## Course: - B.Tech. 1st Yr, II Sem, 2nd mid Term Examination, 2013-14

**Subject: Engg. Chemistry (AHC-101)** **Uni. Roll No:-**

**Time:-90 Minutes** **Total Marks:-20**

**Note:-**

1. Answer any all questions from Sec A, **Any three** from Sec B and **Any three** from Sec C.
2. All questions of the particular group should be answered collectively at one place. All parts of a question (a, b, etc.) should be answered at one place.
3. Answer should be brief and to-the-point and be supplemented with neat sketches.
4. Any missing or wrong data may be assumed suitably giving proper justification.
5. Figures on the right-hand side margin indicate full marks.

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### Section-A

**Note: Attempt All Questions.** 5X1=5 marks

(I) Write down the relation between the rate constant and temp. of a reaction
(II) Calculate the bond order of $He_2^+$ ion.
(III) Define a semiconductor.
(IV) What is point or centre of symmetry in a compound?
(V) Write the average composition of gobar gas.

### Section-B

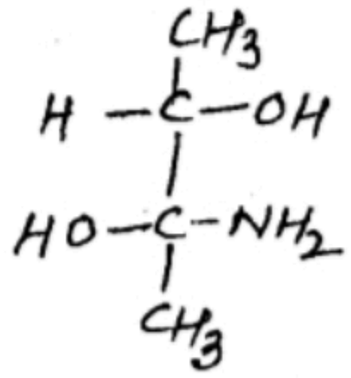
**Note: Attempt Any Three Questions.** 3X2=6 marks

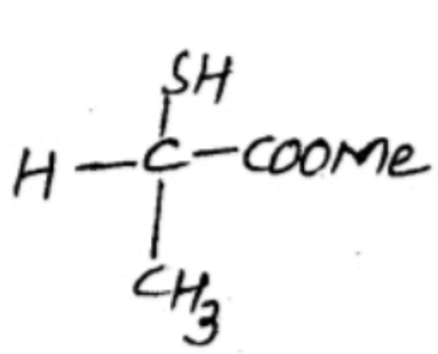
(I) Derive integrated rate equation for first order reaction.
(II) Draw the energy level diagram for NO, calculate its bond order and assign the magnetic behavior.
(III) Calculate the density of BCC crystal if side of the cube is $5A^0$ and atomic mass is 60.
(IV) Write the possible optical isomers of tartaric acid.

### Section-C

**Note: Attempt Any Three Questions.** 3X3=9 marks

(I) Differentiate order of reaction & molecularity. Calculate the activation energy of a reaction, whose rate constant is tripled by a $10^0C$ rise in temp.in the vicinity of $27^0C$.
(II) Discuss the mechanism of Aldol Condensation.
(III) Write the Advantages of gobar gas and solar energy.
(IV) Assign R or S configuration (with proper numbering) to the following.

(a) 

(b) 

(c)