

(DCHE21)

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M.Sc. (Second) DEGREE EXAMINATION, DEC. – 2016

(Second Year)

CHEMISTRY

Analytical Chemistry

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(4 × 7½ = 30)

Answer any four questions

- Q1)** Write the working principle and applications of Turbidmetry. What are its limitations.
- Q2)** Explain the sources of radiations and detectors used in different regions of Infrared spectroscopy.
- Q3)** Explain the theory and working principle of phosphorimetry. Write few applications of this technique.
- Q4)** Write about the errors and interferences in flame photometry.
- Q5)** Draw and explain the conductometric titration curve of a strong acid and strong base.
- Q6)** Explain the construction and working of dropping mercury electrode.
- Q7)** Write the principle of solvent extraction and explain the factors affecting solvent extraction?
- Q8)** Write the principle and development methods followed in paper chromatography.

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SECTION - B

(4 × 10 = 40)

Answer All questions

- Q9)** a) Write the instrumentation of UV - visible spectroscopy. Explain the techniques to improve the precision in spectrophotometry.

OR

- b) Explain the theory, instrumentation, principle and applications of Infrared (IR) spectroscopy.

- Q10)** a) Write the experimental procedure and working principle of Atomic absorption spectroscopy. What are the advantages of AAS over flame photometry.

OR

- b) Explain the principle of Fluorimetry. What are the factors influencing fluorescence? Write the applications of Fluorimetry.

- Q11)** a) Explain the principle and applications of amperometric titrations.

OR

- b) Describe the theory, principle and applications of electrogravimetry.

- Q12)** a) Explain the working principle, instrumentation and application of Gas Liquid Chromatography(GLC).

OR

- b) Write the principle of Thin Layer Chromatography. How do you prepare TLC plate and write the applications of TLC.



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M.Sc. DEGREE EXAMINATION, DEC. – 2016

Second Year

CHEMISTRY

Inorganic Chemistry

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(5 × 5 = 25)

Answer any five questions

- Q1)** Explain the position of Lanthanides and Actinides in the periodic table. Write any one method for the separation of lanthanides.
- Q2)** Explain the Magnetic properties of Lanthanides.
- Q3)** Write the basic principle of electronic absorption spectroscopy. How do you apply this technique for the study of structure of metal complexes?
- Q4)** Write the basic instrumentation and applications of Raman spectroscopy.
- Q5)** Explain chemical shift in NMR spectroscopy.
- Q6)** Explain hyperfine splitting in ESR spectroscopy.
- Q7)** Write the applications of metal complexes in medicine.
- Q8)** Explain the mechanism of synthetic oxygen carriers.

SECTION – B
Answer any three questions

(3 × 15 = 45)

Q9) Describe the synthesis of Transuranium elements.

OR

Write the general properties of Actinides. Describe the uses of lanthanides and actinides.

Q10) Explain the instrumentation, working principle and applications of Infrared (IR) spectroscopy.

OR

Name different types of crystal systems. Explain their properties. How do you interpret x – ray diffraction data.

Q11) Explain the basic instrumentation, working principle and applications of Mass spectroscopy.

OR

Describe the instrumentation, principle and applications of ESR spectroscopy.

Q12) Explain photosynthesis process with suitable examples.

OR

Explain the mechanism of sodium pump and metal ion toxicity.



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M.Sc DEGREE EXAMINATION, DEC. – 2016

Second Year

CHEMISTRY

Organic Chemistry

Time : 3 Hours

Maximum Marks : 70

Part – A

Answer any four questions

Q1) Explain steric effects in biphenyls.

Q2) Explain about effect of hydrogen bonding and solvent effect on vibrational values.

Q3) Explain about NOE

Q4) Explain MC. Lafferty arrangement.

Q5) Explain photo chemistry of olefins

Q6) Explain photo – fries re – arrangement.

Q7) Explain stereochemistry of morphine.

Q8) Explain Neber rearrangement

Part – B

Unit - I

Q9) a) Explain Woodward Fieser rules for calculating the U.V. values with 3 examples.

OR

b) Explain the various factors affecting the U.V. values with examples.

Unit - II

Q10) a) Explain about

i) Fourier transform technique

ii) Chemical shift and factors affecting chemical shift

OR

b) i) Explain Mass fragmentation in alcohols, carbonyls

ii) Nitrogen rule

Unit - III

Q11) a) i) Explain about Norrish type I & type II reactions

ii) Explain photo - Fries rearrangement.

OR

b) Explain sigmatropic re – arrangement reactions.

Unit - IV

Q12) a) Explain structural elucidation of citral and cinnol.

OR

b) Explain synthesis of quinine and atropine.



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M.Sc. DEGREE EXAMINATION, DEC. – 2016

Second Year

CHEMISTRY

Environmental Chemistry

Time : 3 Hours

Maximum Marks : 70

SECTION – A

(5 × 5 = 25)

Answer any five questions from the following

- Q1)** State and explain the important segments of environment.
- Q2)** Discuss the effect of temperature and air on weathering.
- Q3)** Write the analysis of SO₂ in Air pollutants?
- Q4)** Explain the Air pollution due to radioactive substances.
- Q5)** Explain hydrological cycle.
- Q6)** How soaps and detergents causes water pollution?
- Q7)** How do you determine dissolved oxygen in water samples?
- Q8)** Explain the principle and applications of reverse osmosis in water Treatment.

SECTION – B

(3 × 15 = 45)

Answer any three questions
All questions carry equal marks.

- Q9)** a) How do you determine total nitrogen and humus in soil samples.
OR
b) Write the Ion – exchange properties of soil. Explain the functions of soils.
- Q10)** a) Explain the control methods for the organic pollutants and particulate matter in Air.
OR
b) How do you analyse aromatic hydrocarbons in Air pollutants?

Q11) a) Write the Unique properties of water and the composition of sea water and water quality parameters.

OR

b) Explain domestic and industrial water pollution.

Q12) a) Explain Tertiary methods of water treatment write about the use of coagulants in water treatment.

OR

b) Explain the monitoring of oxides of nitrogen and carbon in Air.

