Govt. M.H. College of Home Science & Science for women, Autonomous
Jabalpur M.P.

Code No. OBS/201/C/21

M.Sc. II Semester Open Book Main Examination July 2021
Subject : - Chemistry
Paper-I : Inorganic Chemistry

Max. Marks : 35
Min. Marks : 12

Note : Attempt all questions in about 250 to 300 words.
All questions carry equal marks.

Q.1 What is chelate effect? Discuss how the stability of the complex vary with the size and number of chelate rings

Q.2 What is trans effect? Discuss the various theories supporting trans effect.

Q.3 How many electronic transitions do you expect in case of $[Cr(C_2O_4)_3]^{3-}$ Complex ion? Describe the various electronic transitions occurring in this ion.

Q.4 What are metal nitrosyls? Write Nitrosylating agents for synthesis of metal nitrosyls.

Q.5 Write necessary conditions for any set of elements to form a group, subgroups, classes and group.

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Code No. OBS/202/C/21

M.Sc. II Semester Open Book Main Examination July 2021
Subject : - Chemistry
Paper-II : Organic Chemistry

Max. Marks : 35
Min. Marks : 12

Note : Attempt all questions in about 250 to 300 words.
All questions carry equal marks.

Q.1 (a) Give the difference between SE1 and SE2 reaction. (4)
(b) Describe the mechanism of Vilsmeir reaction. (3)

Q.2 (a) What is NBS? Discuss its importance for bromination of unsaturated molecules. (3)
(b) What do you understand by replacement of diazo group . Give example. (4)

Q.3 Discuss the mechanism of following reactions.
(a) Perkin Reaction. (3.5)
(b) Mannich Reaction. (3.5)

Q.4 (a) Describe benzyne mechanism of aromatic nucleophilic substitution reaction. (4)
(b) Explain Von Richter re-arrangement. (3)

Q.5 (a) Calculate the vibrational frequency (cm^{-1}) for C-H group, force constant = $5x10^5$ dynes/cm reduced mass=0.92 amu. (2)
(b) What are factors on which IR stretching frequencies depends, explain giving examples. (3)
(c) Discuss some important application of Resonance Raman Spectroscopy in chemistry. (2)

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Govt. M.H. College of Home Science & Science for women, Autonomous
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Code No. OBS/203/C/21

M.Sc. II Semester Open Book Main Examination July 2021
Subject : - Chemistry
Paper-III : Physical Chemistry

Max. Marks : 35
Min. Marks : 12

Note : Attempt all questions in about 250 to 300 words.
All questions carry equal marks.

Q.1 (a) What are the general features of fast reactions? Describe the relaxation method for the study of fast reactions. (4.5)
(b) Write short note on barrierless chemical reactions in solution. (2.5)

Q.2 (a) Give BET equation for multilayer adsorption. Explain how the surface area of an adsorbent can be determined with help of this equation. (4.5)
(b) Write short note on micellisation. (2.5)

Q.3 (a) Explain Debye-Huckel-Onsager modification to concentrated solutions. (4.5)
(b) Write short note on structure of electrical double layer. (2.5)

Q.4 (a) Define Molecular mass of Macromolecules. Explain viscosity method for molecular mass determination of macromolecules. (4.5)
(b) Explain Hardy Schulze rule. (2.5)

Q.5 (a) Derive an expression for Half wave potential ($E_{1/2}$). What are its significance in chemical analysis. (4.5)
(b) Write short note on corrosion monitoring and prevention. (2.5)

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Govt. M.H. College of Home Science & Science for women, Autonomous
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Code No. OBS/204/C/21

M.Sc. II Semester Open Book Main Examination July 2021
Subject : - Chemistry
Paper-IV : Spectroscopy & Diffraction Methods

Max. Marks : 35
Min. Marks : 12

Note : Attempt all questions in about 250 to 300 words.
All questions carry equal marks.

Q.1 What is the basic principle of ESCA? How will you obtain a photo electron spectrum.

Q.2 Describe lave method of X-Ray structure analysis of crystals.

Q.3 What is neutron diffraction? Discuss the method of measurement of neutron diffraction in detail.

Q.4 Write in detail the secondary structure of proteins and its main function.

Q.5 What do you understand by biopolymer? Describe any one method for the determination of molecular weight of biopolymer

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Govt. M.H. College of Home Science & Science for women, Autonomous
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Code No. OBS/205/C/21

M.Sc. II Semester Open Book Main Examination July 2021
Subject : - Chemistry
Paper-V : Computers for Chemists

Max. Marks : 50

Note : Attempt all questions in about 250 to 300 words.
All questions carry equal marks.

Q.1 (a) Describe the Input Output Devices?
(b) Describe the memory and secondary storage?

Q.2 (a) Write a program in C to find Sum, Difference and Product of two numbers?
(b) Write the program to find even and odd no.

Q.3 Write the program to calculate Normality & Molarity?

Q.4 (a) Describe the steps involved in creating a chart in MS-EXCEL.
(b) Write the process to create Bibliography in MS Word.

Q.5 Write short note on:-
(a) PDF
(b) JPG
(c) Scanner
(d) OMR
(e) Web Camera

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Govt. M.H. College of Home Science & Science for women, Autonomous
Jabalpur M.P.

Code No. OBS/201/C/21

M.Sc. II Semester Practical Sessional Examination July 2021
Subject : - Chemistry
Practical - I (Inorganic Chemistry)

Max. Marks : 6

Note : All questions are compulsory.

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Q.1 What is chromatography. Explain Ion Exchange chromatography. (2)

Q.2 Write the different steps of Gravimetric analysis. Explain Gravimetric analysis of Nickel as Nickel dimethygly oxime. (2)

Q.3 What is Ion Exchangers. (1)

Q.4 Write the Structure of Nickel dimethylgly oxime. (1)

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Code No. OBS/202/C/21

M.Sc. II Semester Practical Sessional Examination July 2021
Subject : - Chemistry
Practical - II (Organic Chemistry)

Max. Marks : 5

Note : All questions are compulsory.

Q.1 What is acetylation. Explain. **(2)**

Q.2 For nitration, H_2SO_4 is also required. Why? **(1)**

Q.3 Why p-product is major in preparation of p-bromo acetanillide. **(1)**

Q.4 How will you prepare p-ritro aniline from acetanillide. **(1)**

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Code No. OBS/203/C/21

M.Sc. II Semester Practical Sessional Examination July 2021
Subject : - Chemistry
Practical - III (Physical Chemistry)

Max. Marks : 5

Note : All questions are compulsory.

Q.1 What is end paint in conductrometric titration. (2)

Q.2 Draw the titration curve for strong acid and strong base in conductormetric titration. (1)

Q.3 Draw the pH titration curve for NaOH and mixture of CH_3COOH and HCL Mention end point for both acid. (1)

Q.4 Write the name of two reference. Electrode and give cell reaction with glass electrode. (1)

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