

Master of Science (Chemistry)
Fourth Semester Main Examination, June 2020
Analytical Chemistry [MSC401T]

Time: 3:00 Hrs

Max Marks 85

Note: Attempt all questions.

Each question has two parts.

Part A is 10 marks and part B is 7 marks.

- Q.1 (a) Explain the Electronic Spectral studies of transition metal complexes.
(b) Write a short note on charge transfer spectra.
OR
(a) Write the selection rule of electronic spectroscopy.
(b) Explain the term standard deviation & accuracy in detail.
- Q.2 (a) Discuss the basic principal of flame emission spectroscopy
(b) Write application of atomic absorption spectroscopy.
OR
(a) Write the spectrometry with the help of ray-diagram.
(b) What are single beam & double beam spectra? Explain briefly.
- Q.3 (a) What is chromatography? Explain it in details along with theory & principle.
(b) Write a short note on application of chromatographic methods.
OR
(a) Discuss the theory of eletrogravimetric analysis.
(b) Write the advantages of coulometric litration.
- Q.4 (a) Write detail note on HPCL.
(b) Write detail note on GC.
OR
(a) Explain the thermo gravimetric analysis. Write its principle and instrumentation.
(b) Write a short note on differential scanning colorimeter.
- Q.5 Write short note on any two:-
(a) Differential scanning of colorimeter.
(b) DTA
(c) TG
(d) Application of thermal method in analysis.

Master of Science (Chemistry)
Fourth Semester Main Examination, Aug-Sep 2020
Environmental Chemistry [MSC402T]

Time: 3:00 Hrs

Max Marks 85

Note: Attempt all questions. Each question has two parts.

Part A is 10 marks and part B is 7 marks.

- Q.1 (a) Explain analytical method of measuring BOD.
(b) Explain Biochemical cycle of carbon.

OR

- (a) Explain various effects of heat budget.
- (b) Describe vertical temperature and temperature version.

- Q.2
- (a) Explain minamata diseases.
 - (b) What are pesticides explain.

OR

- (a) Write down the classification of pesticides.
- (b) Write brief note cu tsunami.

- Q.3
- (a) What is air pollution? Write control strategies of air pollution.
 - (b) What is noise pollution? Write control strategies of noise pollution.

OR

- (a) How did the smog formed in atmosphere? Explain.
- (b) Write down the photochemical reaction in atmosphere.

- Q.4
- (a) Explain, What are micro and macro nutrients?
 - (b) Explain biological cycle of nitrogen.

OR

- (a) Write short note on the biological cycle of oxygen.
- (b) Write down the purification and treatment method of water.

- Q.5
- (a) Explain the analytical method of measuring COD (Chemical oxygen demand).
 - (b) Explain organochlorine pesticides, briefly.

OR

Write short note on any two:

- i. Acid Rain
- ii. Green House Effect
- iii. DO (Dissolved Oxygen)

Enrollment No.....

Master of Science (Chemistry)
Fourth Semester Main Examination, Aug-Sep 2020
Solid State Chemistry and Material Science [MSC403T]

Time: 3:00 Hrs

Max Marks 85

Note: Attempt all questions. Each question has two parts.
Part A is 10 marks and part B is 7 marks.

- Q.1
- (a) Write a short note on Stokbarger method.
 - (b) Explain the general principles solid state of compound.
- OR
- (a) What is F – Centre defect in solids?
 - (b) Give an example of a solid that shows both Schotty and Frenkel defect.
- Q.2
- (a) What is law of mass action? Derive it.
 - (b) Write a short note on meissner effects of superconductivity with diagram.
- OR
- (a) What is BCS theory of superconductivity? Write its full name.
 - (b) Write a short note on Zeolite synthesis.

- Q.3 (a) Write down the properties of nanostructured material.
(b) What is the role of nanotechnology in various fields? Write down its applications.
OR
(a) How can the nanoparticles be synthesized by nano lithography.
(b) What type of stoichiometric defect is shown by ZnS?
- Q.4 (a) What is the effect of magnetic field on super conductivity.
(b) Why does the conductivity of silicon increase with the rise of temperature?
OR
(a) Write the relation between luminescence and phosphorescence.
(b) Write the properties of nano materials.
- Q.5 (a) Write the structure of fullerenes. Describe it.
(b) What are the carbon nano tubes? Write its types.
OR
(a) Write down the note on optical and magnetic properties of Cu – doped $Zn_{1-x}Cd_xS$ nanoparticles.
(b) What is co-precipitation as a procedure to solid state reactions?

Enrollment No.....

Master of Science (Chemistry)
Fourth Semester Main Examination, Aug-Sep 2020
Bio-organic Chemistry [MSC404T]

Time: 3:00 Hrs

Max Marks 85

Note: Attempt all questions.

Each question has two parts.

Part A is 10 marks and part B is 7 marks.

- Q.1 (a) Explain chemical catalysis.
(b) Write biotechnological application of enzymes.
OR
(a) Explain transition state theory.
(b) Write a note on enzyme substrate complex.
- Q.2 (a) Explain Biological catalysis.
(b) Explain Nomenclature and classification of enzyme.
OR
(a) What is apoenzyme and coenzyme?
(b) What is meant by acid base catalysis?
- Q.3 (a) Application of enzyme clinical analysis.
(b) What is co-enzyme and their uses.
OR
(a) Define enzyme and types of enzyme.
(b) Explain steric effect orientation.
- Q.4 (a) Write properties of enzymes.
(b) Explain proximity effect and molecular adaptation.
OR
(a) How do vitamins act as co-factors?

(b) Write short note on prosthetic group with functions.

Q.5 (a) Explain cyclodextrin based enzyme models.
(b) What do you mean by recombinant DNA technology?

OR

(a) Explain micelles synthetic enzyme or synzymes.
(b) Discuss short guest chemistry in enzyme model with application.

Enrollment No.....

Master of Science (Chemistry)
Fourth Semester Main Examination, Aug-Sep 2020
Organ Metallic Chemistry [MSC405T]

Time: 3:00 Hrs

Max Marks 85

Note: Attempt all questions. Each question has two parts.

Part A is 10 marks and part B is 7 marks.

Q.1 (a) Explain synthesis of glycerol (Monosanto Acetic Acid Process)?
(b) Explain synthesis of acetic acid.

OR

(a) What are organometallic compound? Explain with its types and uses.
(b) Write short note on-
i. Wacker Process
ii. Heck Reaction

Q.2 (a) Write briefly about metal alkyl compounds.
(b) What are organyl of sodium?

OR

(b) Explain hydrozirconation of alkenes.
(b) Explain butadiene in organic synthesis.

Q.3 (a) Define isomerism with classification.
(b) What is 18-electron rule?

OR

(a) Explain Organometallic of zinc with the help structure.
(b) Write chelate effect and theory, structure of chelate effects.

Q.4 (a) What is homogenous catalysis? explain giving —able example.
(b) Elaborate the term arene metal carbonyls.

OR

(a) What are the applications of transition metal complex.
(b) Explain application of organo metallic compounds.

Q.5 (a) Give an detail account of cyclopentadienyl metal hybrids explain with example.
(b) What are transition metal carbenes.

OR

(a) Explain the synthesis process of organo magnesium compounds.
(b) What are metal hydrides? explain with examples.