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**VA—04—2024**

**FACULTY OF SCIENCE**

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

**NOVEMBER/DECEMBER, 2024**

**(CBCS/New Pattern)**

**CHEMISTRY**

**Paper—XII**

**(Organic and Inorganic Chemistry)**

**(Friday, 29-11-2024)**

**Time : 10.00 a.m. to 12.00 noon**

*Time—2 Hours*

*Maximum Marks—40*

**N.B. :—** (i) Attempts *all* questions.

(ii) Figures to the right indicate full marks.

1. Solve any *three* of the following : 3×5=15

(a) What are chelates ? How are they classified ? Differentiate between metal chelate and metal complex.

(b) Give the postulates of Werner's theory of co-ordination compounds.

(c) Write a note on anti-arthritis drugs.

(d) Write the IUPAC names of the following complexes :

(i)  $K_4[Cu(CN)_6]$

P.T.O.

- (ii)  $\text{Na}_3[\text{Fe}(\text{C}_2\text{O}_4)_3]$
- (iii)  $[\text{Cr}(\text{NH}_3)_6]^{3+}$
- (iv)  $[\text{CuCl}_2(\text{CH}_3\text{-NH}_2)_2]$
- (v)  $[\text{Pt}(\text{NH}_3)_6\text{Cl}_4]$ .
- (e) Explain the chemotherapeutic action of anti-cancer drug cis-platin.
2. Solve any *three* of the following : 3×5=15
- (a) How will you prepare pyridine from acetylene and  $\beta$ -picoline ? What is the action of the following reagents on pyridine ?
- (i)  $\text{H}_2\text{SO}_4$
- (ii)  $\text{Br}_2$
- (iii)  $\text{KOH}$ .
- (b) Explain molecular orbital picture of furan.
- (c) What are dyes ? Give the synthesis and uses of the following dyes :
- (i) Phenolphthalein
- (ii) Methylene orange.
- (d) Write a short note on antimalarials, antitubercular and tranquilizers with a suitable example.
- (e) Discuss the chemical constitution of nicotine.

3. Solve any *two* of the following :

2×5=10

(a) How will you convert ?

(i) Acetylene to pyrole

(ii) Mucic acid to furan

(iii) Sodium succinate to thiophene.

(b) Explain synthesis and uses of the following drugs :

(i) Sulphanilamide

(ii) Sulphadiazine.

(c) What are Pesticides ? Define insecticides, fungicides and rodenticides with suitable example.

(d) What are fat soluble vitamins ? Give sources and deficiency diseases of Vitamin-D and Vitamin-E.