

Total No. of Questions :6]

SEAT No. :

P2204

[4824]-11

[Total No. of Pages : 2

M.Sc.

BIOCHEMETRY

BCH-170: Biomolecules

(2008 & 2010 Pattern) (Semester-I)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *Answer to the both sections should be written on separate answer sheets.*
- 2) *All questions are compulsory.*
- 3) *Figures to the right indicate full marks.*

SECTION-I

Q1) Answer any five of following. [15]

- a) What are lipoproteins? Give the significance.
- b) What is the role of vitamins as coenzyme explain with example.
- c) Write account of LDL, VLDL, HDL.
- d) What are anomers and epimers? Explain with example.
- e) What are chemical reactions of carbohydrates. Explain.
- f) Define rancidity, acid number and their relation.

Q2) Answer any three of the following. [15]

- a) Give the classification of lipids with example.
- b) Give the structures of following
 - i) Glucopyranose
 - ii) Maltose
 - iii) Cellulose
 - iv) Fructofuranose
 - v) Fructose
- c) Write note on biological significance of glucose and fructose.
- d) Explain the classification of carbohydrate with example.

P.T.O.

- Q3)** Write note on any two of the following: [10]
- a) Give the deficiency condition of vitamins.
 - b) Phospholipids.
 - c) Reaction of glucose with oxidising and reducing agents.

SECTION-II

- Q4)** Answer any five of following: [15]
- a) What are zwitterions? How are they formed?
 - b) Draw structure of following tetrapeptide.
 - i) Gly - Val - His - Phe.
 - ii) Cys - Arg - Trp - Ala.
 - iii) Leu - Cys - Asn - Val.
 - c) Explain super-secondary structure of proteins.
 - d) What are non-standard amino acids. Explain with example.
 - e) Enlist and explain the factors stabilizing the structure of protein.
 - f) What are globular proteins? Explain with example.

- Q5)** Answer any three of following: [15]
- a) Write note on acid-base titration curve of amino acids.
 - b) Give the classification of proteins on basis of their biochemical functions.
 - c) Discuss the quaternary structure of haemoglobin.
 - d) What are levels of protein conformation. Explain with example and their significance.

- Q6)** Write note on any two of following: [10]
- a) Explain classification and properties of aminoacids.
 - b) Ramchandran plot.
 - c) Edmann's and Sanger's reagent reactions with protein.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P2205

[4824]-12

M.Sc.

BIOCHEMISTRY

BCH - 171: Enzymology and Biophysical Techniques

(2008 & 2010 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw neat labelled diagrams wherever necessary.*
- 3) *Figures to the right indicate full marks.*
- 4) *Answers to the two sections should be written in separate answer books.*

SECTION -I

Enzymology

Q1) Answer any three of the following: **[15]**

- a) Give the nomenclature and classification of enzymes.
- b) Write a note on covalent catalysis mechanism of enzyme action.
- c) Write a note on allosteric enzymes.
- d) Explain the regulation of enzyme action by phosphorylation and dephosphorylation.

Q2) Answer any three of the following: **[15]**

- a) Derive the Michalis-Menton equation.
- b) Describe the various methods used to determine mechanisms of enzyme action.
- c) Write a note on competitive inhibition with suitable example.
- d) What is an enzyme turnover? Give its significance.

P.T.O.

Q3) Answer any two of the following: [10]

- a) Acid - base catalysis.
- b) Describe the ping-pong mechanism of double substrate enzyme reaction.
- c) Describe the various factors an which enzyme reaction rate is affected.

SECTION -II

Biophysical Techniques

Q4) Answer any three of the following: [15]

- a) Write a note on lyophilisation.
- b) Describe in detail the principle of in exchange chromatography.
- c) Give the importance of moving phase TLC.
- d) What is dialysis? How is it used in protein purification procedures?

Q5) Answer any three of the following: [15]

- a) Write a note on isoelectric focussing.
- b) What is affinity chromatography? Give the principle of this process.
- c) Distinguish between partition and adsorption chromatography with suitable example.
- d) What is gel filtration? How can it be used to purify proteins?

Q6) Answer any two of the following: [10]

- a) Write a note on principle and applications of HPLC.
- b) Distinguish between nature PAGE and SDS-PAGE procedures and comment on their use in protein purification and characterisation.
- c) Give an account of the various special chromatographic techniques used for nucleic acids.



Total No. of Questions : 6]

SEAT No. :

P2206

[4824]-13

[Total No. of Pages : 2

M.Sc.

BIOCHEMISTRY

BCH - 172 : Cell Biochemistry (2008 Pattern)

**BCH - 172 : Microbiology and Cell Biochemistry of
Eukaryotes (2010 Pattern)**

(Semester - I)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Answer both the sections on separate answer sheets.*

SECTION - I

Microbiology

Q1) Answer any three of the following: **[15]**

- a) What are the different methods of isolation of pure culture? Explain any one in detail.
- b) Give the physical and chemical characteristics of micro-organisms.
- c) Explain the types of nitrogen fixation in detail.
- d) Give the methods for production of mutants by chemical and physical agents.
- e) Explain electron microscope in detail.

Q2) Attempt any three of the following: **[15]**

- a) Explain phase contrast microscope in detail.
- b) How will you control growth of micro-organism by physical and chemical agents.
- c) How will you differential plant and animal viruses.
- d) Define antimicrobial agents, sanitizer, disinfectant with example.
- e) Discuss production of alcohol.

P.T.O.

Q3) Answer any two of the following: [10]

- a) Explain replication of Herpes simplex virus.
- b) Explain bacterial growth curve.
- c) Write a note on exotoxin and endotoxin.

SECTION - II

Cell Biochemistry

Q4) Answer any three of the following: [15]

- a) Write a note on different phases of mitosis.
- b) Write a note on cytoskeleton and its components.
- c) What is stem cell and what are the major types of stem cells.
- d) Define the term cell cycle? Elaborate on difference between mitosis and meiosis.
- e) Write a note on fungi and its biological importance.

Q5) Attempt any three of the following: [15]

- a) Define the term fertilization. What is the significance of fertilization.
- b) Write a note on density gradient centrifugation.
- c) Explain with diagram difference between prokaryotic and eukaryotic cell.
- d) Write a note on organogenesis.
- e) Describe the structure and various functions of mitochondria in the cell.

Q6) Answer any two of the following: [10]

- a) Write a note on different types of transport mechanism across plasma membrane.
- b) Define the term gametogenesis. Differentiate between spermatogenesis and oogenesis.
- c) Write a note on cell junction.



Total No. of Questions : 6]

SEAT No. :

P2207

[4824]-21

[Total No. of Pages : 2

M.Sc.

BIOCHEMISTRY

BCH-270 : Bioenergetics & Metabolism

(2008 & 2010 Pattern) (Semester-II)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw labelled diagrams wherever necessary.*
- 3) *Figures to the right hand indicate full marks.*
- 4) *Answers to the two sections should be written in separate answer books.*

SECTION-I

Q1) Answer Any Three of the following: [15]

- a) Write a note on high energy compounds with special reference to ATP.
- b) Discuss the regulation and significance of glycolysis.
- c) Write a note on glyoxalate cycle.
- d) Oxidative phosphorylation in mitochondria.

Q2) Answer Any Three of the following: [15]

- a) Describe the Hill's reaction and give its significance.
- b) Write a note on bacterial photosynthesis.
- c) Describe glycogen synthesis and its regulation.
- d) Give the bioenergetics of the citric acid cycle.

Q3) Answer Any Two of the following: [10]

- a) Give a detail account of pentose phosphate pathway.
- b) Write a note on photosynthetic pigments.
- c) Write a note on electron transport chain.

P.T.O.

SECTION-II

Q4) Answer Any Three of the following: **[15]**

- a) Write a note on transamination.
- b) Give the bioenergetics of odd number carbon atom fatty acids in beta oxidation.
- c) Write a note on pyrimidine degradation.
- d) Give an account of any two inborn errors of amino acid metabolism.

Q5) Answer Any Three of the following: **[15]**

- a) What are porphyrins? What is their role in metabolism?
- b) Describe the one carbon atom transfer by folic acid in biosynthesis of glycine.
- c) Write a note on formation of ketone bodies and their significance.
- d) Describe urea cycle in detail.

Q6) Answer Any Two of the following: **[10]**

- a) Write a note on biosynthesis of cholesterol.
- b) Describe the gamma glutamyl cycle.
- c) Give an account of the biosynthesis of the purine nucleus ie the purine ring.



Total No. of Questions :4]

SEAT No. :

P2208

[4824]-22

[Total No. of Pages :2

M.Sc.

BIOCHEMISTRY

BCH - 271: Techniques in Characterization of Biomolecules

(2008 & 2010 Pattern) (Semester - II)

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figures to the right side indicate full marks.*

Q1) Answer any four of the following:

[20]

- a) Describe the use of sedimentation in DNA analysis.
- b) Write a note on partial specific volume and diffusion coefficient.
- c) Describe the applications of viscosity.
- d) Explain the principle of potentiometric biosensors.
- e) Write a note on electron spray assisted ionization.

Q2) Attempt any four of the following:

[20]

- a) What is meant by quenching? Explain the different factors that are involved in quenching.
- b) Differentiate between preparative and analytical ultracentrifugation.
- c) Discuss the theory of viscosity.
- d) Explain the units of measuring radiation adsorption.
- e) What are the factors affecting on viscosity. Explain any one in detail.

P.T.O.

Q3) Answer any two of the following: [20]

- a) Describe the principle and working of ESR.
- b) Explain the theory and applications of autoradiography.
- c) What are mediators? Explain the principle of mediators based biosensors. With suitable example.

Q4) Write short notes (any four) [20]

- a) MALDI- TOP- MS.
- b) ORD and CD.
- c) Immunosensors.
- d) Radiation dosimetry.
- e) Ostwald capillary viscometer.

EEE

Total No. of Questions : 6]

SEAT No. :

P2209

[4824]-23

[Total No. of Pages : 2

M.Sc.

BIOCHEMISTRY

BCH-273: Membrane Biochemistry & Nucleic Acid (2008 Pattern)

BCH - 273 : Membrane Biochemistry & Genetics (2010 Pattern)

(Semester - II)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to right indicate full marks.*
- 3) *Answer section I and section II in separate answer sheets.*

SECTION - I

Membrane Biochemistry

Q1) Answer any three questions

[15]

- a) Describe active and passive transport.
- b) Explain the different factors affecting the properties of the membrane.
- c) What is diffusion? Explain osmoregulation.
- d) Explain the mechanism of transport of Na⁺ and K⁺ ion.
- e) Explain the molecular mechanism of valinomycin and gramicidin.

Q2) Attempt any three of the following :

[15]

- a) Describe in detail the drug transport through membrane.
- b) Explain various models of biological membrane.
- c) Describe the assembly of virus membrane receptor.
- d) Explain receptor mediated endocytosis.
- e) How antimicrobial agents reach their target site. Explain the mode of penetration with example.

P.T.O.

Q3) Answer any two of the following: [10]

- a) Explain the role of protein in exocytosis and endocytosis.
- b) Write in detail the role of Na-K ATPase in membrane transport.
- c) Explain in detail different voltage gated channels.

SECTION - II

Genetics

Q4) Answer any three questions: [15]

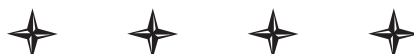
- a) Enlist salient features of Watson and Crick model.
- b) State and describe the law of segregation with example.
- c) Differentiate between A, B, and Z form of DNA.
- d) Write a note on mutant isolation and its selection.
- e) Write a note on Tetrad analysis.

Q5) Attempt any three of the following [15]

- a) What is meant by specialized transduction? Explain how does it differ from generalized transduction.
- b) Define bacteriophage. Add a note on lytic cycle.
- c) Explain Mendelian laws of inheritance with example.
- d) What is plasmid? Enlist its different types.
- e) Discuss the experimental evidence that proves DNA as genetic material.

Q6) Answer any two of the following [10]

- a) Describe Messelson and Stahl experiment and its interpretation.
- b) Explain the features of genetic code.
- c) Write a note on lac operon.



Total No. of Questions :4]

SEAT No. :

P2210

[4824]-31

[Total No. of Pages : 2

M.Sc.

BIOCHEMISTRY

BCH-370: Molecular Biology

(2008 and 2010 Pattern) (Semester-III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right side indicate full marks.*
- 3) *Neat diagrams must be drawn wherever necessary.*

Q1) Answer any four of following. **[20]**

- a) Explain signal hypothesis in protein targeting.
- b) What are retrotransposons? Give their method of transposition.
- c) Write note on Rho dependent and Rho-independent termination factors.
- d) Explain the clover leaf structure of t-RNA.
- e) Write note on enzymes required in DNA replication.

Q2) Attempt any two of the following. **[20]**

- a) Explain protein targeting to nucleus in detail.
- b) What is splicing of RNA? Explain alternative splicing and give the need for splicing.
- c) Explain eukaryotic transcription and compare it to the prokaryotic transcription.

Q3) Answer any four of following **[20]**

- a) Give importance of methylation of DNA in E.coli.
- b) Give the post-translational modification of mRNA.
- c) Write note on transposable elements? Explain LINE & SINE in brief.
- d) Write note on inhibitors of protein synthesis.
- e) Explain Ames Test with its application.

P.T.O.

Q4) Write note on (any four).

[20]

- a) Nucleotide excision repair system.
- b) Role of DNA polymerases in replication.
- c) Shine Dalgarno sequence and pribnow box.
- d) Retroviruses.
- e) Composite and non-composite transposition.



Total No. of Questions :6]

SEAT No. :

P2211

[4824]-32

[Total No. of Pages :3

M.Sc.

BIOCHEMISTRY

BCH-371: Medical Biochemistry and Immunology

(2008 & 2010 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Answers to the two sections should be written on separate answer sheets.*
- 3) Figures to the right side indicate full marks.*

SECTION -I

(Medical Biochemistry)

Q1) Answer any three of the following: [15]

- a) Explain the mode of action of antibiotics that inhibit the biosynthesis of cell wall with example.
- b) Describe how the antibiotics inhibit protein biosynthesis with example.
- c) Explain role of puromycin, streptomycin and erythromycin.
- d) Explain in detail the extrinsic mechanism of apoptosis.
- e) Write an account on Hemoglobinopathies with respect to thalassemias.

Q2) Attempt any three of the following: [15]

- a) Describe the life cycle of influenza virus.
- b) Describe the enzyme involved in heart diseases and their importance in pathological findings.

P.T.O.

- c) Explain the molecular basis of hemoglobinopathies.
- d) Enlists causative agents of cancer and role of viruses in carcinogenesis.
- e) Explain the pathophysiology of myocardial infarction and coronary heart diseases.

Q3) Answer any two of the following: **[10]**

- a) Describe the physiological role of lysosomes & its pathology.
- b) Describe the life cycle of malaria.
- c) Describe molecular genetics of cancer.

SECTION -II

(Immunology)

Q4) Answer any three of the following: **[15]**

- a) Explain different types of immunity generated in our body.
- b) Elaborate on the steps involved in the production of monoclonal antibodies.
- c) Explain primary lymphoid organ in detail.
- d) Explain the principle, procedure and application of ELISA techniques.
- e) Where do T cells and B cells mature in the body. How are they responsible for desired immune response of the host system.

Q5) Attempt any three of the following: **[15]**

- a) Why are antibody termed as immunoglobulins? List out the different classes of immunoglobulins and write on their function in the body.

- b) Compare the complement activation events of the classical pathway with those of alternate pathway.
- c) Discuss the etiology and development of AIDS.
- d) List out the types of hypersensitivity reaction and give their features.
- e) What are immunodeficiency diseases. Discuss the features of one such disease.

Q6) Answer any two of the following: **[10]**

- a) List out the different types of antigen -antibody reactions explain any one.
- b) What is MHL gene. Explain its structural features.
- c) Explain Blood antigen and Rh factors.

EEE

Total No. of Questions : 4]

SEAT No. :

P2212

[4824]-33

[Total No. of Pages : 2

M.Sc.

BIOCHEMISTRY

BCH-372: Signal Transduction Path Ways (2008 Pattern)

BCH - 372 : Neurochemistry (2010 Pattern)

(Semester - III)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*
- 3) *Draw neat labelled diagram where necessary.*

Q1) Answer any four of the following:

[20]

- a) Explain the reuptake mechanism of neurotransmitters.
- b) Describe the role of Na⁺, and K⁺ channels in propagation of nerve impulses.
- c) Discuss the role of hypothalamus.
- d) Explain the role of protein kinase in memory.
- e) Write a note on neuropeptides.

Q2) Attempt any two of the following:

[20]

- a) Explain the steps involved in axonal neurotransmission.
- b) How does closure of sodium channels hyperpolarise the photoreceptor cells.
- c) Describe the location and function of the somatic sensory receptor for tactile sensation.

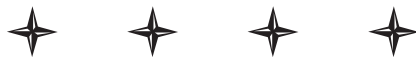
P.T.O.

Q3) Answer any two of the following: **[20]**

- a) Describe the difference in afferent pathway and efferent pathway with example.
- b) Write a note on sensory perception.
- c) Describe taste receptors and, transduction mechanism.

Q4) Write short notes on : (Any four) **[20]**

- a) Basilar membrane.
- b) Synaptic plasticity.
- c) GABA
- d) Chemical messengers.
- e) Natural factors effecting the development of CNS.



Total No. of Questions : 4]

SEAT No. :

P2213

[4824]-34

[Total No. of Pages : 2

M.Sc.-II

BIOCHEMISTRY

**BCH-373 : Biochemical Toxicology
(2008 & 2010 Pattern) (Semester-III)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Figures to the right indicate full marks.*

Q1) Answer Any Four of the following: **[20]**

- a) What are the aims and objective of the experimental toxicology studies?
How acutetoxicity of toxicant is determined?
- b) Write a note on teratology and reproduction.
- c) Give the significance of occupational toxicology.
- d) Explain the dose response relationship.
- e) What are chemical application of toxicology.

Q2) Attempt Any Four of the following: **[20]**

- a) What are toxic effect of ethanol.
- b) Explain phase I and phase II niotransformation reaction.
- c) Explain the vascular effect on brain and lung.
- d) How will you evaluate the toxicity of a substance?
- e) Give the fate of cadmium in human body.
- f) Explain mutagenecity.

P.T.O.

Q3) Answer Any Four of the following:

[20]

- a) Give the principle of toxicology. Classify the toxic agents.
- b) Explain allergic and idiosyncratic reaction.
- c) Enumerate the amphibian toxins and their toxic effects.
- d) How oxidative types of air pollution is generated?
- e) Give the fate of mercury in human body.
- f) Give the chemical composition of snake venom.

Q4) Answer Any Four of the following:

[20]

- a) What is the site and mechanism of action of DDT.
- b) Explain with example acute, subacute, subchronic and chronic toxicity.
- c) Explain AIMS test.
- d) Explain component of cytochrome p-450 mono-oxygenase system.
- e) Explain with example plant and animal toxin.
- f) Explain with suitable example detoxication and toxication reaction.



Total No. of Questions : 6]

SEAT No. :

P2214

[4824]-41

[Total No. of Pages : 4

M.Sc.

BIOCHEMISTRY

BCH-470 : Biochemical Endocrinology & Tissue Culture

(2008 Pattern) (Old)

BCH - 470 : Biochemical Endocrinology and Plant Biochemistry

(2010 Pattern) (New)

(Semester-IV)

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Draw neat labelled diagrams wherever necessary.*
- 3) Figures to the right hand indicate full marks.*
- 4) Answers to the two sections should be written in separate answer books.*

SECTION-I

(Biochemical Endocrinology)

Q1) Answer Any Three of the following: [15]

- a) What are prostaglandins? Explain their functions.
- b) Describe the mode of action of the hormones of the pancreas.
- c) Write a note on gastrointestinal hormones.
- d) What are the hormones produced by the adrenal medulla? Describe their mode of action.

Q2) Attempt Any Three of the following: [15]

- a) Give the structure, transport of the thyroid hormone. What disorders are related to thyroid hormone imbalance.
- b) Write a note on enkephalins.

P.T.O.

- c) What are secondary messengers? Give the role of cAMP (cyclic) AMP as a secondary messenger.
- d) Explain the mechanism of steroid hormones in regulation of gene expression.

Q3) Answer Any Two of the following: [10]

- a) Explain in detail the mechanism of action of the pituitary hormone and the effect of over and less production on growth.
- b) Explain the role of the parathyroid hormone.
- c) What is calcium signalling? Explain its significance in hormone action.

SECTION-II

(Tissue Culture)

Q4) Answer Any Three of the following: [15]

- a) Describe the wet sterilisation procedure.
- b) Write a note on hardening in plant tissue culture.
- c) Describe the various types of organ culture.
- d) Give the importance of various micronutrients used in plant tissue culture media.

Q5) Answer Any Three of the following: [15]

- a) Give the process for induction of hairy root culture having Agrobacterium rhizogenes.
- b) Distinguish between suspension culture and monolayer culture.
- c) Give the application of plant tissue culture.
- d) Describe the characteristics of an established cell line.

Q6) Write short notes on (Any Two):

[10]

- a) Contact inhibition.
- b) Growth regulators in plant tissue culture.
- c) Protoplast fusion.
- d) Cell Banking.

SECTION-II

(Plant Biochemistry)

Q4) Attempt Any Three of the following:

[15]

- a) Biosynthesis of sucrose.
- b) Role of phosphorus in plant growth.
- c) Describe the light reaction of photosynthesis.
- d) Write a note on pharmaceutical value of plants.

Q5) Answer Any Three of the following:

[15]

- a) Write a note on source-sink relationship in plants.
- b) Explain the role of auxin in plant growth.
- c) Explain the role of calcium in plant growth.
- d) Describe the structure of chloroplasts with the help of a neat labelled diagram.

Q6) Write short notes on (Any Two):

[10]

- a) Write a note on C_4 mechanism of CO_2 fixation in plants.
- b) Explain the various abiotic stresses in plants and their physiology.
- c) Biochemical changes in ripening. Explain the role of growth regulators in ripening.



Total No. of Questions :6]

SEAT No. :

[Total No. of Pages :2

P2216

[4824]-43

M.Sc.

BIOCHEMISTRY

**BCH - 471: Fermentation and Enzyme Technology and Food Technology
(2008 Pattern)**

**BCH - 471: Fermentation Technology and Food Technology (2010 Pattern)
(Semester - IV)**

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

- 1) All questions are compulsory.*
- 2) Figures to the right side indicate full marks.*
- 3) Answers to both the sections should be solved in separate answer sheets.*

SECTION -I

(Fermentation)

Q1) Answer any three of the following: [15]

- a) What are the different criteria for isolation of industrially important micro-organism.
- b) What are the different recovery process of the product? Which one is best. Justify your answer.
- c) How will you proceed for isolation of resistant mutant.
- d) Give the different methods of strain improvement.
- e) Explain the process of production of penicillin.

Q2) Attempt any three of the following: [15]

- a) Explain the method of isolation of micro-organism by enrichment culture techniques.
- b) What are the basic requirement for expression of foreign DNA in micro-organism?
- c) How will you proceed for isolation of auxotrophic mutants.
- d) Explain the design of fermenter in detail.
- e) Explain the isolation method for intracellular and extracellular products.

P.T.O.

Q3) Answer any two of the following: [10]

- a) Explain media formulation.
- b) Explain the effect of inhibitor on fermentation process.
- c) Discuss biological and physical method of effluent treatment.

SECTION -II

(Food Technology)

Q4) Answer any three of the following: [15]

- a) Give the foods of animal and plant origin. Give its importance.
- b) What are the different methods of monitoring of food quality.
- c) Explain primary feed stock.
- d) What are the different enzymes used in food processing.
- e) How will you modify food genetically explain with suitable example.

Q5) Attempt any three of the following: [15]

- a) Explain enzymes used in fruit juice technology.
- b) Give the method of starch production.
- c) Write a note on single cell protein.
- d) Give the manufacture of natural and synthetic sweetener.
- e) How will you perform meat tenderization.

Q6) Answer any two of the following: [10]

- a) Explain different food additives used in industries.
- b) How will you manufacture synthetic syrups.
- c) What are the different enzymes used for food analysis.

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