they corrected?
4. Draw the magnetic field lines around a bar magnet.

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Group - B

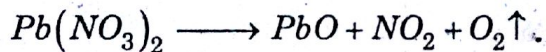
5. Write a short note on the pH scale.
6. Rainbow is an example of a continuous spectrum. Explain.
7. The electronic configuration of an element X is $\begin{matrix} K & L & M \\ 2 & 8 & 6 \end{matrix}$. Then,
 - a) What is the group of the element X in the periodic table?
 - b) What is the valence of X?
8. Mention two methods which produce very pure metals.

SECTION II

4 × 1 = 4

- Note :**
1. Answer any four questions from the following.
 2. Each question carries one mark.

9. Balance the following chemical reaction.



10. Why doesn't distilled water conduct electricity?
11. Mention two names of scientists who participated in the classification of elements.
12. Write the characteristics of an image formed by a plane mirror.
13. Define the term, "dispersion of light".
14. How can you appreciate the role of a small fuse in a housewiring circuit in preventing damage to various electrical appliances connected in the circuit?

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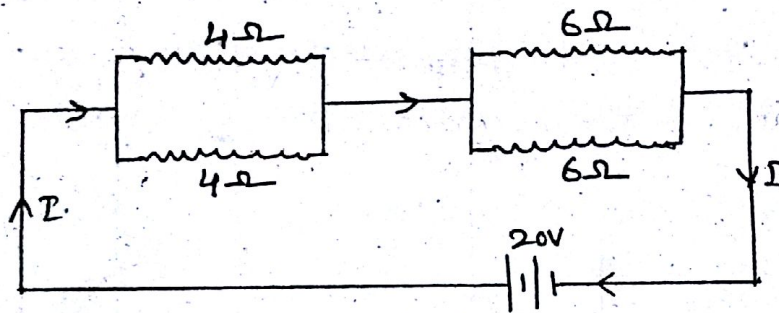
SECTION III

4 × 4 = 16

- Note : 1. Answer any four questions, choosing at least two from each group.
2. Each question carries four marks.

Group - A

15. Write an experiment to conclude that the rate of rise in temperature depends on the nature of the substance.
16. Explain the working of lens in an eye. How do you appreciate the working of ciliary muscles in the eye?
17. Observe the circuit and answer the following questions :



- a) Calculate the resultant resistance in the circuit.
- b) Calculate the current in the circuit.
18. What are the applications of electromagnetic induction in our daily life?

Group - B

19. If the atomic number of an element is 17, then :
- a) Write the electronic configuration of this element.
- b) How many shells does it contain?
- c) In which shell is the last electron present?
- d) What is the nearest inert gas to it?

19E (A)

20. How do bond energies and bond lengths of a molecule help us in predicting their chemical properties? Explain with examples.
21. What is the thermite process? Mention its applications in daily life.
22. Define the homologous series of carbon compounds. Mention any two characteristics of homologous series.

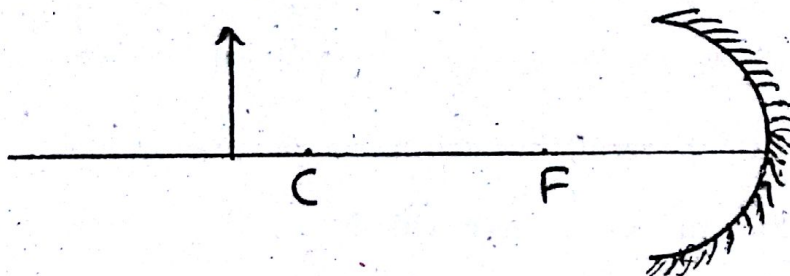
SECTION IV

1 × 5 = 5

Note : 1. Answer **any one** of the following questions.

2. Each question carries **five** marks.

23. An object is placed on the principal axis of a concave mirror as shown in the diagram. Copy the diagram and complete it to show the formation of an image.



24. Draw an experimental setup to observe the thermal decomposition reaction of calcium carbonate.

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NEW SYLLABUS

19E (B)

GENERAL SCIENCE, Paper-I

(Physical Sciences)

(English Version)

Parts A and B

Time : 2½ Hours

Maximum Marks : 50

Part B

Attach Part 'B' question paper to the main answer book of Part 'A'.

Time : 30 Minutes

Marks : 15

Instructions :

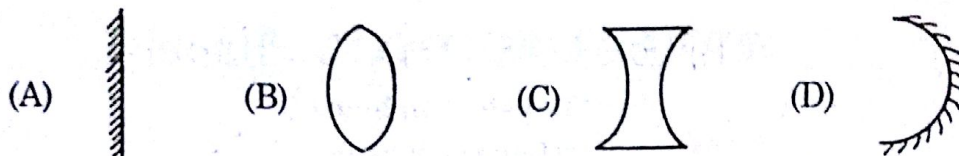
1. Answer all questions.
2. Each question carries ½ mark.
3. Answers are to be written in the question paper only.
4. Marks will not be awarded in case of any overwriting, rewriting or erased answers.

I. Write the 'CAPITAL LETTER' showing the correct answer for the following questions in the brackets provided against them. $20 \times \frac{1}{2} = 10$

1. The temperature of a steel rod is 330 K. Its temperature in $^{\circ}\text{C}$ is []
(A) 55°C (B) 57°C
(C) 59°C (D) 53°C
2. Magnification produced by a convex mirror is always []
(A) more than 1 (B) less than 1
(C) equal to 1 (D) more or less than 1
3. A convex lens with refractive index 1.525 will behave as a divergent lens. When it is immersed in the another medium, whose refractive index is []
(A) 1.33 (B) 1.525
(C) 1.66 (D) 1.41

19E (B)

4. Which of the following can form a virtual image which is always smaller than the object? []



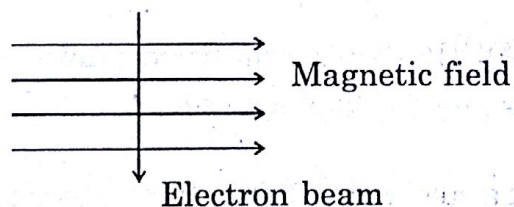
5. The refractive indices of a four substances, benzene, water, sapphire and ice are 1.50, 1.33, 1.77 and 1.31 respectively. The speed of light is the maximum in the substance, []

(A) benzene (B) water (C) sapphire (D) ice

6. The potential difference across a 3Ω resistor is 6 V. The current flowing in the resistor will be []

(A) 2 A (B) 9 A (C) $\frac{1}{2}$ A (D) 18 A

7. An electron beam enters a magnetic field at right angles to it as shown in the figure. []



Then the direction of force acting on the electron beam will be

(A) to the right (B) out of the page
(C) into the page (D) to the left

8. If the critical angle for a material to air is 30° , then the refractive index of this material will be []

(A) 2.0 (B) 1.0 (C) 1.5 (D) 2.5

9. Two litres of water at 25°C is mixed with one litre of water at 85°C . The equilibrium temperature of the mixture is []

(A) 45°C (B) 35°C (C) $\frac{35^\circ}{3}\text{C}$ (D) 25°C

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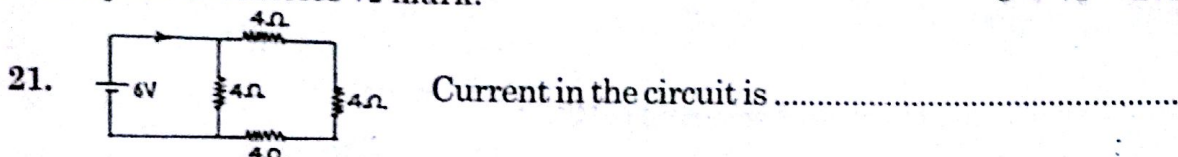
10. If the current flowing through a fixed resistor is halved, the heat produced in it will become []
(A) four times (B) one-fourth
(C) double (D) one-half
11. Which of the following substances is oxidized in the given reaction? $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$ []
(A) Al_2O_3 (B) Fe_2O_3 (C) Al (D) Fe
12. The pH value of acid rain is []
(A) greater than 5.6 (B) less than 5.6
(C) equal to 5.6 (D) between 6.6 and 7.6
13. The maximum number of electrons that can be accommodated in the L shell of an atom []
(A) 2 (B) 4 (C) 8 (D) 16
14. Group I elements are called []
(A) alkali metals (B) alkali earth metals
(C) halogens (D) inert gases
15. The products of the Chloro-Alkali process are []
(A) $NaCl$, Cl_2 and H_2 (B) H_2 , Cl_2 and $NaOH$
(C) Cl_2 , Na_2CO_3 and H_2O (D) $NaOH$, Cl_2 and HCl
16. The most abundant metal in the earth's crust is []
(A) oxygen (B) aluminium (C) zinc (D) iron
17. Which is the iron ore from the following? []
(A) Galena (B) Magnesite (C) Zincite (D) Hematite
18. The smelting process which is carried out in a special furnace which is called furnace. []
(A) blast (B) reverberatory
(C) open hearth (D) none of these

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19. $-COOH$ group is called []
 (A) Ketone (B) Amine (C) Carboxyl (D) Ether
20. One picometer (pm) = meters. []
 (A) 10^{-8} (B) 10^{-10} (C) 10^{-12} (D) 10^{-15}

II. Fill in the following blanks with suitable answers.
 Each question carries $\frac{1}{2}$ mark.

$5 \times \frac{1}{2} = 2\frac{1}{2}$



22. The least distance of distinct vision is
23. When the lenses of focal lengths f_1 and f_2 are kept at a distance 'd' apart, then focal length of the combination $\frac{1}{F} =$
24. The latent heat of water is
25. The eye lens forms a real image and inverted image of an object on

III. Match the following by writing the letter of the correct answer in the brackets, choosing from Group B.

$5 \times \frac{1}{2} = 2\frac{1}{2}$

<i>Group 'A'</i>		<i>Group 'B'</i>
26. Plaster of Paris	[]	(A) Scandium
27. Eka silicon	[]	(B) C_3H_8
28. Epsom salt	[]	(C) $CHCl_3$
29. Propane	[]	(D) C_4H_{10}
30. Chloroform	[]	(E) $MgSO_4 \cdot 7H_2O$
		(F) Germanium
		(G) $CaSO_4 \cdot \frac{1}{2}H_2O$