

Roll No. \_\_\_\_\_

[Total No. of Pages : 2

**SIVS-N 187 A-2K13**

**B.Sc. IVth Semester Degree Examination**

**Chemistry**

**Paper - IV**

**(New)**

Time : 3 Hours

Maximum Marks : 80

**Instructions to Candidates:**

*Answer all the three sections.*

**Section - A**

**I.** Answer all the following questions.

**(15×1=15)**

- 1) Define the term ligand
- 2) What is EAN rule?
- 3) What is a protic solvent?
- 4) The alkali metal solutions in liquid ammonia are blue in colour . Why?
- 5) What is monazite?
- 6) What are ethers?
- 7) What is Perkin's reaction?
- 8) Tri methylamine is a weaker base than dimethylamine. Give reason.
- 9) What is Hinsberg's reagent?
- 10) Give the IUPAC name of diethyl ether.
- 11) Write the Einstein's photoelectric equation and explain the terms involved .
- 12) State Gibb's phase rule.
- 13) What is meant by the term Eutectic point?
- 14) Define quantum efficiency.
- 15) State Grothus - Draper's law.

**Section - B**

**II.** Answer any **five** of the following questions.

**(5×5 =25)**

- 16) Write the postulates of werner's co-ordination theory.
- 17) Write a note on sidg-wick theory of electronic inter pretation.

- 18) How acetone react with  
i)  $\text{NH}_2\text{-NH}_2$   
ii)  $\text{CH}_3\text{MgI}$   
iii)  $\text{NH}_2\text{OH}$
- 19) Give any two methods of preparations of ethers.
- 20) Write a note on basic characters of amine
- 21) What do you understand by black body and black body radiation? Explain.
- 22) Define Schrodinger wave equation. What are it's importance?

**Section - C**

**III.** Answer any **four** of the following : **(4×10 =40)**

- 23) a) Explain octahedral geometry and diamagnetic nature of  $[\text{Fe}(\text{CN})_6]^{-4}$  ion on the basis of valence bond theory (At. No. of Fe = 26). **(6)**  
b) Calculate the EAN of central metal ion in  $\text{K}_4[\text{Fe}(\text{CN})_6]$ . **(4)**
- 24) a) How does thorium occurs in nature? How is the thorium metal extracted from monazite sand? **(6)**  
b) Give the classification of solvents with examples. **(4)**
- 25) a) Explain the reduction reactions of Nitrobenzene in **(6)**  
i) alkaline and ii) Neutral medium.  
b) Give a test to distinguish primary secondary and tertiary amines. **(4)**
- 26) a) Give the mechanism of Cannizzaro's reaction. **(5)**  
b) Write any two methods of synthesis of Ketone's. **(5)**
- 27) a) Discuss the application of phase rule with labelled phase diagram of sulphur system. **(6)**  
b) Write a note on fluorescence. **(4)**
- 28) a) Explain the **(6)**  
i) Spin quantum number ii) Compton effect.  
b) State and Explain Beer's-Lamberts Law. **(4)**
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