



PBO-003-001103 Seat No. _____

B. Sc. (Sem. I) (CBCS) Examination

November / December - 2018

Chemistry : Paper - 101

(Old Course)

Faculty Code : 003

Subject Code : 001103

Time : $2\frac{1}{2}$ Hours]

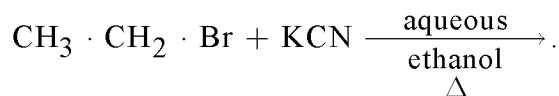
[Total Marks : 70


Instructions :

- (1) This question paper contains three questions, all are compulsory.
- (2) Figures to the right indicate full marks.

1 Answer the following : 20

- (1) If bond multiplicity increases, what is effect on covalent radius value ?
- (2) Define : Ionization potential.
- (3) What is the hybridization in BeCl_2 ?
- (4) What is the shape of molecule having Sp^3d hybridization ?
- (5) Write electronic configuration of Cr.
- (6) What is the oxidation state of Mn in KMnO_4 ?
- (7) Complete reaction :



- (8) What is β -elimination reaction ?
- (9) Give IUPAC name of .
- (10) Draw structure of Spiro pentane.
- (11) Define : Heat capacity.

- (12) Define : Isolated system.
- (13) What is desorption ?
- (14) Which force is effective during physical adsorption ?
- (15) Name type of standard solutions.
- (16) 1 PPM = _____ gram per litre.
- (17) Which solution is used to standardize NaOH ?
- (18) Which is the conjugated base for HCl ?
- (19) If pH of solution is 2, what is the concentration of H⁺ in solution ?
- (20) Give two examples of salt of weak acid + weak base.

- 2** (a) Answer the following : (any **three**) **6**
- (1) Explain Ionic radii.
 - (2) Write note on : Ionization Potential.
 - (3) Draw structure of CH₄ and SF₆.
 - (4) Discuss metallic character of transition elements.
 - (5) Write Perkin's method for preparation of cycloalkane.
 - (6) Write reaction of cycloalkane with Br₂.
- (b) Answer the following : (any **three**) **9**
- (1) Discuss any three factors affecting ionization energy.
 - (2) Explain hybridization in C₂H₄ and C₂H₂.
 - (3) Write note on non-stoichiometric compounds.
 - (4) What is E² reaction ? Explain mechanism.
 - (5) Explain catalytic hydrogenation of cycloalkanes.
 - (6) Discuss physical properties of cycloalkanes.
- (c) Answer the following : (any **two**) **10**
- (1) Discuss factors affecting the magnitude of electro negativity.
 - (2) Explain : Valence Bond Theory.
 - (3) Discuss various oxidation states of d-block elements.
 - (4) Explain : SN² reaction with mechanism.
 - (5) Discuss Bayer's Strain Theory.

- 3 (a) Answer the following : (any **three**) **6**
- (1) Explain extensive properties.
 - (2) Define : Isothermal process, Adiabatic process.
 - (3) Give limitations of Freundlich adsorption isotherm.
 - (4) Calculate molarity of 2 litre solution containing 100 gm NaOH (M.W. = 40 gm/mole)
 - (5) Write note : Buffer capacity.
 - (6) Discuss Arrhenius principle of acid-base.
- (b) Answer the following : (any **three**) **9**
- (1) Explain : Enthalpy.
 - (2) Discuss Zeroth law of thermodynamics.
 - (3) Derive Freundlich adsorption isotherm.
 - (4) Define : Normality, Molarity, Molality.
 - (5) Discuss Lewis concept for acid-base.
 - (6) Derive K_w for water.
- (c) Answer the following : (any **two**) **10**
- (1) Prove $C_p - C_v = R$.
 - (2) Give difference between physical adsorption and chemical adsorption.
 - (3) Derive equation of K_h , h and pH for salt of strong acid + weak base.
 - (4) Explain mechanism of Buffer solution.
 - (5) Derive Langmuir adsorption isotherm.
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