A–9053	Sub. Code
	4MCH1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Chemistry

ORGANIC CHEMISTRY–I

(CBCS – 2014 onwards)

Time : Three Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$
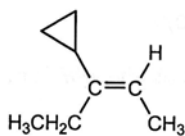
Answer **all** questions.

1. State : Hammond postulate.

2. Offer explanation for higher stability of benzhydryl carbocation than the benzyl carbocation.

3. Which among the $CH_3CH_2CH_2CH_2Br$ and $CH_3CH_2CH_2CH_2CN$ reacts faster with sodium cyanide in DMSO? State reason.

4. What is S_Ni reaction?

5. Ferrocene is aromatic. Explain.

6. Tropylium cation is aromatic whereas cycloheptatriene is not aromatic. Give reason.

7. Draw the 1R, 2R enantiomer of 1-bromo-2-chlorocyclopropane.

8. Determine the E or Z configuration of

9. How does DNA store informations?

10. What is the effect of heat on ascorbic acid?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) (i) State "Principle of Microscopic reversibility".

    (ii) What is resonance? Give the rules for writing the resonance structures.

    Or

    (b) What are the methods of generation of free radical?

12. (a) Solvolysis of 2-bromo-2-methylbutane in acetic acid containing potassium acetate gave three products. Identify them.

    Or

    (b) State Hoffmann's rule in elimination reactions; Explain with examples.
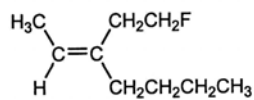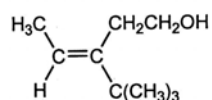
13. (a) Write a short note on aromaticity of annulenes.

    Or

    (b) Discuss the aromaticity of cyclooctatetraene and cyclooctatetraenyl dianion.

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14. (a) Draw the stereroisomers of 2,3-butanediols.

Or

(b) Find the E-Z configuration of the following compounds.

15. (a) Discuss the structure of Vitamin K.

Or

(b) Describe the structure and functions of mRNA.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. (a) Discuss the structure and reactions of carbocations.

(b) Describe the hydrogen bonding in detail.   (5+5=10)

17. (a) Give the example for nucleophilic substitution at allylic carbon.

(b) State Bredt's rule and its application in elimination reactions.   (5+5=10)

18. (a) Is 1,3,5 ,7-cyclononatetraene aromatic? If yes, give reasons for its aromaticity. Otherwise how will you convert into aromatic?

(b) State whether the following compound is aromatic or not and give the reasons for your answer

(i) Cyclazine   (ii) Tridehydro-[18] annulene

3   **A-9053**

19. (a) Describe Cahn, Ingold and Prelog system of designation of configuration in detail.

    (b) Arrange the following in order of increasing dipole moment

    (E)- 1 -chloropropene,(b) 1,1 -dichloro-2-methylpropene,(c) (E)-2,3 -dichloro-2-butene

    (5+5=10)

20. (a) Draw the structure of vitamin-B12 and give its importance.

    (b) Describe the tertiary structure of DNA. (5+5=10)

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4   **A-9053**

A–9054	**Sub. Code**
	4MCH1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Chemistry

INORGANIC CHEMISTRY - I

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** the questions.

1. Even though K+ and Cl- are iso-electronic, they have different ionic radii. Why?

2. Explain the Lowry-Bronsted concept of acid and bases.

3. Sigma bond is stronger than pi bond. Why?

4. Predict the geometry of C1F3 using hybridization.

5. What is meant by colour centres in solid state?

6. What is nonstoichiometric compound? Give examples.

7. What is the meant by styx number?

8. Mention the health hazards caused by Asbestos.

9. Draw the structure of beryllium acetate.

10. Pd(CO)$_4$ does not exist but Ni(CO)$_4$ exist. Why?

Part B   (5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) What is meant by percent ionic character? How do they depend?

                    Or

      (b) Explain the generalized concept of acids-bases.

12. (a) Differentiate between

           (i)   bonding MO and antibonding MO

           (ii) sigma and pi bond.

                    Or

      (b) Draw and explain MO diagram of NO molecule.

13. (a) What is semiconductor? How are they classified? Give their uses.

                    Or

      (b) Discuss the use of semiconductors in solar energy conversion.

14. (a) What is feldspar? How are they classified? Discuss its structure.

                    Or

      (b) How is B_4H_{10} prepared? Mention its type and structure.

15. (a) Explain the extraction of thorium from its ore.

                    Or

      (b) Discuss any five chemical properties of metal carbonyls.

                    2   **A–9054**

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain HSAB concept of acid and bases.

17. Draw and explain the MO diagram of nitrate ion.

18. Discuss in details about
    (a) Frankel defect and
    (b) High temperature super conductors. $(5 + 5)$

19. (a) How is B_5H_{12} prepared? Discuss its structure.
    (b) Discuss the structure of poly vanadate ion. $(5 + 5)$

20. (a) Mention the preparation and uses thoria.
    (b) Discuss the structure and bonding of ferrocene.

$(5 + 5)$

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3 A–9054

A–9055	Sub. Code
	4MCH2C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Chemistry

ORGANIC CHEMISTRY — II

(CBCS – 2014 onwards)

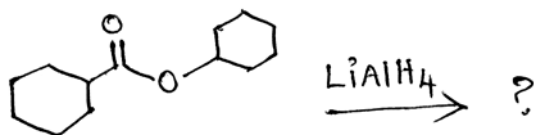Time : 3 Hours   Maximum : 75 Marks

**Part A** $(10 \times 2 = 20)$
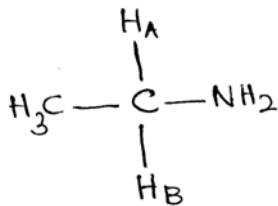
Answer **all** questions.

1.   Identify the product(s) for the following :

2.   What is Birch reduction? Give example.

3.   What is Mannich reaction?

4.   Favorskii rearrangement proceeds through cyclopropanone as an intermediate. Comment.

5.   Show why nitration of naphthalene goes exclusively at the α – position.

6.   Give the product(s) to be expected for the following reaction,
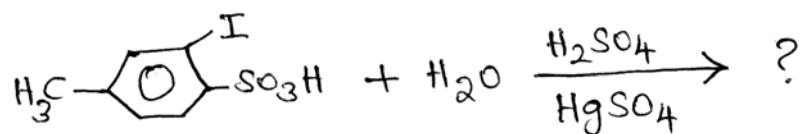
7. Assign pro–R and pro–S labels to H_A and H_B for the following :

8. Explain the term prostereoisomerism.

9. Write the difference between conformation and configuration.

10. Draw conformations of 1, 4-dimethylcyclohexane. Comment on their energies and stabilities.
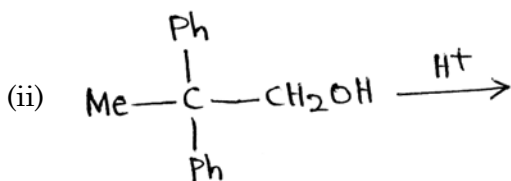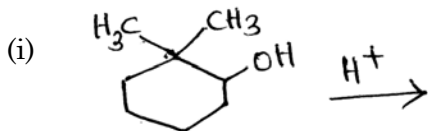
Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Outline the mechanism and applications of Wolff-Kishmer reduction.

Or

(b) Give the synthetic applications of O_sSO_4 and periodic acid.

12. (a) Predict the product(s) with appropriate mechanism.

(i)

(ii)

Or

(b) Discuss the mechanism of Sommelet–Hauser rearrangement.

2   **A–9055**

13. (a) Formulate resonable mechanism for the following reactions :

(i)

(ii)
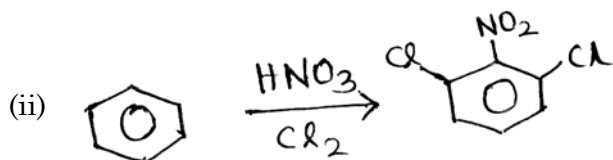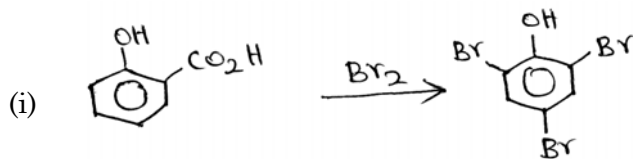
Or

(b) Discuss $S_N Ar$ mechanism. Give evidence in support of the mechanism.

14. (a) With suitable examples explain stereospecific and stereoselective reactions.

Or

(b) Explain Re and Si faces with examples.

15. (a) Explain the steric and stereoelectronic factors in acyclic derivatives.

Or

(b) Discuss the conformation of ethane.

A–9055

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. (a) Predict the product(s) and suggest a suitable
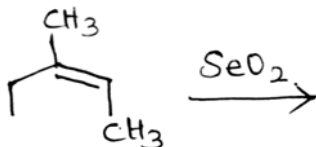   mechanism for the following :   (5)

    (b) Give a brief account on Meerwein–Pondorf–Verley
         reduction.   (5)

17. Write notes on the following : $(4 + 2 + 4)$

    (a) Knoevenagel reaction.

    (b) Wittig reaction.

    (c) Pinacol rearrangement.

18. Discuss the following :

    (a) Gattermann–Koch Formylation.

    (b) Hammett relationship.

19. (a) Explain enantiotopic and diastereotopic ligands. (3)

    (b) What is meant by Cram's rule?   (2)

    (c) Discuss the optical isomerism exhibited by
         biphenyls.   (5)

20. (a) Determine the free energy difference by using Eliel
         equation.   (5)

    (b) Write a note on stereochemistry of ansa compounds.

                                                      (5)

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4   **A–9055**

A–9056	Sub. Code
	4MCH2C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Chemistry

PHYSICAL CHEMISTRY – II

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** the questions.

1. What are unimolecular reactions? Mention their types.

2. What is Frank-Robinowitch effect?

3. Define zero point energy (Z.P.E).

4. Calculate the reduced mass of HCl. Given the atomic mass of $^1H = 1.673 \times 10^{-27}$ kg and $^{35}Cl = 58.06 \times 10^{-27}$ kg.

5. Give the selection rules for anharmonic oscillator.

6. What are stokes and anti-stokes lines?

7. What is meant by quadrupole splitting?

8. Define Mc Connel rule.

9. What is meant by order (h) of a group (G)?

10. Distinguish between proper (C_n) and improper rotations (S_n).

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the kinetics of $H_2 - O_2$ explosive reaction.

Or

(b) Explain in detail the RRKM theory of unimolecular reactions.

12. (a) The pure rotational spectrum of gaseous HBr consists of a series of equally spaced lines separated by 24.83 cm^{-1}. Calculate the inter nuclear distance of the molecule. The atomic masses are: $^1H = 1.673 \times 10^{-27}$ kg; $^{78}Br = 79.90 \times 10^{-27}$ kg.

Or

(b) Derive the information obtained from rotational spectra.

13. (a) Explain the hyper fine splitting in ESR sepctroscopy.

Or

(b) What is Fermi resonance? How does the phenomenon of Fermi resonance appear in IR spectra?

14. (a) Discuss the applications of NQP spectroscopy.

Or

(b) Explain the principle of ESR spectroscopy.

15. (a) State and explain Great orthogonality theorem.

Or

(b) Write a note on reducible and irreducible representations.

2 A–9056

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the Lindemann treatment of unimolecular reactions. Explain their salient features.

17. (a) Show that for a rigid diatomic rotor, the moment of inertia is given by $I = \mu r^2$.

    (b) Discuss the instrumentation of Microwave spectromenter. (5+5)

18. (a) Describe the theory of Laser Raman spectroscopy.

    (b) Explain the following terms:

        (i) Frank Condon Principle and

        (ii) Mutual exclusion principle (4+6)

19. Discuss the theory of NQR. What type of electrons contribute to EFG? In what respect NQE spectroscopy differ from NMR spectroscopy? (3+4+3)

20. (a) Construct the character table C2v.

    (b) Prove that all irreducible representation of Abelian group must be one dimensional. (6+4)

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A–9056

A–9057	Sub. Code
	4MCH2E1

M.Sc., DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Chemistry

Elective — POLYMER CHEMISTRY

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What are homo and co-polymers?

2.   Define monomers and repeat unit.

3.   Give the preparation of polytetra fluroethylene?

4.   What is the monomer used for the preparation of polyacrylonitrile.

5.   Define glass transition temperature.

6.   What are syndiotatic polymers?

7.   Define polymer degradation.

8.   What are photo stabilizers?

9.   Define elastomers in polymer processing.

10.   What is calendaring?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Based on the properties of polymers, how will you classify the polymers?

Or

(b) Discuss the ring opening mechanism for polymerisation of polymers.

12. (a) Write the preparation of

(i) PMMA

(ii) Polychloroprene

Or

(b) How is polycuadienes prepared? Give its uses.

13. (a) Explain isotatic and atatic polymers.

Or

(b) Discuss the importance of glass transition temperature.

14. (a) Explain emulsion polymerisation techniques.

Or

(b) Discuss the thermal degradation of polymers.

15. (a) Explain thermo plastic and thermo setting plastics.

Or

(b) Discuss the bulk and suspension polymerisation techniques.

2 **A–9057**

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the cationic polymerisation mechanism

17. Give the preparation and uses of the following:

     (a) phenol-formaldehyde resin

     (b) urea-formaldehyde resin   (5+5)

18. Discuss the concept of

     (a) number of average molecular weight

     (b) weight average molecular weight   (5+5)

19. (a) Explain oxidative degradation of polymer

     (b) Explain suspension polymerisation   (5+5)

20. Explain technique of

     (a) die casting

     (b) rotational casting

     (c) thermo foaming

     (d) reinforcing   (2+2+3+3)

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3   **A–9057**

A–9058	Sub. Code
	4MCH2E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Chemistry

Elective – GREEN CHEMISTRY

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Explain the term green cleaning with one example.

2.   Define: eco efficiency.

3.   Mention any two awards for green chemistry.

4.   Mention the business benefits of green chemistry.

5.   Give any two advantages of microwave assisted synthesis.

6.   Explain the term microwave activation.

7.   Define biocatalysts with a particular example.

8.   How are the solvents chosen for green synthesis?

9.   Mention any two health impacts of management.

10.   Explain the term environmental toxins.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Compare and contrast green chemistry with synthetic chemistry.

Or

(b) Describe the pollution control measures taken in green chemistry.

12. (a) Write a note on inception of green chemistry.

Or

(b) Describe the role of international organisation promoting green chemistry.

13. (a) Explain the green synthesis of any one reaction involving phase transfer catalysts.

Or

(b) List and explain the benefits, limitations and equipments involved in microwave synthesis.

14. (a) Write short notes on choice of reagents and starting materials in design involving green synthesis.

Or

(b) Explain the green method of synthesizing adipic acid.

15. (a) Discuss the adverse effect of arsenic on health and environment.

Or

(b) Describe the green method of removal of arsenic from water.

2   **A–9058**

Part C (3 × 10 = 30)

Answer any **three** questions.

16. (a) Write a note on environmental protection law. (5)

    (b) Explain the following terms with suitable examples.

      (i) green products

      (ii) green washing (5)

17. Give a detailed account of twelve principles of green chemistry.

18. Write a short note on:

    (a) Microwave assisted reaction without catalyst using one example.

    (b) Oxidation of toluene of benzoic acid by microwave assisted synthesis. (5+5)

19. Discuss the role of principles of green chemistry involving synthesis of paracetomol.

20. Describe in detail the harmful effects and impact of heavy metals like mercury, uranium, thallium and tellurium on health and environment.

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A–9058

A–9059

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Chemistry

ORGANIC CHEMISTRY – III

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. State and explain octant rule.

2. What is Photoreduction? Give an example.

3. How can intermolecular and intramolecular hydrogen bonding be distinguished by IR-spectroscopy?

4. Comment : Molecular ion intensity decreases in the order, cyclic > acylic > branched.

5. Explain for equal number of nucleii ^{13}C NMR peaks are much weaker than ^{1}H NMR peaks.

6. What are shift reagents?

7. Predict the product(s)
    $$CH_3CH_2COOH + CH_3NH_2 \xrightarrow[0°c]{DCC} ?$$

8.   Explain Hundsdiecker reaction.

9.   What are hormones? How are they classified?

10.   Mention the ideal characteristics of a mobile phase in HPLC.

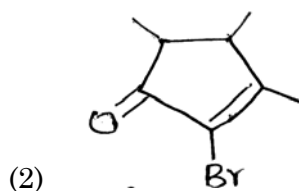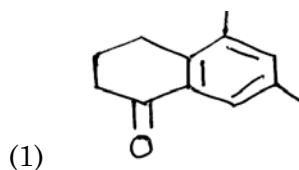**Part B** $(5 \times 5 = 25)$

Answer **all** questions.

11.   (a)   Explain briefly the principle and applications of ORD.

Or

(b)   Explain the photochemistry of olefins and dienes with an appropriate examples.

12.   (a)   (i)   Calculate λ_{max} for the following :   (3)

(1)

(2)

(ii)   Write about the use of isotopic peaks in structure elucidation in mass spectrometry. (2)

Or

2   **A–9059**

(b) (i) Explain Retro Diels-Alder reaction (3)

(ii) Arrange the following compounds in decreasing order of carbonyl frequencies. Give reason to justify the order (2)
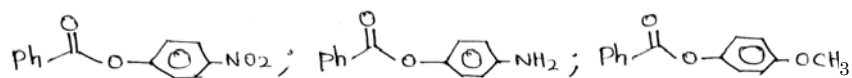
13. (a) Elaborately discuss on Nuclear overhauser effect.

Or

(b) (i) In ^{1}H NMR spectrum of monofluoro acetone shows a doublet for methyl protons with J = 4.3 Hz. Explain. (2)

(ii) Explain spin-spin splitting with an example. (3)

14. (a) Explain the formation and detection of free radicals.

Or

(b) Write notes on :

(i) Sandmeyer and

(ii) Gomberg reaction.

15. (a) Discuss the position of hydroxyl group and double bond in cholesterol.

Or

(b) Outline the working principle and applications of GLC.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. (a) Discuss the mechanism of Norrish-I and Norrish-II type reactions with suitable examples. (6)

(b) Give an account on photosensitization. (4)

3 **A–9059**

17. (a) Discuss Mc Lafferty rearrangement with mechanism. (4)

(b) The Mass spectrum of the following compound exhibits peaks at m/z 93, 69, 67. Explain. (3)
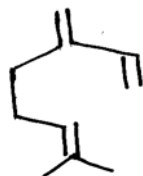
(c) Briefly explain molecular vibrations in polyatomic molecules. (3)

18. Give an account on the following :

(a) Deuterium substitution,

(b) Off-resonance decoupling. (5+5)

19. (a) Discuss the role of phase transfer catalyst in organic reactions. (4)

(b) Give the applications of the following reagents in organic synthesis with an example :

(i) LDA

(ii) 1,3-dithiane

(iii) Gilman's reagent. (2+2+2)

20. (a) Give the synthesis of progesterone from ergosterol. (5)

(b) Explain the principle and applications of column chromatography. (5)

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4

A–9059

A–9060	Sub. Code
	4MCH3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Chemistry

INORGANIC CHEMISTRY-III

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** the questions.

1.   Most charge transfer pigments are red and yellow coloured. Why?

2.   What is meant by orbital selection rule?

3.   What are hot bands?

4.   Define Doppler effect.

5.   Predict the NMR spectrum of C1F3

6.   How is ESR spectrum presented?

7.   Absorption spectra of actinides consist of sharp lines. Explain

8.   What are the uses of lanthanides?

9.   What is meant by template reaction?

10.   How is metal ion catalysis of organic reactions classified?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Calculate the 10 Dq and β value of octahedral complex of d^7 configuration

Or

(b) Discuss the different types of transitions in electronic spectroscopy

12. (a) Give the important features of the MB spectra of sodium nitro prusside and $[Fe_3(CO)_{12}]$

Or

(b) Explain how the Geometrical isomers are distinguished by IR spectroscopy

13. (a) Discuss the NMR of paramagnetic molecules

Or

(b) What is g value? Discuss the factors affecting g value

14. (a) Describe the extraction of lanthanides from solvent extraction method

Or

(b) Discuss the extraction of Pu from the fission products

15. (a) Describe the reactions due to metal ion polarization of coordinated ligands

Or

(b) Discuss the role of metal ions catalysed hydrolysis of amide complexes

2 **A–9060**

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. (a) Discuss the electronic spectra $[Ni)H_2O)_6]^{2+}$ complex

    (b) Explain the factors affecting the band width and band shape in electronic spectroscopy   (5+5)

17. (a) Explain how the IR and Raman spectroscopy are useful in elucidating the structure of metal nitrosyls

    (b) Discuss the effect of quadrupole and magnetic interactions in MB spectroscopy   (5+5)

18. (a) Describe the hyper fine splitting in ESR spectroscopy

    (b) Explain the terms Kramer's degeneracy and Zero field splitting   (6+4)

19. (a) Distinguish between lanthanides and Actinides

    (b) Discuss the colour and oxidation states of lanthanides   (5+5)

20. (a) Explain the reactions due to metal ion catalyzed hydrolysis of ester

    (b) Discuss the isomerism exhibited by six coordinated complexes   (5+5)

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3   **A–9060**

A–9061	Sub. Code
	4MCH3C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Chemistry

PHYSICAL CHEMISTRY – III

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** the questions

1. Calculate the oscillator strength of the electronic band having the integrated absorption coefficient 1.471×10^{19} dm^3 mol^{-1} $cm^{-1}s^{-1}$. Is the spectral transition allowed or forbidden?

2. What is meant by internal quenching?

3. Given a classical observables (position and momentum), write down the corresponding quantum operators.

4. Define Compton effect.

5. What does it mean that two wavefunctions are orthogonal to each other? What about a set of wavefunctions is orthonormal?

6. What are the conditions to satisfy for the acceptable wave functions?

7. What is parity wave function?

8. Is there zero point energy for the (a) particle in the box? and (b) free particle?

9. How are polymers classified?

10. Define kinetic chain length.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Derive Stern-Volmer equation.

Or

(b) What is photosynthesis? Explain the method of storing solar energy.

12. (a) Write a note on linear operator.

Or

(b) Derive de-Broglie relation. How is it verified?

13. (a) Explain the postulates of quantum mechanics.

Or

(b) Derive the Schrodinger wave equation

14. (a) What are known as polar plots? Illustrate in the case of lower quantum numbers.

Or

(b) Obtain the energy of rotation of a rigid rotor.

15. (a) Equal numbers of molecules with $M_1 = 20,000$ and $M_2 = 2,50,000$ are mixed. Calculate number-average mass and mass-average mass

Or

(b) Describe the light scattering method for the determination of molar mass of macromolecules. Draw the Zimm plot.

2 A–9061

Part C　　　　　　($3 \times 10 = 30$)

Answer any **three** questions.

16. (a) Explain the Jablonski digram for developing various photophysical processes?

    (b) Distinguishing between fluorescence and. phosphorescence　　　　　(5+5)

17. Explain Planck's theory of radiation and Einstein's photoelectric equation.

18. (a) Explain vanishing and non–vanishing commutators? Give suitable examples.

    (b) Calculate the probability that a particle in a one-dimensional box of length a is found to be between 0 and $a/2$　　　　(5+5)

19. Using variation theorem, solve the Schrodinger wave equation for the ground state energy of two electron atom.

20. (a) Discuss the kinetics and mechanism of ionic polymerization.

    (b) Explain the emulsion polymerization techniques
　　　　　　　　　　　　　　　　(5+5)

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3　　　　　　　　$\boxed{\textbf{A–9061}}$

A–9062	Sub. Code
	4MCH3E2

M.Sc DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Chemistry

Elective — MOLECULAR PHOTO CHEMISTRY

(CBCS – 2014 onwards)

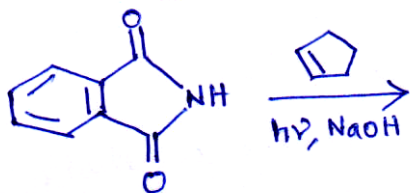Time : 3 Hours   Maximum : 75 Marks

**Part A** $(10 \times 2 = 20)$

Answer **all** questions.

1.   Give the selection rule for radiation less transitions.

2.   Comment: Heterocyclic compounds are non-fluorescent at room temperature and Fluorescent at low temperature.

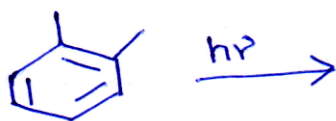3.   Predict the product (S)

4.   Mention the Woodward-Hoffman selection rule for electrocyclic reactions.

5.   What is photo-oxidation-reduction reactions?

6.   Complete the following.
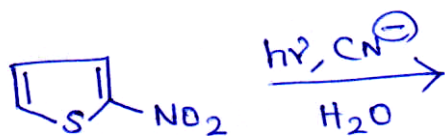
7.   What is Barton reaction?

8.   Write down the photochemical isomerisation product (S) for the following

9.   Explain the term actinometry.

10.   Mention the light sources for visible and UV region.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11.   (a)   Give a brief account on fluorescence emission.

Or

(b)   Discuss the photophysical Kinetics of unimolecular processes.

12.   (a)   Discuss the photoreduction of dyes by two electron transfer processes.

Or

(b)   Explain the photochemical dimerisation reactions of olefins with suitable examples.

2   **A–9062**

13. (a) Give a account on the photochemical conversion of solar energy.

Or

(b) Explain photo substitution reactions with examples.

14. (a) Illustrate the photochemistry of alkene compounds.

Or

(b) Outline the mechanism of di-π methane rearrangement reaction.

15. (a) What are lasers ? Give its applications.

Or

(b) Write notes on Uranyl oxalate actinometer.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. (a) Describe photophysical processes in eletrorically excited molecules. (7)

(b) Explain: "In dilute solution, aniline is about 40 times more Fluorescent than benzene, where as benzoic acid is non-Fluoresent". (3)

17. Discuss the following.

(a) Photo oxidation and photo oxygenation

(b) Chemiluminescence. (5+5)

18. (a) Discuss the following photorearrangement reactions with example,

(i) geometrical isomerization

(ii) Linkage isomerization (5)

(b) Explain the photochemistry of Metallocene compounds. (5)

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19. Give a detailed account on photo-Fries rearrangement of others and anilides.

20. Write a brief note on the following actinometer's,

    (a) Ferriorxalate and

    (b) Reinecke's salt

    ————————

4   **A–9062**

A–9063	Sub. Code
	4MCH3E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Chemistry

Elective — PHARMACEUTICAL CHEMISTRY

(CBCS – 2014 onwards)

Time : 3 Hours   Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. Define : Drug metabolism

2. How are the pharmacokinetic properties of a drug specified?

3. What is antibacterial agent? Give an example.

4. Draw the structure of streptomycin.

5. What is chemotherapy?

6. Draw the structure and uses of cis-platin.

7. Mention the therapeutic action of nifedipine.

8. Write a synthesis of sodium nitroprusside.

9. Mention the use of IR spectroscopy in analysis of drugs.

10. Write the principle of TLC.

Part B $(5 \times 5 = 25)$

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the effect of Changing size and shape and Introduction of new substituents in SAR.

Or

(b) Discuss the sources lead compounds.

12. (a) Discuss the structural features and SAR of penicillin – G.

Or

(b) Give a synthesis and structure of terramycin.

13. (a) Provide the synthetic route and assay of the clorambucil.

Or

(b) Mention the adverse effects of chemotherapy.

14. (a) Describe the therapeutic action and SAR of hydralazine.

Or

(b) Provide the preparative routes of captopril.

15. (a) Discuss the principle and instrumentation of Mass spectroscopy.

Or

(b) Describe the application of HPLC in analysis.

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Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the phases of pharmacokinetics.

17. Provide the preparative ways, structure and SAR of streptomycin.

18. (a) Discuss in detail about the dosage, efficacy chemotherapy.

    (b) Provide the synthetic ways and assay of chloroquine. (5 + 5)

19. Give details on the therapeutic action and SAR of sodiumnitroprusside.

20. (a) Describe the principle and instrumentation of NMR spectroscopy. (6)

    (b) Provide the TLC technique in analyzing the purity of drugs. (4)

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