

6. Diastereomers are
- (a) super imposable on each other
 - (b) imposable on each other
 - (c) non-super imposable on each other
 - (d) non-super imposable on anything
7. Which of the following gas do not attract or repel each other?
- (a) non-ideal gas
 - (b) Nitrogen
 - (c) oxygen
 - (d) ideal gas
8. Surface tension mainly depends on
- (a) Nature of the liquid
 - (b) Environment
 - (c) Temperature
 - (d) All the above
9. The wave number is
- (a) $\bar{\nu} = \frac{1}{\lambda}$
 - (b) $\bar{\nu} = \lambda$
 - (c) $\nu = \bar{\lambda}$
 - (d) $\bar{\nu} = \frac{1}{\lambda^{-1}}$

10. Which one of the following is based on the absorption of ultraviolet or visible by chemical compounds?
- (a) IR spectroscopy
 - (b) NMR
 - (c) uv-visible spectroscopy
 - (d) Microwave spectroscopy

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What are the rules governing electronic configuration in various atomic orbitals?
- Or
- (b) Demonstrate inert pair effect.
12. (a) Write a note on dipole moment.
- Or
- (b) Explain: Ferromagnetic properties.
13. (a) Demonstrate on Stereo isomerism.
- Or
- (b) Write a note on classification of hydrocarbons.

14. (a) Discuss on kinetic theory of gases.

Or

(b) Write a note on amorphous and crystalline solids.

15. (a) What are the general characteristics of wave?

Or

(b) Write a short note on infrared spectroscopy.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Define the following :

- (i) Atomic number (2)
- (ii) Isotopes (2)
- (iii) Isobars (2)
- (iv) Isotones. (2)

Or

- (b) (i) What is meant by periodic laws? (4)
- (ii) Explain : Shapes of s, p and d orbitals. (4)

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17. (a) Discuss on the postulates of valence bond theory.

Or

(b) Write a detailed note on magnetic properties.

18. (a) Explain the following :

- (i) functional isomerism (4)
- (ii) positional isomerism. (4)

Or

(b) Illustrate the IUPAC nomenclature of organic compounds.

19. (a) (i) Establish the concept of surface tension. (6)

(ii) State ideal gas equation. (2)

Or

(b) Define the following :

- (i) Space lattice
- (ii) Unit cell
- (iii) Radius ratio rule
- (iv) Viscosity.

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20. (a) Define the following :

- (i) Wavelength
- (ii) Frequency
- (iii) Amplitude
- (iv) Wave number.

Or

- (b) (i) Write a note on microwave spectroscopy.
 - (ii) Write a note on infrared spectroscopy.
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