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V—25—2017

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

OCTOBER/NOVEMBER, 2017

CHEMISTRY

Paper XII

(Organic and Inorganic Chemistry)

(Monday, 9-10-2017)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

N.B. :— (i) Attempt All questions.

(ii) Figures to the right indicate full marks.

Section A

(Organic Chemistry)

1. Answer any *five* of the following : 5×2=10
- (a) Define Drug. Explain qualities of good drug.
 - (b) Explain in brief Witt's Theory of colour.
 - (c) What happens when thiophene is treated with acetic anhydride ?
 - (d) How will you convert Furan to THF ?
 - (e) Write the structural formula of Vitamin A. Mention its sources and diseases caused by its deficiency.
 - (f) How will you synthesis of the following compound from acetylene ?
 - (i) Pyrrole
 - (ii) Thiophene.
 - (g) What are Alkaloids ? Give the general properties of alkaloids.

P.T.O.

2. Answer any *two* of the following : 2×5=10
- (a) Explain the synthesis and uses of the following drugs :
- (i) Aspirin
 - (ii) Sulphadiazine
- (b) What are Fungicides ? Give the synthesis and uses of the following pesticides :
- (i) DDT
 - (ii) 2, 4-D
- (c) How will you convert :
- (i) Furan to Pyrrole
 - (ii) *n*-butane to thiophene
 - (iii) Pyrrole to 2-nitropyrrole.
3. Answer any *one* of the following : 1×7=7
- (a) What are Dyes ? Give the synthesis and uses of the following dyes :
- (i) Phenolphthalein
 - (ii) Alizarin
 - (iii) Indigo
- (b) Discuss the chemical constitution of Ephedrine.

Section B

(Inorganic Chemistry)

4. Solve any *three* of the following : 3×3=9
- (a) How would you formulate $\text{COCl}_3 : \text{NH}_3$, $\text{COCl}_3 : 5\text{NH}_3$ and $\text{COCl}_3 : 4\text{NH}_3$ according to Werner theory ? How many Cl^- (Chloride) ions are precipitate as AgCl from their aqueous solution ?
- (b) Define chelate, co-ordination number and complex compound.

- (c) What are geometrical isomerism ? Draw cis and trans isomers of the following compound :
- (i) $[\text{Pt}(\text{NH}_3)_2 (\text{Br})_2]$
- (ii) $[\text{CO}(\text{en})_2 (\text{Cl}_2)]^+$
- (d) Give the characteristics of Hard acid.
- (e) Define HSAB principle. Explain stability of complexes on the basis of HSAB principle with suitable example.
5. Solve any *two* of the following : 2×2=4
- (a) Calculate EAN of the following :
- (i) $[\text{Fe}(\text{CN})_6]^{-4}$
- (ii) $[\text{CO}(\text{Cl})_2 (\text{NH}_3)_4]^+$
- (b) Write the name of the following complex according to IUPAC nomenclature :
- (i) $[\text{Pt}(\text{PY})_4] [\text{Pt}(\text{Cl})_4]$
- (ii) $[\text{Cu}(\text{NH}_3)_4] \text{SO}_4$
- (c) What are ligand ? How are they classified ?
- (d) What is Symbiosis ? Give example.