

2019

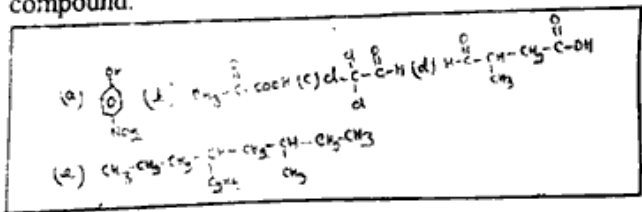
### Instruction

Candidates are required to give their answers in their own words as far as practicable. Answer any six questions, selecting at least two questions from each groups.

#### Group - A

1. What are postulates of kinetic theory of gases? Deduce the kinetic gas equation  $PV = \frac{1}{3} mnc^2$  5+7½ = 12½

2. (a) Write IUPAC name of the following organic compound. 5x2½ = 12½



3. (a) What do you mean by colligative properties? 4

(b) When do you get abnormal values of colligative Properties? 4

(c) Establish the relation between osmotic pressure and lowering of vapour pressure. 4½

4. (a) State and explain Hess' law. Discuss its Applications. 3+5+4½ = 12½

(b) State and explain Kirchoff's law.

#### Group - B

5. Give the structural formula of the following organic compound. 5x2½ = 12½

(a) 2,2 Dimethyl Hex-3-ene (b) Hept-1-ene-3-yne

(c) 1,1,1-trichloro, hex-2-yne (d) Hexanoic acid

(e) 5-formyl hexanoic acid

6. (a) Give three methods for the preparation of aldehyde? 2½

(b) How would you test for aldehyde? 3x3+3½ = 12½

7. (a) Give three methods for the preparation of ethanoic acid.

(b) How would it react with NH<sub>3</sub>, CH<sub>3</sub>OH, PCl<sub>5</sub> and NaOH? 3x2+6½ = 12½

8. Discuss the following: 4½+4+4 = 12½

(a) K<sub>c</sub> and K<sub>p</sub>

(b) Osmosis

(c) Standard enthalpy change

#### Group - C

9. (a) Explain the following: 8½+4 = 12½

(i) Hund's Rule (ii) Pauli's exclusion principle

(iii) Aufbau principle

(b) Write the electronic configuration of the following atoms. (i) z=24 (ii) z=26 (iii) z=29 (iv) z=37.

10. Write notes on the general periodic trends of the following giving their definitions. 4+4+4½ = 12½

(i) Ionization energy

(ii) Electro negativity

(iii) Ionic radii

11. (a) How does tin occur in nature? Write method for its extraction. 6½+3+3 = 12½

(b) Write name and formula of two ores of tin.

(c) PbCl<sub>2</sub> is solid but PbCl<sub>4</sub> is liquid. Why?

12. Write notes on any three: 4+4+4½ = 12½

(a) Red lead

(b) White lead

(c) Hydrazine

(d) Boric acid