F–9413	Sub. Code
	7MCH2C1

M.Sc. DEGREE EXAMINATION, APRIL 2023.

Second Semester

Chemistry

ORGANIC CHEMISTRY – II

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Among the conformations of monosubstituted cyclohexane, axial form is less stable than equatorial. Give reason.

2. Draw the stable conformation of 1, 2-disubstituted cyclohexane. Give reason.

3. Predict the λ max for 1, 3-Butadiene.

4. State and explain Mc Lafferty rearrangement.

5. Give one example of shift reagent and mention its role in NMR spectra.

6. Explain spin-spin relaxation time in C-13 NMR spectroscopy with an example.

7. Comment on the selectivity of N-Bromo Succinimide in organic synthesis.

8. Enlighten the role of umpolung reagent (1,3-dithiane) in organic synthesis.

9. Draw the structure of cholesterol.

10. How is dehydroepiandrosterone converted to androsterone?

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

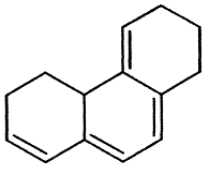
Answer **all** questions, choosing either (a) or (b).

11. (a) Review the factors that determine the stability of a conformation.

Or

(b) Draw the most stable conformation of ethylene-glycol in Newmann projection and justify.

12. (a) Calculate the λ max for the following compound by UV spectroscopy:



Or

(b) Write a note on finger print region in IR spectroscopy.

13. (a) Draw and explain the NMR spectrum of ethanol. How does it differ from dimethyl ether?

Or

(b) Discuss the following:

(i) Chemical shift

(ii) Equivalent and non-equivalent protons (3+2)

14. (a) Describe in detail Oppenauer oxidation with mechanism.

Or

(b) Describe with mechanism, Woodward-Prevost hydroxylation reaction.

15. (a) Describe the structure and stereochemistry of vitamin D_2.

Or

(b) Briefly discuss the functions of androsterone and testosterone.

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

Answer any **three** questions.

16. What is meant by conformational energy? How to determine conformational energy difference? Give in detail conformational analysis of cyclohexane.

17. (a) Briefly describe the principle of Mass spectroscopy. (4)

(b) Explain with suitable examples for the following:

(i) Base peak

(ii) Parent ion

(iii) Metastable ion

(iv) Isotopic ions (4×1.5)

18. Explain the following:

(a) Off-resonance decoupling

(b) 2D NMR (HOMOCOR AND HETCOR) (5+5)

19. Briefly discuss with mechanism for the following:

(a) Oxidation reactions involving chromic acid and osmium tetroxide.

(b) Role of crown ethers and quaternary ammonium salt as phase transfer catalyst in organic synthesis. (5+5)

20. Describe the chemistry and stereochemistry of ergosterol.

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F–9414	Sub. Code
	7MCH2C2

M.Sc. DEGREE EXAMINATION, APRIL 2023.

Second Semester

Chemistry

INORGANIC CHEMISTRY – II

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Write the IUPAC name for the following complex compounds:

   (a) $[Ni(PPh_3)_2(CN)_2]$ and

   (b) $[(NH_3)_4Co-(OH)_2-Co(NH_3)_4]^{4+}$

2. Why chelates are more stable than normal complexes?

3. What are labile and inert complexes?

4. Define Crystal field activation energy (CFAE).

5. How does pH affect the binding of oxygen to haemoglobin?

6. Write the structure of metalloporphyrin molecule.

7. Mention the conditions for a metal to act as catalyst.

8. What is Wacker's process?

9. What is meant by breeder reactor?

10. Elucidate the source of energy in the Sun.

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

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

11. (a) Derive the relationship between stepwise stability constant and overall stability constant

Or

(b) State and explain Jahn-Teller distortion. What are its consequences?

12. (a) Explain the pi bonding theory of trans effect.

Or

(b) Discuss the mechanism of anation reaction

13. (a) Write short notes on *in-vivo* and *in-vitro* nitrogen fixation

Or

(b) Illustrate the mechanism of the intake of oxygen by myoglobin and haemoglobin.

14. (a) Write short notes on Oxo process

Or

(b) What is Ziegler- Natta catalyst? How does it catalyze the polymerization of olefins?

15. (a) The activity of radioactive isotope falls to 75% in 60 days. Calculate the half life and decay constant.

Or

(b) Explain the working of Breeder reactor.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail the VB theory to explain metal-ligand bonding in coordination complexes.

17. (a) Discuss the factors affecting reactivity of square planar complexes

    (b) How is electron transfer reaction used in synthesis of coordination complexes? (5+5)

18. (a) What are blue copper proteins? How are they classified? Give their functions.

    (b) Discuss the function of ferridoxin. (6+4)

19. Enumerate the mechanisms of oxidative addition and reductive elimination reactions

20. (a) Explain the theory of nuclear fusion reaction

    (b) Define radioactive equilibrium. Where can it be observed? How is it reached? (5+5)

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F–9415	Sub. Code
	7MCH2C3

M.Sc. DEGREE EXAMINATION, APRIL 2023

Second Semester

Chemistry

PHYSICAL CHEMISTRY–II

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Explain the reason and conditions of explosion reactions.

2. What are the assumptions of collision theory?

3. How are fundamental and overtone frequencies in IR explained?

4. What is normal modes of vibration?

5. Explain fine and hyperfine structures of ESR spectra.

6. How does the electric field gradient arise in NQR?

7. State mutual exclusion principle.

8. Sketch the photoelectron spectrum of oxygen. Explain.

9. Explain with a suitable example the term "improper axis of symmetry".

10. Give the symmetry selection rules for IR and Raman spectra.

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

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

11. (a) Give the mechanism of $H_2 - Br_2$ thermal reaction and derive the rate equation.

Or

(b) Describe the Lindemann theory of unimolecular reactions.

12. (a) What is the difference between infrared and microwave spectroscopy?

Or

(b) Deduce an expression for Einstein's coefficient of induced absorption.

13. (a) Differentiate between nuclear quadrapole coupling in atoms and molecules.

Or

(b) Explain the nuclear overhauser effect in NMR spectroscopy.

14. (a) Describe the laser Raman spectroscopy.

Or

(b) Give an account of Franck Condon principle.

15. (a) Give a concise note on the application of group theory to normal mode analysis.

Or

(b) State and explain Great orthogonality theorem.

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

Answer any **three** questions.

16. (a) What are chain reactions? List their general characteristics. (5+5)

(b) Discuss RRKM theory for unimolecular reactions.

17. (a) Describe the vibrational spectra of a diatomic molecule. (5+5)

(b) How can the bond length of a molecule from its rotational spectra?

18. (a) How can the ESR spectroscopy be used in the identification of free radicals? (5+5)

(b) How do chemical shift arise in NMR spectra of molecules?

19. (a) Describe the different types of electronic transitions possible in polyatomic molecules. (6+4)

(b) Outline the classical theory of Raman effect.

20. (a) Write a short note on direct product groups. (4+6)

(b) Construct the character table for C_{2v} point group.

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F–9416	Sub. Code
	7MCH3C2

M.Sc. DEGREE EXAMINATION, APRIL 2023.

Third Semester

Chemistry

INORGANIC CHEMISTRY – III

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** the questions.

1. Explain Mossbauer spectrum $Fe_2(CO)_9$.

2. What is meant by Doppler broadening?

3. What are forbidden and allowed transitions?

4. Predict the ^{31}P-NMR spectrum of H_3PO_3.

5. Calculate EAN of Cr in $Cr(CO)_6$.

6. What happens when selenium reacts with halogen and oxygen?

7. Explain the ionic radii of Lanthanide series.

8. Most of the actinides ions are coloured. Explain.

9. Write the styx number for B_2H_6.

10. How are poly acids classified?

Part B (5 × 5 = 25)

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

11. (a) What are nitrosyls? How are they identified by IR spectroscopy?

Or

(b) Illustrate the nature of quadrupole splitting of the MB signal for ^{57}Fe and ^{119}Sn.

12. (a) Calculate the 10 Dq and β value of tetrahedral complex of d3 configuration.

Or

(b) What is a shift reagent? Explain the use of the shift reagent in the elucidation of complex NMR spectra.

13. (a) How is Beryllium acetate prepared? Discuss its structure.

Or

(b) Discuss the bonding and structures of $Fe_2(CO)_9$.

14. (a) Give a brief description on the occurrence and the extraction of lanthanides.

Or

(b) How does Thorium occur in nature? How is it extracted from its ore?

15. (a) What are carboranes? How are carboranes classified? Give examples.

Or

(b) Discuss the structure of octamolybdate anion.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. (a) Explain the MB spectra of $[Fe_3(CO)_{12}]$ and sodium nitroprusside. (5+5)

    (b) Describe the use of IR and Raman spectra to detect the types of hydrogen bonding.

17. (a) Write a note on charge transfer transition.

    (b) Predict the structure of the following:

    (i) ^{31}P-NMR of P_4S_3

    (ii) ^{19}F-NMR of BrF_5

    (iii) ^{19}F-NMR of PF_5 (4+6)

18. (a) Mention the ores of Germanium. How is Germanium extracted from its ore?

    (b) Discuss the magnetic properties and structure of ferrocene. (5+5)

19. (a) Discuss in detail the similarities and dissimilarities between later Lanthanides and later Actinides.

    (b) Give the preparation, properties and uses of plutonium. (5+5)

20. Discuss the structure and bonding of

    (a) ferrocene and

    (b) 1:12- hetero poly anion (5+5)

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F–9417	Sub. Code
	7MCH3C3

M.Sc. DEGREE EXAMINATION, APRIL 2023

Third Semester

Chemistry

PHYSICAL CHEMISTRY – III

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

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

Answer **all** questions.

1. Define fluorescence.
2. What are radiation less transitions?
3. Explain Planck's quantum theory of radiation.
4. Define De-Broglie's concept.
5. Define eigen value and eigen function.
6. Explain Zeeman effect.
7. Explain radial probability distribution.
8. What are spherical harmonics?
9. State the principle of equipartition of energy.
10. Define acid-base catalysis.

Part B (5 × 5 = 25)

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

11. (a) Describe and discuss the Jablonski diagram for depicting various photophysical processes.

Or

(b) What is chemiluminescence? Discuss the mechanism of chemiluminescence in anion-cation reactions.

12. (a) State and explain the postulates of quantum mechanics.

Or

(b) What are vanishing and non-vanishing commutators?

13. (a) Explain orthogonality and normalization of wave functions.

Or

(b) Derive Schrodinger wave equation.

14. (a) Using the variation method solve the Schrodinger wave equation for the hydrogen atom.

Or

(b) Set up the Schrodinger wave equation for simple harmonic oscillator.

15. (a) Derive Michaelis-Menton equation.

Or

(b) Discuss the different types of degrees of freedom.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss the salient features of photochemical conversion and storage of solar energy.

17. Derive the quantum mechanical operator for angular momentum and total energy.

18. Set up and solve the Schrodinger equation for a particle moving in a ring.

19. Determine the delocalization energy of butadiene using HMO calculations.

20. Discuss in detail the kinetics of unimolecular surface reactions.

F–9418	Sub. Code
	7MCH3E1

M.Sc. DEGREE EXAMINATION, APRIL 2023

Third Semester

Chemistry

Elective : PHARMACEUTICAL CHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define the term prodrug? Give any one example.

2. State and explain induced fit theory.

3. What are antiviral agents? Give one example

4. Describe the role of an antibiotic with an example.

5. Mention any two antimetabolites involved in cancer treatment.

6. What are CNS depressants? Explain with an example.

7. Give any two uses of amyl-nitrate.

8. What are sedatives? Give example.

9. What are local anaesthetics? Give one example.

10. Give the preparation of Nifedipine.

Part B (5 × 5 = 25)

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

11. (a) Explain the concept of structure-activity relationship (SAR) in drug design.

Or

(b) Discuss occupancy and induced fit theory in detail.

12. (a) Outline the synthesis of penicillin-V.

Or

(b) What are β - lactam antibiotics? Explain their mode of action with suitable examples.

13. (a) Explain the mode of action of CNS depressants. List out the side effects of its prolonged use.

Or

(b) Discuss the role alkylating agents and anti-metabolites in cancer treatment.

14. (a) Write short notes on different types of cardiovascular diseases.

Or

(b) Describe the synthesis of atenelol in detail.

15. (a) Briefly discuss the synthesis of phenacetin and methyl salicylate.

Or

(b) Discuss the synthesis of paracetamol in detail.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Illustrate the various factors affecting bioactivity of drug.

17. Describe the structural of cephalosporin. Comment on the structure activity relationship.

18. Discuss the synthesis of chlorambucil and 6-mercaptopurine. Reason out their activity.

19. Outline the synthesis of verampamil and sorbitrate.

20. Describe the synthesis, properties and therapeutic uses of aspirin and guanothidine.

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F–9419

Sub. Code
7MCH4C1

M.Sc. DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Chemistry

INSTRUMENTAL METHODS OF ANALYSIS

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Express the results with the significant figures: 4.512+1.788+(532*2.1).

2. What is meant by accuracy? How does it differ from precision?

3. Suggest a test chemical that can be added to a water sample to precipitate lead (II) ions. Write a chemical equation for the formation of the precipitate.

4. How is purity of precipitates determined?

5. What are the requirements for choosing a reference electrode?

6. Distinguish between coulometric titration and volumetric titration

7. Outline the principle of DSC.

8. How is Procedural decomposition temperature obtained from TG curves?

9. Define Beer's and Lambert's law

10. What are the advantages and disadvantages of colorimeter?

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

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

11. (a) Calculate the mean, median and standard deviation of the following set of values:

7.5, 5.2, 6.4, 4.9, 5.6 and 6.8

(b) Write a note on minimisation of errors

12. (a) Explain the method of drying and igniting of precipitates.

Or

(b) Explain the terms co-precipitation and post precipitation.

13. (a) Write the principle of amperometry. Mention the advantages and disadvantages of amperometric titrations.

Or

(b) Explain the principle and working of chronopotentiometry

14. (a) Distinguish between DTA and DSC.

Or

(b) Describe, with examples, the various types of curves obtained from thermogravimetric (TG) experiments, and discuss their interpretation.

15. (a) Describe the principle and applications of AAS.

Or

(b) Discuss the instrumentation of Fluorimetry.

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

Answer any **three** questions.

16. What do you mean by correlation and regression? From the set of X and Y data calculate the linear correlation coefficient.

X	1	2	3	4	5
Y	2.3	5.6	8.9	12.5	25.7

17. (a) Write a note on colloidal precipitates.

(b) Discuss the types of precipitates with suitable examples. (5+5)

18. Explain with schematic diagram the principle and applications of

(a) stripping voltametry and

(b) electrogravimetry

19. (a) Illustrate the factors affecting the position of TG curves.

(b) Discuss the principle and applications of DTA. (5+5)

20. (a) Outline the working and instrumentation of colorimetric analysis.

(b) Estimate the amount of iron in colorimetric analysis in the presence of copper. (6+4)

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F–9420

Sub. Code
7MCH4E1

M.Sc. DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Chemistry

Elective – NANO CHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Write different modes of classification of nano materials.

2. Define the biological agents used in the synthesis of nano materials.

3. What are carbon nanotubes?

4. Define metal/oxide nano particles.

5. What are carbon clusters?

6. Write about the organic nano materials.

7. Write about the analytical technique that is used to find the surface morphology of nano materials.

8. What is the information derived by TEM?

9. What is DNA-knots?

10. What is nano mechanical device?

Part B (5 × 5 = 25)

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

11. (a) Discuss the classification of nano materials in detail.

Or

(b) Write notes on sol-gel method of synthesis of nano materials.

12. (a) Write about semiconductor quantum dots.

Or

(b) Give the applications of carbon nanotubes.

13. (a) Write short notes on alkali doped C_{60}.

Or

(b) Give the preparation and properties of nano–TiO_2 nano material.

14. (a) Discuss the principles and applications of Transmission electron microscopy (TEM).

Or

(b) Discuss the principles and applications of X-ray diffraction.

15. (a) Give a detailed account of DNA based sensor.

Or

(b) Explain the functions of molecular diodes.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain

    (a) Hydro thermal synthesis of nano materials.

    (b) Chemical vapour condensation process. (5+5)

17. Discuss the applications nano materials in the field of

    (a) Medical and health

    (b) Defense. (5+5)

18. Discuss the preparation and properties of nano-CdO and nano-CdS.

19. Give the principles and applications of

    (a) Scanning electron microscopy

    (b) Anger emission spectroscopy. (5+5)

20. Give detailed account of

    (a) self-assembled nano transistors

    (b) nano mechanical device assembled by Seeman. (5+5)

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F–9421

Sub. Code
7MCH4E2

M.Sc. DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Chemistry

Elective – CORROSION CHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is EMF Series?

2. What is dry corrosion? Give an example.

3. What are pitting corrosion? Give an example

4. Explain the term erosion corrosion.

5. Explain the term Hot dipping.

6. What are requirements of good paint?

7. What is thermodynamic reversibility?

8. What are the criteria for selection of cathode?

9. What are fuel cells?

10. what is electro catalysis of hydrogen oxidation?

Part B (5 × 5 = 25)

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

11. (a) Bring out the difference between chemical and electrochemical corrosion.

Or

(b) What are the factors influencing the corrosion?

12. (a) Explain the classification of atmospheric corrosion.

Or

(b) Write a note on soil corrosion.

13. (a) Explain the following

(i) Metallic coating

(ii) Non-metallic coating

Or

(b) What are the factors affecting the electroplating.

14. (a) What are electrochemical energy conversion? Explain with suitable example.

Or

(b) Discuss the applications of primary and secondary cells.

15. (a) Write the following

(i) Current – voltage relationship

(ii) Limiting current density

Or

(b) Describe the construction of solid polymer fuel system.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. (a) Write the theory of electrochemical corrosion.

    (b) Give the corrosion control methods. (5+5)

17. Explain the following

    (a) Stress corrosion

    (b) Galvanic corrosion

    (c) Dezincification and corrosion fatigue. (4+3+3)

18. Discuss the following electroplating applications

    (a) Chromate coating

    (b) Oxide coating

    (c) Organic coating (4+3+3)

19. (a) Write briefly different types of secondary cells.

    (b) Explain the molten salt and solid electrolytes. (5+5)

20. (a) Write a note on porous electrodes.

    (b) Discuss the construction of phosphoric acid fuel cell system. (4+6)

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F–9422	Sub. Code
	7MCH4E3

M.Sc. DEGREE EXAMINATION, APRIL 2023.

Fourth Semester

Chemistry

Elective – GREEN CHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. "Green chemistry is sustainable chemistry" – Comment.

2. Give the advantages of green products.

3. What is meant by atom economy?

4. List out some of the awards for green chemistry.

5. Write down any four major health impact caused by tellurium.

6. Mention the ill effects of cadmium to the environment.

7. Define green synthesis.

8. Give examples for choice of catalyst for a green synthesis.

9. Write the advantages of a microwave assisted synthesis.

10. What is meant by Biocatalyst?

Part B (5 × 5 = 25)

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

11. (a) Give a brief note on environmental protection laws.

Or

(b) Discuss the challenges for a chemist in adapting green chemistry.

12. (a) Give a brief account on inception of green chemistry.

Or

(b) Discuss how effectively the international organisations are promoting green chemistry.

13. (a) Describe the process of arsenic metal removal from water.

Or

(b) Discuss the health impacts of mercury and uranium.

14. (a) Describe the Kolbes-Schmitt synthesis using super critical liquids.

Or

(b) Discuss the important role in choosing starting materials and solvents for green synthesis.

15. (a) Explain the conversion of nitriles from alkyl and aryl halide in the presence of Phase Transfer Catalysts.

Or

(b) With a suitable example explain briefly microbial oxidation and enzymatic hydrolysis.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Write notes on,

    (a) Dreaming green chemistry (3)

    (b) Recycling of waste (3)

    (c) Education on green chemistry (4)

17. Discuss the twelve principles of green chemistry.

18. Write an account of adverse effect of vanadium, beryllium, thallium and selenium on health and environment.

19. (a) Explain how Knoevenagel reaction carried out in water medium.

    (b) Discuss the Claisen-Schimidt condensation using ionic liquids. (5+5)

20. Write notes on,

    (a) Heterogeneous liquid-liquid and solid-liquid reactions. (7)

    (b) Specific effects of microwaves. (3)

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F–9423	Sub. Code
	7MCH4E4

M.Sc. DEGREE EXAMINATION, APRIL 2023

Fourth Semester

Chemistry

Elective – MOLECULAR PHOTOCHEMISTRY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

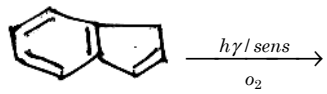
Part A (10 × 2 = 20)

Answer **all** questions.

1. What is photosensitization?

2. Define quantum efficiency.

3. Predict the following photo oxidation reaction product.



4. State wood ward-Hoffmann rule.

5. What are photoaquation reaction?

6. Give an example of photochemical reaction in transition metal complexes.

7. What is Barton reaction?

8. Give example for photo oxygenation reaction.

9. What is actinometry?

10. Write the advantages of ferrioxalate actinometer.

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

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

11. (a) Explain Jablonski diagram.

Or

(b) Write a note on Fluorescence emission.

12. (a) Give the non concerted cyclo addition mechanism involved in photodimerisation.

Or

(b) Explain chemiluminescence with example.

13. (a) Explain photo substitution reaction with suitable examples.

Or

(b) (i) What is photoredox reaction? (2)

(ii) Explain photochemistry of metallocenes. (3)

14. (a) Give a brief account on photochemical isomerization.

Or

(b) Discuss the mechanism of Hofmann-Loeffler-Freyterg reaction.

15. (a) Write notes on oranyl oxalate.

Or

(b) Explain the applications of Laser.

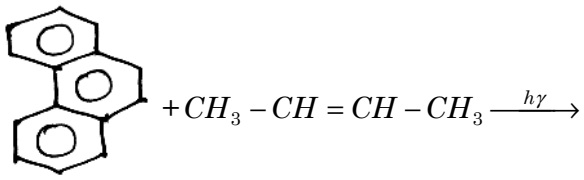
Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. (a) Discuss in detail about photophysical kinetics of unimolecular processes. (7)

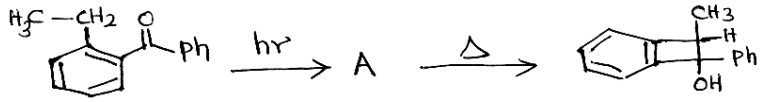
(b) What is radiation less transition? (3)

17. (a) Write the product for the following. (2)



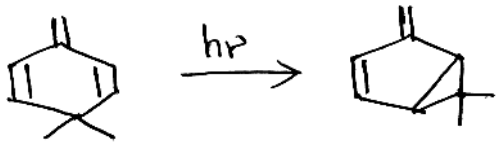
(b) Explain photo reduction with suitable examples. (4)

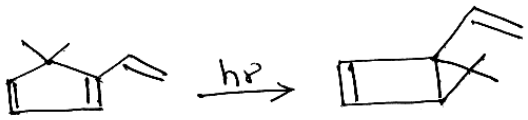
(c) Write the structure of the intermediate A in the following reaction with mechanism. (4)



18. Discuss the role of inorganic photochemistry in photochemical conversion and storage of solar energy.

19. (a) Give the Mechanism for the following Di-π methane rearrangement. (6)

(i) 

(ii) 

(b) Write notes on phototries rearrangement of anilides. (4)

20. Give a brief account on, (5+5)

(a) Reinecke's salt actinometers

(b) Quality marks of a chemical actinometer.

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