

This question paper contains 3 printed pages]

**BF—26—2016**

**FACULTY OF SCIENCE**

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

**OCTOBER/NOVEMBER, 2016**

**CHEMISTRY**

**Paper XII**

**(Organic and Inorganic Chemistry)**

**(Saturday, 8-10-2016)**

**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) Explain the term analgesics and antiseptics. Give *one* example of each.

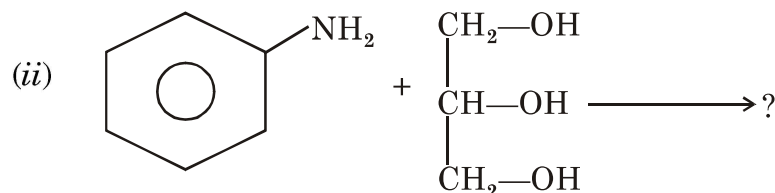
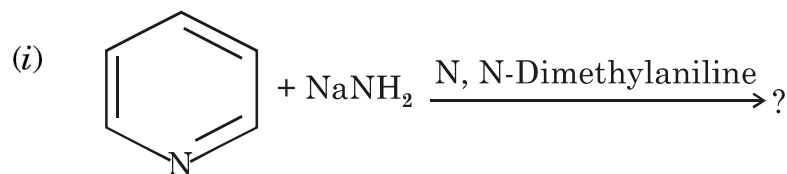
(b) Explain in brief Armstrong's theory.

(c) What happens when furan is treated with 1, 3-butadiene.

(d) How will you convert thiophene to 2-chloromethyl thiophene.

(e) Write the structural formula of vitamin-C. Mention its sources and diseases caused by its deficiency.

(f) Predict the product(s) :



(g) Give the classification 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) Paracetamol
  - (ii) Sulphanilamide.
- (b) What are Herbicides ? Give the synthesis and uses of the following pesticides :
- (i) Methoxychlor
  - (ii) BHC.
- (c) How will you convert :
- (i) Furan to furan-2-sulphonic acid.
  - (ii) Sodium succinate to thiophene
  - (iii) Pyrrole to pyrrolidine.
3. Answer any *one* of the following : 1×7=7
- (a) Give the synthesis and uses of the following dyes :
- (i) Methyl orange
  - (ii) Diamond black-F
  - (iii) Congo-Red.
- (b) Discuss the chemical constitution of Nicotin.

### Section B

#### (Inorganic Chemistry)

4. Solve any *three* of the following : 3×3=9
- (a) What are chelate ? Give difference between chelate and metal complex.
- (b) Define EAN rule and calculate EAN of the following :
- (i)  $[\text{Ni}(\text{CO})_4]$
  - (ii)  $[\text{Co}(\text{H}_2\text{O})_6]^{+3}$ .
- (c) What are the postulates of Werner's theory of coordination compounds ?
- (d) Give the characteristics of soft acid.
- (e) Explain hardness and softness of acids and bases with the help of :
- (i) Electrostatic interaction
  - (ii) Polarising power and polarisability.

5. Solve any *two* of the following :

2×2=4

- (a) Write the formula of the following complexes :
- Sulphatotetraamminecobalt (III) nitrate.
  - Sodiumdicynoargenate (I).
- (b) Identify type of isomers in the following complexes :
- $[\text{Co}(\text{NH}_3)_5\text{Br}] \text{SO}_4$  and  $[\text{Co}(\text{NH}_3)_5\text{SO}_4] \text{Br}$
  - $[\text{Cr}(\text{NH}_3)_4(\text{NO}_2)_2]^+$  and  $[\text{Cr}(\text{NH}_3)_4(\text{ONO})_2]^+$ .
- (c) Which of the following ligands are bidentate and hexadentate :
- Ethylenediammine
  - EDTA.
- (d) Classified the following hard and soft acid :
- $\text{H}^+, \text{Cu}^+, \text{I}^+, \text{Li}^+$ .