Tenkasi District

Common First Mid Term Test - 2024

O | - D 8 - 2024

Standard 11

Time: 1.30 Hrs.

CHEMISTRY

Marks: 35

#### PART - A

## I. Choose the correct answer:

5×1=5

- 1) Total number of electrons present in 1.7g of ammonia is
  - a)  $6.022 \times 10^{23}$

b)  $\frac{6.022 \times 10^{22}}{1.7}$ 

c)  $\frac{6.022 \times 10^{24}}{1.7}$ 

- d)  $\frac{6.022 \times 10^{23}}{1.7}$
- 2) Which of the following is / are true with respect to carbon-12.
  - a) relative atomic mass is 124
  - b) oxidation number of carbon is +4 in all its compounds
  - c) 1-mole carbon-12 contain 6.022 × 10<sup>22</sup> carbon atoms
  - d) all of these
- 3) Two electrons occupying the same orbital are distinguished by
  - a) azimuthal quantum number
- b) spin quantum number
- c) magnetic quantum number
- d) Orbital quantum number
- If temperature and volume of an ideal gas is increased to twice its values, the initial pressure P becomes
  - a) 4p
- b) 2p
- c) p
- d) 3p
- 5) Which of the following is not a thermodynamic function?
  - a) internal energy

b) enthalpy

c) entropy

d) frictional energy

### PART - B

# II. Answer any three questions in short:

3×2=6

- 6) What is the empirical formula of the following?
  - i) Fractose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>) found in honey
  - ii) Caffaina  $(C_8H_{10}N_4O_2)$  a substance found in tea and coffee
- State Hund's rule of maximum multiplicity.
- 8) Distinguish between diffusion and affusion.
- 9) Define molar heat capacity. Give its unit.
- 10) Calculate the entropy change when 1 mole of enthanol is evaporated at 351K. The molar heat of vaporisation of ethanol is 39.84 kg mol<sup>-1</sup>.

### PART - C

## III. Answer any three questions:

3×3=9

11) How many moles of hydrogen is required to produce 10 moles of ammonia?

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- 12) Describe the Aufbau principle.
- 13) Write the Vandar waals equation for a real gas. Explain the correction term for pressure and volume.
- 14) Enthalpy of neutralization is always a constant when a strong acid is neutralized by a strong base account for the statement.
- 15) Give Kelvin statement of second law of thermodynamics.

#### PART - D

# IV. Answer any three questions:

- 16) (i) An organic compound present in vinegar has 40% carbon, 6.6% hydrogen and 53.4% oxygen.
  - (ii) Find the empirical formula of the compound.
- 17) Explain briefly the principal quantum number and Azimuthal quantum number,
- 18) The quantum mechanical treatment of the hydrogen atom gives the energy value.

$$E_n = \frac{-13.6}{n^2} \text{ eV atom}^{-1}$$

- (i) Use this expression to find  $\Delta E$  between n = 3 and n = 4.
- (ii) Calculate the wavelength corresponding to the above transition.
- 19) (i) How many orbitals are possible for n = 4?
  - (ii) Describe about Bohr atom modal:
- 20) Suggest and explain an indirect method to calculate the lattice enthalpy of sodium chloride crystal.

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