Date :- 31-3-16

B. Pharm / Sem-I (CBSGS)

PP-I

QP Code : **24921**

(3 Hours) [**Total Marks : 70**

N. B. : (1) **All questions are compulsory.**
(2) Draw neat labelled diagrams wherever necessary.

1. (a) State different types of liquid crystals & give their characteristics. 3
(b) State conditions for optical activity of a compound & state different optical isomers. 2
(c) Calculate vapour pressure of a solution when 235 gm of sucrose is added to 650 ml of water at 40°C. 3
(Mol wt of sucrose = 342, Mol wt of water = 18.02)
(d) Differentiate between reversible and irreversible process. Give different statements of 1st law of thermodynamics. 4
(e) Define the following :– 3
(i) Faraday's first law of electrolysis
(ii) Molecular conductance
(iii) Equivalent conductance

2. (a) (i) "Liquefaction of carbon dioxide is easier than that of hydrogen" - state True or False & justify. 4
(ii) Explain working of aerosols.

OR

(a) Write a short note on liquefaction of gases by Claude's method.
(b) Define dielectric constant & explain concept of polarizability. 3
(c) (i) State Kirchoff's equation 4
(ii) Explain Hess's law of constant heat summation

3. (a) Why do real solutions deviate from Rault's law? Explain positive & negative deviations. 4
(b) The resistance of 0.01 N electrolyte solution was found to be 210 ohm at 25°C. Calculate equivalent conductance of the solution if cell constant is 0.88. 3

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(c) Explain efficiency of heat engine. Calculate the maximum efficiency of an engine operating between 110°C & 25°C. 4

OR

(c) State the following :–
  (i) Carnot theorm
  (ii) Gibb's Helmholtz equation
  (iii) Third law of thermodynamics
  (iv) Criteria for equilibrium

4. (a) Derive the relationship between Van der Waals constants & critical constants. 4
(b) Define molar refraction & explain its use for determination of structure. 3
(c) Explain any one method for determination of molecular weight of non-volatile solute. 4

OR

(c) Establish the correlation between depression of freezing point & lowering of vapour pressure. How is it used for determination of molecular weight?

5. (a) Differentiate between crystalline & amorphous solids & explain concept of solvates & hydrates. 4
(b) State and explain 3
  (1) Clausius Clapeyron euqation
  (2) Vant Hoff equation.

OR

(b) Calculate the heat of reaction for – 3
  $C_2H_4 (g) + 3O_2 (g) \rightarrow 2CO_2 (g) + 2H_2O (g)$
  from the following valus of bond energies–
  C – H : 414   C=O : 724   C=C : 619
  O = O : 499   O–H : 460
(c) What is osmotic pressure? Describe any one method for its determination. 4

6. (a) For gas 'X', the Van der Waal constants are given as - 3
  a = 4.0 atm lit^{-2} mol^{-2}, b=0.036 lit mol.
  If the gas constant, R = 0.082 lit atm deg^{-1}, calculate critical pressure, volume & temperature for the gas.
(b) Write a short note on steam distillation. 3
(c) Define entropy & state its importnace in thermodynamics. 3
(d) State postulates of Arrhenius theory of electrolyte dissociation. 2
