

For Candidates Admitted From 2015-2017

15MCH43E

M.Sc., DEGREE EXAMINATIONS | APRIL 2019  
SEMESTER – IV CHEMISTRY  
ELECTIVE: APPLIED ELECTROCHEMISTRY

Time: 3 Hrs

Max. Marks: 75

**PART- A (10 X 2 = 20)**  
**ANSWER ALL QUESTIONS**

1. Write about diffusion limited current.
2. Give the basic principle of chronoamprometry
3. What are electro chemical cells? Mention their components.
4. Why calomel electrode is called as a secondary electrode.
5. Write the advantages of Hall-Heroult process
6. Mention the factors affecting the quality of electrodeposition.
7. Write the key properties of separators.
8. What happens when batteries are charged?
9. What is crevice corrosion? Write its stages.
10. Mention the functions of sacrificial anode.

**PART- B (5 X 5 = 25)**  
**ANSWER ALL QUESTIONS**

11. a) Discuss pulse polarographic method. (OR)  
b) Explain rotating disc electrodes.
12. a) Write note on electro inorganic chemicals- perchlorates. (OR)  
b) Discuss about electro synthesis of fluorine.
13. a) Write note on electro refining of Cu. (OR)  
b) Distinguish electro plating and hot dipping.
14. a) Describe the working of lead acid battery. (OR)  
b) Write note on lithium cells.
15. a) What is pourbaix diagram? Explain its characteristics. (OR)  
b) Explain with example the factors influencing corrosion.

**PART- C (3 X 10 = 30)**  
**ANSWER ANY THREE QUESTIONS**

16. Discuss the principle and applications of cyclic voltametry.
17. Give a detailed note on electro reduction of nitro and carbonyl group.
18. Explain the following (i) Hall-Heroult process (ii) Electroplating of chromium.
19. Discuss the working of the following  
(i) Lead acid batteries (ii) Leclanche cells.
20. Discuss in detail the paint coating system of corrosion control.

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**For Candidates Admitted From 2018**

18 MCH 21C

REG.NO.....

M.Sc. DEGREE EXAMINATIONS, APRIL 2019

CHEMISTRY

SEMESTER : II

INORGANIC CHEMISTRY-II

Time : 3 HRS.

Max.Marks: 75

**PART -A ( 10 X 2 =20)**

**ANSWER ALL THE QUESTIONS**

1. What do you mean by ambidentate ligand? Give example .
2. Write the hybridisations for the complexes with coordination number 4 and 6.
3. Calculate the number of microstates for a  $d^4$  system. What is the ground state term symbol for it?
4. Mention any two differences between Charge Transfer transition and d-d transition.
5. Why is the bonding in nitrosyl complex considered analogous to carbonyl complex?
6. Iron forms a penta carbonyl while Nickel forms a tetra carbonyl- Justify.
7. Write the role of Mg in biological process
8. Give examples for chelating agents in medicine
9. What is Wacker's process?
10. Write the coordination number of intermediates in nucleophilic substitution in an octahedral complex.

**PART - B ( 5 x 5 = 25)**

**ANSWER ALL THE QUESTIONS**

11. a. CFSE of an octahedral complex is higher than the tetrahedral one. Give reasons.  
(or)  
b. Discuss spectrochemical series.
12. a. Compare Orgel and Tanebe Sugano diagrams.  
(or)  
b. Explain Jahn Teller distortion

13. a. Discuss the structure of Chromium group carbonyls.

(or)

- b. Write a note on metal alkene complexes.

14. a. Discuss the structure of ferrocene .

(or)

- b. Write a note on the structure and functions of cytochrome.

15. a. Explain the  $\pi$  bonding theory of trans effect.

(or)

- b. What are the salient features of the outer sphere mechanism?

**PART - C ( 3 x 10 = 30)**

**ANSWER ANY THREE QUESTIONS**

16. i. Write the merits and demerits of CFT.  
ii. Draw and explain the molecular orbital diagram of an octahedral complex having sigma interaction only.
17. i. What is Nephelauxetic effect?  
ii. Draw and explain the Tanebe Sugano diagram of a  $d^5$  system
18. i. Discuss the compounds of molecular nitrogen.  
ii. Write a note on Vaska's compound.
19. i. Discuss Cyanide poison and CO poison.  
ii. Give an account on Na - K pump.
20. Illustrate the polymerisation of olefins by Zeigler-Natta catalysis

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**For Candidates Admitted From 2018**

18 MCH 22C

REG.NO.....

M.Sc. DEGREE EXAMINATIONS, APRIL 2019

CHEMISTRY SEMESTER : II

ORGANIC CHEMISTRY- I

Time : 3 HRS.

Max.Marks: 75

**PART -A ( 10 X 2 =20)**

**ANSWER ALL THE QUESTIONS**

1. Define quantum efficiency.
2. What is di-  $\pi$  methane rearrangement?
3. How are pericyclic reactions classified?
4. State Woodward -Hoffmann rules for electro cyclic reactions.
5. What is Mannich reaction?
6. What is Cram's rule?
7. Write the general reaction of dienone phenol rearrangement.
8. What is Fries rearrangement?
9. Define Prochirality.
10. Differentiate configuration and conformation.

**PART B - (5 X 5 = 25)**

**ANSWER ALL THE QUESTIONS**

11. a. Explain the Jablonski diagram of photochemistry.  
(or)  
b. Write a brief account on Barton's reaction.
12. a. Draw the orbital correlation diagram for Diels Alder reaction and explain.  
(or)  
b. Outline the mechanism for Claisen and Cope rearrangements.
13. a. Give the mechanism for Wittig reaction.  
(or)  
b. Discuss the mechanism of Claisen and Darzen's condensation reactions.

14. a. Suggest the mechanism for Wagner- Meerwin rearrangement.  
(or)  
b. Describe the mechanism of Favorski rearrangement.
15. a. Discuss about the stereochemistry of nitrogen compounds.  
(or)  
b. Comment on stereoisomerism of aldoxime and ketoxime.

**PART C -(3 X 10 = 30)**

**ANSWER ANY THREE QUESTIONS**

16. Discuss the Norrish type - I and Norrish type - II reactions with examples.
17. Draw the orbital correlation diagrams for butadiene cyclo butene and explain.
18. Describe the mechanism of Knoevenagel and Reformatsky reactions.
19. Give an account on Baeyer-Villiger and Benzidine rearrangements.
20. i) Discuss in detail about optical isomerism of allenes and spiranes.  
ii) Account on stability and reactivity of decalins.

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**For Candidates Admitted From 2015-2017**

15 MCH 41C

REG.NO.....

M.Sc. DEGREE EXAMINATIONS, APRIL 2019

CHEMISTRY SEMESTER :IV

ORGANIC CHEMISTRY-IV

Time : 3 HRS.

Max.Marks: 75

**PART -A ( 10 X 2 =20)**

**ANSWER ALL THE QUESTIONS**

1. Oxidation of santonin with  $KMnO_4$  gives. \_\_\_\_\_
2. Suggest a test for the presence of two double bonds in Caryophyllene.
3. Draw the structure of Vitamin D.
4. State Blanc's rule.
5. What is Hofmann's exhaustive methylation?
6. How is the presence of N-Me group in reticuline identified?
7. Define the term denaturation of protein.
8. List out the problems encountered in the synthesis of peptide.
9. Mention the functions of anthocyanine in plants.
10. Suggest a test for the presence of nitrogroup in chloramphenicol.

**PART -B ( 5 X 5 =25)**

**ANSWER ALL THE QUESTIONS**

11. a. Write the general methods of determination of the structure of terpenoids.  
(or)  
b. Elucidate the structure of Zingiberine.
12. a. Write the biosynthesis of Sterols.  
(or)  
b. Establish the structure of Equilenin.
13. a. How is the structure of quinonic acid arrived? Explain.  
(or)  
b. Explain the synthesis of morphine.

14. a. Write a note on C-terminal and N-terminal analysis.

(or)

- b. Discuss any two methods of polypeptide synthesis.

15. a. How is Cyanidine hydrochloride synthesised? Discuss.

(or)

- b. Write a brief note on Purine bases.

**PART -C ( 3 X 10 =30)**

**ANSWER ANY THREE QUESTIONS**

16. Elucidate the structure of abietic acid.
17. Deduce the position of two angular methyl groups, - OH group and a double bond in cholesterol.
18. Establish the structure of reserpine.
19. Describe the structure of DNA and RNA.
20. i) Explain the structure of flavone.  
ii) Establish the structure of quercetin.

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For Candidates Admitted From 2008

18 MBO 23C

REG.NO.....

M.Sc DEGREE EXAMINATIONS, APRIL - 2019

BOTANY SEMESTER : II

PHYTO CHEMISTRY

Time : 3 HRS.

Max.Marks: 75

PART -A ( 10 X 2 =20)

ANSWER ALL THE QUESTIONS

1. Buffer solution
2. First Law of thermo dynamics
3. Co enzymes
4. Beri beri
5. Amino acids
6. Keratin
7. Glycosidic bond
8. Fatty acids
9. Secondary metabolites
10. Alkaloids

PART -B ( 5 X 5 =25)

ANSWER ALL THE QUESTIONS

11. a. Write short notes on  $p^H$  and its Significance.  
(or)  
b. Comment on Energy.
12. a. List out the Physico- Chemical Properties of enzymes  
(or)  
b. Bring out the general characters of Vitamins.
13. a. Write the classification of Aminoacids on the basis of the properties of R- groups.  
(or)  
b. Explain various chemical bonds involved in Protein Structure.
14. a. Enumerate optical isomerism and mutarotation of carbohydrates.  
(or)  
b. Write any Five Unsaturated Fatty Acids with Structure and its

Common Sources.

15. a. Explain briefly the Shikimic acid pathway.

(or)

- b. List out the Significance of alkaloids.

PART -C ( 3 X 10 =30)

ANSWER ANY THREE QUESTIONS

16. Discuss on the relationship between free energy change and equilibrium constant.
17. Describe the mechanism of enzyme action with regard to lock and key hypothesis.
18. Write an elaborate account on the structure of proteins with suitable illustration.
19. Comment on the structure of starch and mention its properties
20. Write an essay on secondary metabolites of plants.

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