UG-CS-1417 **BCHES-11/ BCHES-11C**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

First Semester

CHEMISTRY – I

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What are functional groups? Give two examples.

2. What are hetero cyclic compounds? Give two examples

3. What is called group in the periodic table? Give two examples.

4. Write about ionic bond.

5. Write about ideal gas.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain the IUPAC nomenclature for alkanes, alkenes and alkynes with examples.

7. Explain Inductive effect and mesomeric effect with examples.

8. Explain Mendeleef's classical periodic law.

9. Explain Born-Haber cycle.

10. Explain Idea gas laws.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss IUPAC nomenclature for compounds having various functional groups.

12. Discuss about hypercojugation and resonance.

13. Discuss about s Mendeleef's Morden periodic law.

14. Discuss about lattice energy.

15. Discuss about critical constants.

16. Discuss about Lewis Theory.

17. Discuss about viscosity and surface tension.

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UG-CS-1418 BZOOSA–11/ BZOOSA–11C

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Zoology

First Semester

ANIMAL DIVERSITY

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Discuss about general characters of protozoans.
2. Write a short note on asexual reproduction of *Paramecium*.
3. Write a short note on Pearl formation.
4. Define pericardium.
5. Explain excretory organ of pigeon.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five question in 200 words.

All questions carry equal marks.

6. Elaborate the classification of animal kingdom in detail.

7. Write a brief note on locomotion and nutrition in *Euglena viridis*.

8. Discuss about the blood vascular system of mussel.

9. Discuss the Arterial System of shark.

10. Give a detailed account on nervous system of pigeon.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Write a brief note on the classification of Platyhelminthes upto class levels.

12. Describe the habit, habitat, morphology and structure of *Euglena viridis*.

13. Explain reproductive system and lifecycle of star fish in detail.

14. Discuss about the mechanism of respiration in frog and its types.

15. Illustrate the respiratory system with mechanism in pigeon.

16. Demonstrate the external morphology of prawn.

17. Elaborate the salient features of chordates.

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UG-CS-1420 BCHES–21

U.G. DEGREE EXAMINATION – FEBRUARY 2025

Chemistry

Second Semester

CHEMISTRY – II

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words each.

1. State the term inert pair effect.

2. What is Chugaev reaction?

3. Define molecular viscosities and structural viscosities.

4. List out the uses of superphosphate and potassium nitrate.

5. Illustrate homolytic and heterolytic cleavage.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

6. Discuss various types of quantum numbers.

7. What is 1,3 dipolar addition? Explain its mechanism with suitable example.

8. Explain the molar, atomic and structural refractors

9. Discuss the preparation and uses of Paris green and hydrocyanic acid.

10. Explain the structure, stability and reactions of carbanion.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 200 words.

11. Discuss the hybridisation pattern of sp3 and dsp2 with neat diagram.

12. (a) Compare E1 and E2 elimination.

(b) Give a short account on Hofmann degradation.

13. Explain the theory, types and applications of liquid crystals.

14. Write note on

    (a) pesticides and

    (b) fungicides. (5+5)

15. Explain the mechanism of cycloaddition and dehalogenation.

16. (a) Calculate the magnetic properties and bond order of the O_2 molecule with a Molecular orbital diagram.

    (b) Write a note on benzoin condensation. (5+5)

17. (a) Differentiate electrophilic and nucleophilic addition reactions

    (b) Give an account on hydroboration of olefins. (5+5)

UG-CS-1421 BZOOSA–22

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Zoology

Second Semester

ECONOMIC ZOOLOGY

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Harmful vectors

2. Composite fish culture

3. Apiculture

4. Economic importance of silk

5. Asil

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. List out harmful insect vector of human diseases.

7. Brief note on merits and demerits of exotic fishes.

8. Explain the apiculture problems and prospects.

9. Write note on diseases in silk worms.

10. Give an account on types of fowl breeds in India.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Explain the various pests of sugarcane.

12. Demonstrate the pearl culture method with diagram.

13. Elaborate the honey products and its uses.

14. How the harvesting, processing of cocoon, reeling and extraction of silk done? Explain.

15. Construct a note on rearing methods of fowls.

16. Explain the methods involved in culture of prawn.

17. Formulate an essay on development of apiary in India.

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UG–CS–1422 BCHES–31

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Third Semester

CHEMISTRY — III

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Write the preparations of nitrates.

2. Give the role of alums.

3. Write Vilsmeyer Haack reaction.

4. Define molecularity. Explain with example.

5. Explain classification of terpenoids.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain the general characteristic features of s-block elements.

7. Discuss the allotropic forms of carbon.

8. Explain the roles of Riemer-Tiemann reaction in synthetic chemistry with examples.

9. Explain the thermodynamic rate constants for bimolecular reactions.

10. Write the synthesis and structural elucidation of camphor.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.
All questions carry equal marks.

11. Briefly explain the biological importance of sodium and potassium.

12. Write a note on the following :

    (a) Properties and uses of silicon

    (b) Ceramics

13. Explain the aromatic nucleophilic substitution reaction with examples.

14. Discuss the following :

    (a) Effect of temperature on the rate of reactions.

    (b) Distinguish the collision theory and ARRT.

15. Write the synthesis and structural elucidation of limonene and α-terpineol.

16. Explain the characteristic features of p-block elements and elements of Group III A Compounds.

17. Briefly explain general methods for the determination of structure of alkaloids.

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UG-CS-1423 BPHYSA–11/ BPHYSA–11C

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Physics

Second Semester

ALLIED PHYSICS - 1

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What are Lissajous figures? Mention any one use.

2. Define “Bulk modulus” and “Rigidity modulus”. Give the units.

3. What is thermal equilibrium? Explain.

4. Define RMS value of an alternating current.

5. What do you mean by grazing incidence and grazing emergence?

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Give the important factors that a good auditorium should possess.

7. Explain surface tension of a liquid on the basis of molecular theory.

8. Describe Joule -Thompson experiment.

9. Derive an expression for the energy stored by a charged capacitor.

10. Describe an air cell. Explain how it can be used to find the critical angle of a liquid.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Obtain the expression for the resultant motion of a particle subjected to two SHMs of same period and acting at right angles.

12. Describe and explain Jaegar's method of measuring the surface tension of a liquid.

13. Explain the term "Entropy". With suitable theory determine change in entropy in reversible and irreversible processes.

14. Derive an expression for the loss of energy due to sharing of charges.

15. Explain how two thin prisms can be combined to produce dispersion without deviation.

16. Explain the production of ultrasonics with a neat circuit diagram.

17. Describe Poiseuille's method for determining the co-efficient of viscosity.

UG–CS–1424 BCHES–41

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Fourth Semester

CHEMISTRY — IV

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What is metal displacement reaction? Give example.

2. Give the roles of reactions in ionic liquids.

3. Write a note on inter-halogen compounds.

4. What are oxohalides of transition metals?

5. What is anti-malarial agents? Give example.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Write the following roasting and smelting.

7. Explain the green synthesis of paracetamol.

8. Give the characteristics of noble gases.

9. Discuss the comparative studies of lanthanides and actinides.

10. Explain in details about anti-inflamatory and antipyretics agents.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Write the importance of electrolytic reduction, electrolysis and Arkel de Boer method.

12. Briefly explain the phase transfer catalysis in green synthesis.

13. Discuss in details about the chemistry of phosphorous and selenium compounds.

14. Write the electronic configuration, oxidation states and uses of f-block elements.

15. Briefly explain the classification and structure of vitamin A, C and D.

16. Discuss the comparative studies of titanium, chromium, vanadium and iron compounds.

17. Write the roles of penicillin, chloromycetin, streptomycin and tetracycline.

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UG-CS-1425 BPHYSA–22/ BPHYSA-22C

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Physics

Second Semester

ALLIED PHYSICS - 2

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What is Fresnel diffraction?

2. What are two distinct features of the vector atom model?

3. What are magic numbers? Explain.

4. State Heisenberg's uncertainty principle.

5. Write De-Morgan's theorems.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.
All questions carry equal marks.

6. Explain the formation of colours on thin films of liquid due to reflected light.

7. State and explain Pauli's exclusion principle.

8. Define the terms "mass defect" and "binding energy". Find the relation between the two.

9. Derive Einstein's Mass energy equation.

10. Discuss about the reverse bias characteristics of Zener diode.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.
All questions carry equal marks.

11. Describe how a plane transmission grating can be used to find the wavelength of sodium-light.

12. Describe the vector model of an atom and explain the different quantum numbers associated with it.

13. Explain in detail the liquid drop model for a nucleus. Bring out the analogy between a small liquid drop and a nucleus.

14. What are the postulates of wave mechanics? Derive Schrodinger time dependent-equation.

15. What is a NAND gate? Explain how it can be used to realize the basic logic gates OR, AND and NOT gates.

16. What is a nuclear reactor? Explain the construction and working of a nuclear power reactor.

17. Draw the circuit of Half adder and Half subtractor and explain its working. Write down their truth table.

UG-CS-1426 **BCHES-51**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Fifth Semester

INORGANIC CHEMISTRY – I

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What are covalent crystals?
2. What is coordination number? Give two examples.
3. What is binding energy? Give two examples.
4. What are called protic solvents?
5. What is called dative bonding?

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain about Van der Waals crystals.

7. Explain about Werner's theory of coordination complexes.

8. Explain radioactive decay.

9. Explain properties and applications of liquid ammonia.

10. Explain in detail about clusters.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss in detail about Weiss and Miller indices.

12. Discuss about Valance bond theory of coordination complexes.

13. Discuss about isotopes, isobars and isotones.

14. Discuss in detail about aprotic solvents.

15. Discuss in detail about organo magnesium compounds.

16. Discuss about crystal defects.

17. Discuss about isomerism in coordination complexes.

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UG-CS-1427 BCHES–52

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Fifth Semester

ORGANIC CHEMISTRY — I

Time : 3 hours Maximum marks : 70

PART A — ($3 \times 3 = 9$ marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What are furans?

2. What is plane polarized light?

3. What is cis-trans isomerism? Give two examples.

4. What are called intramolecular rearrangements?

5. What is called finger print region?

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain about Fisher Indole synthesis.

7. Explain about asymmetry of molecules.

8. Explain about optical activity of biphenyls and allenes.

9. Explain about Wagner-Meerwein and Pinaco-Pinacolone rearrangement.

10. Explain in detail about factors affecting chemical shift.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven question in 500 words.

All questions carry equal marks.

11. Discuss in detail about the chemistry of indole, quinoline and isoquinoline.

12. Discuss in detail about ORD.

13. Discuss about conformational isomerism.

14. Discuss in detail about rearrangements to electron deficient nitrogen.

15. Discuss in detail about principles and of NMR spectroscopy.

16. Predicts the NMR signals of the following compounds :

    (a) Ethanol,

    (b) Propanol,

    (c) Diethyl ether,

    (d) Acetone,

    (e) Anthacene.

17. Discuss about optical purity and recemization.

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UG-CS-1428 **BCHES-53**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Fifth Semester

PHYSICAL CHEMISTRY – I

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What do you understand by inversion temperature, thermodynamic system and surroundings?

2. Differentiate between ideal and non-ideal solutions.

3. State Nernst equation and explain the terms in it.

4. Explain the Tyndall effect.

5. Distinguish between absorption and emission spectroscopy.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Differentiate between (a) extensive and intensive properties (b) open, closed and isolated systems

7. State Raoult's law. What are negative and positive deviations from Raoult's law?

8. Discuss the principle of determination of pH of the solution with the help of a glass electrode.

9. Explain the origin of charge on the colloids.

10. Explain the factors contribute the broadening of spectral lines and intensity of the spectral transitions.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Prove thermodynamically that Joule-Thomson effect for an ideal gas is zero and deduce the expression of Joule-Thomson coefficient for real gases in terms of van de Waals constant "*a*" and "*b*".

12. Discuss the method of determination of the elevation of the boiling point of a liquid containing a non-electrolyte in solution.

13. Describe the construction and working principle of a calomel electrode.

14. (a) Explain the stability of colloids.

    (b) Explain the Schulze-Hardy rule for coagulation.

15. Discuss the different types of molecular spectra.

16. (a) Define EMF and mention its thermodynamic significance.

    (b) With neat cell diagram, explain the terminology used in representing an electrochemical cell.

17. (a) Derive the expressions for the depression of freezing point.

(b) Write a short note on stern double layer.

UG-CS-1429 BCHES-54

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Fifth Semester

POLYMER CHEMISTRY

Time : 3 hours Maximum marks : 70

PART A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Differentiate between natural polymers and synthetic polymers.

2. What are the configurations of polymer chains?

3. What are the weight average molecular weight?

4. Distinguish between cellulose and amylose.

5. Define polymer composites. Give an example.

PART B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Compare and contrast between thermoplastic and thermosetting polymers.

7. Explain the relationship between Tg and Tm of a polymers.

8. Discuss the chemical and spectroscopic analysis of polymers.

9. Explain the significance of stereoregularity in polymers.

10. Explain the applications of functional polymers in various fields.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss the classification of polymers and polymerization techniques.

12. Explain the morphology and order in crystalline polymers.

13. Describe the end group and viscosity method of determination of molecular weights of polymers.

14. Explain the stereoisomerism in observed in mono-substituted and di substituted ethylene.

15. Discuss the different types of specialty polymers with suitable examples.

16. Write a short note on

    (a) electrically conducting polymers

    (b) molecular weight determination using ultra centrifugation method.

17. A suspension contain equal masses of particles with molecular masses 20000 and 40000. Calculate M_n and M_m.

UG-CS-1430 BCHES–61

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Sixth Semester

INORGANIC CHEMISTRY – II

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Sketch the structure of Wurtsite.

2. Give the role of magnetic properties of coordination compounds.

3. Define half-life period. Give example.

4. Give examples of acidic and basic buffers.

5. What is bridging carbonyls? Give example.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Write the structure of Sodium chloride and Rutile.

7. Explain nickel carbonyl chelates with examples.

8. Give the importance of Geiger Muller and ionization counters.

9. Explain Henderson equation.

10. What are terminal carbonyls? Explain its role.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss in details about radius ratio rule and non-stoichiometric compounds

12. Explain the applications of chelates in medicine.

13. Write the applications of nuclear energy in agriculture and medicine.

14. Briefly explain the Arrhenius and Bronsted-Lowry theory in acid base chemistry.

15. Explain the chemistry of carbenes and carbynes in organometallic compounds.

16. Discuss in details about nuclear hazards with examples.

17. Write the structure of Zinc blends and defects of solids with structural elucidations.

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UG-CS-1431 BCHES–62

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Sixth Semester

ORGANIC CHEMISTRY – II

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. What is synthons? Give its role.

2. Define epimers.

3. What are conformers? Give examples.

4. Write any three organic reducing agents.

5. Write the principle of UV-visible spectroscopy.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain target molecule with examples.

7. What are optical isomers? Give its role in synthetic organic chemistry.

8. Explain the steric effect and dipole-dipole interactions in conformers.

9. Discuss in details about Knoevenagel condenzations with its role in organic synthesis.

10. Explain the UV spectroscopy approaches in simple molecules.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss the functional group interconversion in retrosynthetic analysis.

12. Explain the Cahn-Ingold-Prelog rule and R and S notations in optical isomers.

13. Write the conformational analysis of cyclopentane and cyclohexane.

14. Write a brief note on MPV, Brich and Clemmensen reductions.

15. Briefly explain the mass spectroscopy.

16. Discuss in details about the applications of UV spectroscopy.

17. Write a brief note on D and L representations for optical isomers with examples.

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UG-CS-1432 **BCHES–63**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Sixth Semester

PHYSICAL CHEMISTRY – II

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Define absolute entropy.

2. What is symmetry? Give example.

3. What is emf? Give its role.

4. Distinguish between nanoparticles and nanomaterials.

5. Give the principle of molecular spectroscopy.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain Nernst heat theorem.

7. Discuss the crystallographic symmetry with examples.

8. Write a note on liquid junction potential.

9. Explain the importance of nanomaterials in electronics and medicine

10. What is selection rule? Give its role in molecular spectroscopy.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Discuss in details about Gibbs-Helmholtz equations.

12. Briefly explain the matrix representations of symmetry operations.

13. Write the principle, working and uses of lead storage cell.

14. What are the physical methods involved in synthesis of nanoparticles.

15. Discuss the vibrational energy level diagrams in molecular spectroscopy.

16. What is cell? Explain primary, and secondary cells with examples.

17. Write a brief note on third law of thermodynamics.

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UG-CS-1433 **BCHES–64**

U.G. DEGREE EXAMINATION – FEBRUARY 2025.

Chemistry

Sixth Semester

ENVIRONMENTAL CHEMISTRY AND LABORATORY HYGIENE

Time : 3 hours Maximum marks : 70

SECTION A — (3 × 3 = 9 marks)

Answer any THREE questions out of Five questions in 100 words.

All questions carry equal marks.

1. Sketch the nitrogen cycle.

2. What are micro nutrients? Give its role.

3. Define flocculation.

4. What are the sources of radioactive pollutants?

5. Write a note on fume disposal.

SECTION B — (3 × 7 = 21 marks)

Answer any THREE questions out of Five questions in 200 words.

All questions carry equal marks.

6. Explain the sources of air pollution.

7. Write the control measure of water pollution.

8. Give the roles of filtration and sedimentation methods.

9. Explain the types of radioactive pollutants.

10. Discuss the storage and handling of carcinogenic chemicals.

SECTION C — (4 × 10 = 40 marks)

Answer any FOUR questions out of Seven questions in 500 words.

All questions carry equal marks.

11. Write a brief note on acid rain, ozone depletion and green house effect.

12. Briefly explain the water quality parameters with standards.

13. Explain the following

    (a) ultrafiltration

    (b) electro-dialysis

    (c) reverse osmosis.

14. Discuss the effects of radioactive pollutants.

15. Write a note on poisonous and inflammable chemicals.

16. Briefly explain the activated sludge, lagoons and ponds in water treatment.

17. Explain the following

    (a) safety rules

    (b) storage and handling of vaporizable chemicals.

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