

Faculty of Science
B.Sc (Chemistry) III-Year, CBCS –IV Semester
Regular Examinations –June/July, 2022
PAPER: Chemistry-IV

Time: 3 Hours

Max Marks: 80

Section-AI. Answer any *eight* of the following (8x4=32 Marks)

1. Define hard acid and soft acid as per Pearson's classification
2. Write any two applications of coordination complex
3. How toxicity of Pb metal can be reduced.
4. Define Anomers with suitable example
5. Define Isoelectric point of an Amino acid
6. What are π excessive aromatic compounds
7. Write a note zero order reactions
8. Prove that $t_{75\%} = 2t_{50\%}$ in the first order reactions.
9. Write any 3 differences between thermal and photochemical reactions
10. Write the difference between p-type and n-type semiconductors
11. Write Acid hydrolysis of aceto acetic ester
12. Write a short note on Gold number of colloid

Section-B

II. Answer the following questions (4x12=48 Marks)

13. (a) Explain crystal field splitting pattern in octa hedral complexes
(OR)
(b) Write the biological role of sodium, potassium and chloride ions
14. (a) Write open chain structure elucidation of glucose molecule
(OR)
(b) Write the following reactions
(i) Strecker synthesis of amino acids
(ii) Paul Knorr synthesis
15. (a) Write a short note on factors which influence rate of a reaction
(OR)
(b) Draw a neat diagram of Jabloski and explain the terms in it
16. (a) Write a note free electron theory of metals
(OR)
(b) Write the definition of a colloid and write any preparation method of a colloid

Faculty of Science

B.Sc (Chemistry) II-Year, CBCS –IV Semester Backlog Examinations –Jan, 2023**PAPER: Chemistry-IV**

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any *eight* of the following questions (8x4=32 Marks)
1. Explain the applications of HSAB-Rule with example
 2. Write the structure and functions of Haemoglobin
 3. Explain the Gouy`s method for the determination of magnetic susceptibility of complexes
 4. Write about Mutarotation
 5. Explain any 2-preparation methods for Amino acids
 6. Write about Chichibabin reaction of Pyridine
 7. Define Rate, order and molecularity of a reaction.
 8. Prove that 1st order Half-life period is independent of initial reactants
 9. Write the differences between Fluorescence and Phosphorescence
 10. Explain Valance Bond Theory(VBT) of Metals
 11. Explain Claisen condensation with mechanism
 12. Explain Hardy-Schulz` law and Gold number

Section-B

- II. Answer the following questions (4x12=48 Marks)
- 13.(a) Explain the crystal field splitting in Octahedral complexes
(OR)
(b)i) Explain the Job`s method for the determination of composition of complexes.
ii) Write the applications of complexes
- 14.(a) Explain Killiani-Fischer synthesis with an example
(OR)
(b)i) Explain the Iso-electric point (IEP) and Zwitter ion with examples.
ii) Explain Paul-Knorr synthesis
- 15.(a) Derive the rate equation for 2nd order reactions if reactants are same
Calculate half life period?
(OR)
(b) Define Quantum yield and explain the reasons for High quantum yields in some reactions.
- 16.(a) What are Semiconductors? Explain intrinsic, extrinsic, p-type & n-type semiconductors
(OR)
(b) Explain Freundlich adsorption isotherm.

Faculty of Science

B.Sc(Chemistry) II-Year, CBCS-IV Semester Regular Examinations –June, 2023

PAPER: Chemistry-IV

Time: 3 Hours

Max Marks: 80

Section-A

I. Answer any *eight* of the following questions (8x4=32 Marks)

1. Explain Pearson`s classification of Hard and Soft Acids and Bases
2. Write the structure and functions of Chlorophyll.
3. Explain the Job`s method for the determination of composition of complexes
4. Explain why Glucose, Fructose and Mannose forms the same Osazone ?.
5. . Explain preparation methods for Amino acids by Strecker synthesis
6. Explain why Furan participates in Diels-Alder reaction with an example
7. Explain the factors influencing the rate of reaction
8. Explain Grotthus-Draper law
9. Derive 2`nd order Half-life period
- 10.Explain Free electron theory of Metals.
- 11.How can you prepare Butyric acid from Malonic ester?
- 12.Explain Brownian movement and Tyndal effect of colloid

Section-B

II. Answer the following questions (4x12=48 Marks)

- 13.(a) Explain the crystal field splitting in Tetrahedral complexes
(OR)
(b) Explain colour and magnetic properties of transition metal complexes?
- 14.(a) Explain open chain structure of Glucose
(OR)
(b) i) Explain the acidic nature of Pyrrole
ii) Explain the Iso-electric point and Zwitter ion
- 15.(a) Derive the first order rate constant and half life time?
(OR)
(b) Define Quantum yield and explain the reasons for Low quantum yields in some reactions. Explain the Jablonski diagram
- 16.(a) Explain the Band theory of Conductors, Semiconductors & Insulators
(OR)
(b) Explain Mannich reaction and Michael addition with mechanism
