P.T.O.

II Semester B.Sc. Examination, April/May 2015 (Semester Scheme) Paper – II : CHEMISTRY (2014-15 Onwards)

Time : 3 Hours

Instructions : 1) Use SI Units. 2) Write equations and neat diagrams wherever necessary.

PART-A

Answer all the questions :

- 1. a) State Henry's law.
 - b) Define hydration energy.
 - c) Name the Catalyst used in Fries-rearrangement.
 - d) Give an example for partially miscible liquid mixture.
 - e) What is the bond order of He_2^+ ?
 - f) Write the structural formula for 2,3 dichloro -1- propanol.

PART – B

Answer any	three questions :
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2.	a)	Give an account on LCAO.	3
	b)	Discuss the geometry and directional property of sp ³ d hybridization.	3
3.	a)	Explain the types of bond formation in N_2 molecule.	2
	b)	What is dipole moment ? Explain the polarity of CO_2 and H_2O on the basis of dipole moment.	4
4.	a) b)	Draw Molecular orbital diagram of CO molecule. Calculate its bond order. Predict its magnetic property. Write a note on bond energy.	4 2
5.	a)	Write the postulates of VSEPR theory.	3
	b)	Explain Fajan's Rule.	3

Max. Marks : 60

(6×1=6)

 $(3 \times 6 = 18)$

PB 260

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PART-C

A	nsw	ver any three questions :	(3×6=18)
6.	a) b)	How do you distinguish 1°, 2° and 3° alcohols by oxidation method ? Nitrophenol is more acidic than phenol. Justify.	3 3
7.	a) b)	Explain Claisen rearrangement with suitable example. How glycerol reacts with i) Conc H ₂ SO ₄ ii) Conc HNO ₃	2 4
8.	a) b)	Discuss the separation of i, 2° and 3° amine mixture by Hinsberg's metho Mention the uses of glycerol.	od. 4 2
9.	a)	Among the following which is more basic and why ?	3



b) What are Phenols ? How are they classified ? Give an example for each type.

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(3×6=18)

Answer any three questions :

10.	a) b)	What are ideal and non-ideal solutions ? Discuss the principle involved in the fractional distillation of type – II liquid mixtures.	2 4
11.	a)	What is critical solution temperature ? Explain the CST in nicotine-water system.	4
	b)	Explain the effect of addition of NaCI on CST of Phenol-water system.	2
12.	a)	Define vapour pressure of a liquid and explain the factors affecting the vapour pressure of liquid.	3
	b)	Derive an expression for relationship between relative lowering of vapour pressure and molar mass of solute.	3
13.	a) b)	What is Osmotic Pressure ? Explain the determination of Osmotic Pressure by Berkely-Hartley method. A solution of 12.5g of urea in 170g of water gave boiling point elevation 0.63 K. Calculate the molar mass of urea.	3 3