Enrollment No:-_____   Exam Seat No:-_____

C.U.SHAH UNIVERSITY
Summer-2015

Subject Code: 4SC02CHC1   **Subject Name: Chemistry-II**
Course Name: B.Sc. (All)   Date: 22/5/2015
Semester: II   Marks: 70
                                                              Time: 10:30 TO 01:30
_____

Instructions:
1) Attempt all Questions in same answer book/Supplementary.
2) Use of Programmable calculator & any other electronic instrument prohibited.
3) Instructions written on main answer book are strictly to be obeyed.
4) Draw neat diagrams & figures (if necessary) at right places.
5) Assume suitable & perfect data if needed.
_____

SECTION –I
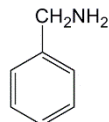
Q-1. Answer all the following short questions.   **(7)**

(i) Write IUPAC name of the following molecule.

$$H_3C-\overset{H_2}{C}-O-\overset{CH_3}{\underset{CH_3}{CH}}$$
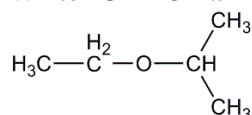
(ii) Draw intermolecular H-bonding of alcohol with water.
(iii) Write the reaction of acetaldehyde with methylamine.
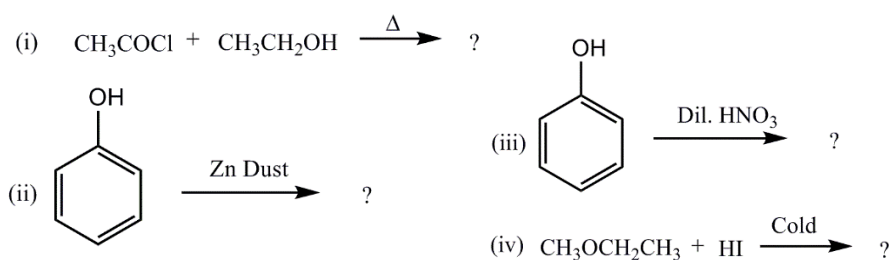**(iv)** Give IUPAC name and Common name of the following compound.

$$CH_2NH_2$$
(benzene ring with CH_2NH_2 substituent)

(v) Define Lattice energy.
(vi) Define stereoisomerism.
(vii) Give definition of Half-cell.

Q-2. Answer the following questions.   **(14)**

(i) Discuss oxidation of alcohols and Lucas test.   (5)
(ii) Explain Reimer-Tiemann reaction of phenol with mechanism and substitution reaction of ethoxy ethane.   (5)
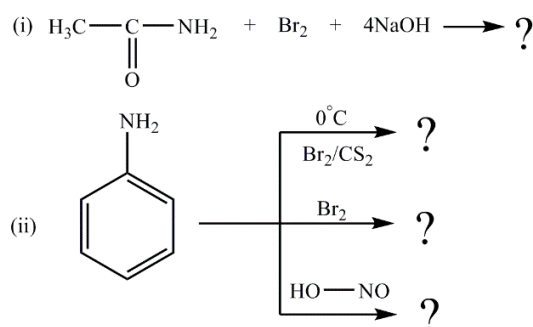**(iii)** Complete the following reactions.   (4)

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(i) $CH_3COCl + CH_3CH_2OH \xrightarrow{\Delta}$?

(ii) (Phenol) $\xrightarrow{\text{Zn Dust}}$?

(iii) (Phenol) $\xrightarrow{\text{Dil. HNO}_3}$?

(iv) $CH_3OCH_2CH_3 + HI \xrightarrow{\text{Cold}}$?

OR

Q-2. Answer the following questions. **(14)**

(i) Write short note on "Hisberg'sMethod". (5)
(ii) Discuss chemical properties of 1˚- alkyl amines. (5)
(iii) Give product of the following reactions. (4)

(i) $H_3C-\overset{\overset{\displaystyle O}{\|}}{C}-NH_2 + Br_2 + 4NaOH \longrightarrow$?

(ii)

Q-3. Answer the following questions. **(14)**

(i) Derive r^+/r^- ratio in tetrahedral crystal lattice and write note on Frenkal defect. (5)
(ii) Explain semi-conductors in brief. (5)
(iii) Derive Max-Born equation for calculation of lattice energy and explain Why CsCl is more stable than NaCl. (4)

OR

Q-3. Answer the following questions. **(14)**

(i) Explain the followings. (5)
  (a) Give any four points which differentiate Bonding molecular orbital (BMO) and antibonding molecular Orbital (ABMO)
  (b) Compare Valance Bond Theory (VBT) and Molecular Orbital Theory (MOT)
(ii) Explain with example (a) Ionization isomerism (b) Polymerisation isomerism (5)
(iii) Draw the energy level diagram of CO molecule and calculate its bond order. (4)

SECTION – II

Q-1. Answer all the following short questions.   (**7**)

   (i)   Give definition of bond order.
  (ii)   What is meant by electrode potential and standard electrode potential?
 (iii)   State factors affecting quantum efficiency.
  (iv)   State methods used for determination of hardness of water.
   (v)   Give full form of TS, TDS and TSS.
  (vi)   Borax bead test is performed when compound is _____.
 (vii)   Which solution is added when white infusible residue is obtain in charcoal cavity test?

Q-2. Answer the following questions   (**14**)

   (i)   Explain Galvanic cell.   (5)
  (ii)   Discuss and derive relation between Gibbs free energy (G), Enthalpy (H) and K.   (5)
 (iii)   Give applications of electro chemical series.   (4)

OR

Q-2. Answer the following questions   (**14**)

   (i)   Explain the Stark-Einstein law of photochemical equivalence.   (5)
  (ii)   Discuss theory of heterogeneous catalysis.   (5)
 (iii)   Write a note on photosensitization with suitable example.   (4)

Q-3. Answer the following questions   (**14**)

   (i)   Discuss Common ion effect in Inorganic Qualitative analysis.   (5)
  (ii)   Give method of analysis for TS, TDS and TSS.   (5)
 (iii)   Discuss method of analysis for Turbidity.   (4)

OR

Q-3. Answer the following questions   (**14**)

   (i)   Method for the measurement of Acidity and Basicity of water.   (5)
  (ii)   Write a short note on Flame test.   (5)
 (iii)   What is qualitative analysis? Explain use of HCl and H_2S in inorganic qualitative analysis.   (4)

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