**Total No. of Questions : 06]**

**SEAT No. :** ____

**P2784**

**[Total No. of Pages : 3**

# [5024] - 11

## M.Sc.

## BIOCHEMISTRY

## BCH - 170 : Biomolecules

## (2008 and 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) ***Draw neat labelled diagrams wherever necessary.***
4) ***Answer to two sections should be written on separate answer books.***

## SECTION - I

***Q1)*** Attempt any five of following. **[15]**

a) What are biological buffers? Explain with examples .

b) Draw structure of :

(i) Maltose (ii) Starch (iii) Glucose

c) Write a note on rancidity .

d) How are macromolecules formed from monomeric subunits.

e) What are fat soluble vitamins ? Enlist their names .

f) Explain what are amino sugars ?

***P.T.O.***

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

a) Explain amphipathic nature of phospholipids .

b) Write note on ascorbic acid , its structure and role .

c) Differentiate between anomers and epimers with examples .

d) Give one example of each of the following with structure :

(i) Monosaccharide

(ii) Aldohescase

(iii) Triacylglyaral

(iv) HDL

(v) Steroids .

***Q3)*** Write note on (any two) : **[10]**

a) Classification of lipids with examples

b) Coenzymes

c) Polysaccharides

## SECTION - II

***Q4)*** Attempt any five of the following : **[15]**

a) Explain what is peptide bond with example .

b) What are rare amino acids.

c) Draw labelled diagram of $\alpha$–helical structure .

d) Write note on sanger's reaction .

e) Enlist and describe biological functions of proteins .

f) Aminoacids are zwitterions .Explain

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

a) Describe the various forces stabilizing the tertiary structure of proteins.

b) Write note on end group analysis .

c) Explain the acid base properties of aminoacids. Explain aminhydrin reaction.

d) How can we determine ‘N’ and ‘C’ terminal amino acids in a polypeptide.

***Q6)*** Write notes on any two : **[10]**

a) Ramchandran plot.

b) Super secondary structures.

c) Titration curves of glycine.

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**Total No. of Questions : 06]**

**SEAT No. :** ____

**P2785**

**[Total No. of Pages :2**

# [5024] - 12

## M.Sc.

## BIOCHEMISTRY (Semester - I)

## BCH - 171 : Enzymology and Biophysical Techniques

## (2008 and 2010 Pattern)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

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

## SECTION - I

### Enzymology

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

a) Derive Michaclis-menten equation .

b) Explain catalytic power & substrate specificity of an enzyme .

c) Give clinical significance of acid and alkaline phosphatases .

d) Discuss in detail enzyme specificity .

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

a) Explain Mechanism of action of triosephosphate isomerase .

b) What do you understand by term homogenization ? Explain different techniques.

c) What are applications of purified enzymes? How purify of an enzyme is judged .

d) Explain term isoenzyme with suitable examples .

***P.T.O.***

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

a) Write note on enzymes diagnosed in liver disease .

b) What is positive cooperativity ? Explain with suitable example .

c) Give effect of competitive and non-competitive inhibitors on double recirprocal plot .

## SECTION - II

## Biophysical techniques

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

a) Differentiate between thin layer chromatography and gets filtration chromatography .

b) Explain any two applications of dialysis .

c) Write the applications of purified enzymes ? How enzymes are separated on basis of solubility .

d) Explain principle and applications of isoelectric focusing .

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

a) Explain in brief theory of electrophoresis .Give the types and explain disc PAGE

b) Draw labelled diagram of UV-VIS spectrometer and explain the applications .

c) Write short note on hydrophobic chromatography .

d) What is restriction mapping? Explain with suitable example .

***Q6)*** Answer any two **[10]**

a) How electrophoresis separate praterns based on molecular weight?

b) How does HPTLC give rapid seperation and higher resolution ?

c) Ion exchange materials may be classified in terms of acidic or basic strength of functional groups attached to polymer matrix .Explain statement .

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**Total No. of Questions : 6]**

**SEAT No. :**

**P2786**

**[Total No. of Pages : 2**

# [5024] - 13

## M.Sc.

## BIOCHEMISTRY

## BCH - 172 : Microbiology and Cell Biochemistry of Eukaryotes

## (2008 and 2010 Pattern) (Semester - I)

***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 books.***
3) ***Figures to the right indicate full marks.***
4) ***Draw neat labelled diagrams wherever necessary.***

### SECTION - I

### Microbiology

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

a) What is pure culture? Name any two methods to obtain it .

b) Explain the advantages of electron microscopy .

c) Explain the role of capsule and give an example of capsulated bacteria.

d) Why is oxygen toxic to anaerobic bacteria ?

e) What is growth curve of bacteria ?

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

a) Distinguish between lytic and lysogeny life cycles .

b) Give an account of fluorescence microscopy .

c) Describe structure of flagella in gram negative organisms .

***P.T.O.***

d) Explain significance of pure culture .

e) Explain the production of L-lysine .

***Q3)*** Write short notes on (any two) : **[10]**

a) Bacterial endotoxins

b) Contribution of Louis Pasteur.

c) TEM

## SECTION - II

## (Cell Biochemistry of Eukaryotes)

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

a) Draw labelled structure of plant cell wall . Give its features .

b) Differentiate between Gap and Tight Junction .

c) Explain mitosis and its phases .

d) Explain principle and applications of density gradient centrifugation .

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

a) Explain cell-cycle in brief .

b) Write note on structure and functions of peroxisomes and endoplasmic reticulum .

c) Write in short about specific cell aggregation in sponges .

d) Explain staining of organells and marker enzymes in animal cell .

***Q6)*** Write short notes on (any two) : **[10]**

a) Subcellular fractionation .

b) Fluid mosiac model .

c) Role of fibronectin .

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**Total No. of Questions : 06]**

**SEAT No. :** 

**P2787**

**[Total No. of Pages : 2**

# [5024] - 21

## M.Sc.

## BIOCHEMISTRY

## BCH - 270 : Bioenergetics and Metabolism

## (2010 Pattern) (Semester -II)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

1) ***Answer to both the 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 the following **[15]**

a) Give the fate of pyruvate .

b) How fatty acids are transporated in mitochondrial matrix .

c) What is the role of CDP in Phospholipid biosynthesis .

d) Differentiate between photosystem I and II .

e) Discuss role of ATP as high energy compound .

f) What is pasteur effect ?

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

a) Explain regulation of fatty acid biosynthesis

b) Write note on pyruvate dehydrogenase complex and its significance .

c) Explain the β-oxidation of a saturated fatty acids with energetics .

d) Explain triacylglycerol biosynthesis .

***P.T.O.***

***Q3)*** Write note on any two of the following **[10]**

a) Respiratory chain in mitochondria .

b) Ketogenesis .

c) Fattyacid synthase complex .

## SECTION - II

***Q4)*** Answer any five of the following **[15]**

a) What is salvage pathway of purines?

b) Write note on rubonucleotide reductase .

c) What is role of aminoacids oxidase in kidneys .

d) Write note on phenylketnuria ?

e) Write note on Glutathione

f) How aromatic amino acids help to reduce the level of ammonia from blood stream .

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

a) Elaborate on reactions of urea cycle .

b) How purine nucleotide biosynthesis is regulated .

c) Explain pathway of pyrimidine degradation .

d) Discuss formation of aromatic amino acids .

***Q6)*** Write note on any two of following **[10]**

a) Porphyrin biosynthesis .

b) Transamination and Deamination reaction .

c) Biosynthesis of sulphur containing amino acids .

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**Total No. of Questions : 06]**

**SEAT No. :** 

**P2788**

**[Total No. of Pages : 2**

# [5024] - 22

## M.Sc.

## BIOCHEMISTRY

## BCH - 271 : Techniques for Characterization of Biomolecules (2010 Pattern)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

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

### SECTION - I

### Biophysical Techniques

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

a) Explain diagramatically the sedimentation of associating and dissociating system .

b) Distinguish boundary and band sedimentation .

c) Explain the working of ostwald's viscometer in measuring viscosity of various liquids .

d) What are gamma counters? Give their uses .

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

a) Discuss the principle & uses of Autoradiography .

b) What are the types of radiations ? Give their features .

c) What is diffusion coefficients and how it can be measured .

d) Explain any two applications of analytical centrifugation .

***P.T.O.***

***Q3)*** Write short notes on (any two) : **[10]**

a) Background noice quenching .

b) Molecular weight determination by viscometry .

c) Radiolysis of water .

## SECTION - II

## Structure Determination of Biomolecules

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

a) Draw the schematic diagram of NMR and explain the instrumentation .

b) What is polarization of fluorescence? List the hanic rule for interpretation

c) What is ESR? Give its principle and working .

d) Discuss cell based Bioremors .

e) Distinguish between CD and ORD .

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

a) Explain the special uses of LCM's in biology and biochemistry.

b) Write short notes on:

(i) ORD and CD

(ii) MALDI-TOF-MS

c) Give the principle and application of IR spectroscopy .

d) Give the instrumentation of GLMS .

e) Explain the mechanism of glucose oxidared biosensors .

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

a) What is circular diachroism techniques ? explain its use fullness in structural analysis of protein .

b) Discuss instrumental of equations of IR spectroscopy.Explain the application of IR spectra to biomolecules .

c) Explain principle instrumentation of MALDI-MS .

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Total No. of Questions : 06]

SEAT No. :

P2789

[Total No. of Pages :2

# [5024] - 23

## M.Sc.

## BIOCHEMISTRY

## BCH - 273 :Membrane Biochemistry and Genetics

## (2010 Pattern)

## Membrane Biochemistry and Nucleic acid

## (2008 Pattern)

*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 to the two sections should be written in separate answer books.***

## SECTION - I

### Membrane Biochemistry

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

a) Explain membrane transport mechanism with example.

b) Explain different types of membrane models with example .

c) Lipids as a major constituents of biological membrane .

d) Co-transport of chloride and bicarbonate

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

a) Nuclear pore complex .

b) Structural significance of gram positive and gram negative bacterial cell wall .

***P.T.O.***

c) Explain Na-K and calcium pump .

d) Give the mechanism of drug transport .

***Q3)*** Aswer any two of the following **[10]**

a) Name different types of anti microbial agents and give its mechanism of transport .

b) Note on different types of membrane models with example.

c) What are different types of transport mechanism. Explain with example.

## SECTION - II

## Nucleic Acids

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

a) Explain mendelian laws of inheritance .

b) Write note isolation and selection of mutants .

c) Explain lactose operon .

d) What is meant by denaturation of DNA . Explain .

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

a) Discuss experimental evidence that proved DNA as genetic material in viruses

b) What are mutagens? Explain types with examples .

c) Genetic code is degenerate . explain .

d) Explain Hardy-Weinberg principle in detail .

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

a) Give comparative account of A and B forms of DNA .

b) What are genetic disorders ? Explain any two in detail .

c) Explain steps in bacteriophage life cycle .

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**Total No. of Questions : 4]** **SEAT No. :**

**P4946** **[Total No. of Pages : 2**

# [5024]-31

## M.Sc. (Biochemistry)

## BCH - 370 : Molecular Biology

## (2008 & 2010 Pattern) (Semester - III)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

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

***Q1)*** Answer any four of the following : **[20]**

a) What are splicesomes? Explain its significant role.

b) Define mutation? Explain SOS repair mechanism

c) Distinguish between DNA polymerase I, II, III with respect to their catalytic activity & subunit structure.

d) Explain role of shine and Dalgero sequence.

e) DNA replication is semiconservative. Explain

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

a) Write note on post trancriptional modification of t-RNA and r-RNA

b) Write note on replication for R

c) Explain RNA editing in detail

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

a) Enlist types of RNA polymerases and give their role.

b) Give steps involved in homologous recombination in which RecA participates.

c) Justify prokaryotic transcription & translation are coupled

d) What are retrotransposons? Give their mechanism of transpects

e) Write note on lysosomal protein transport.

***P.T.O.***

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

a) Protein targetting

b) Closur leaf t-RNA

c) Excision repair mechanism

d) Need for transcriptional modification

e) Signal hypothesis

f) mRNA capping

**Total No. of Questions : 6]** **SEAT No. :**

**P4949** **[Total No. of Pages : 2**

# [5024]-32

## M.Sc. (Semester - III)

## BIOCHEMISTRY

## BCH-371: Medical Biochemistry and Immunology

## (2008 & 2010 Pattern)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

1) ***All questions are compulsory.***
2) ***Neat diagram must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Answers to the two section should be written on separate answer books.***

### SECTION - I

### (Medical Biochemistry)

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

a) Elaborate on causative agents that leads to carcinogenesis

b) How bacteria a develop resistance to antibiotics.

c) Explain the physiological role of hydrolytic enzymes of lysosomes.

d) Discuss the role of clotting factors involved in thrombus formation.

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

a) Give details of various cellular components of blood.

b) Elaborate on the cause and treatment of Artheriosclerosis

c) Discuss the etiology and treatment of myocardial infarction.

d) Elaborate on the molecular basis of hemoglobinopathies with suitable example.

***P.T.O.***

***Q3)*** Write notes on any two of the following : **[10]**

a) CSF.

b) Apoptosis.

c) Teratogenesis.

## SECTION - II

**(Immunology)**

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

a) Enlist the cash involved in cell mediated immunity and explain their mechanism.

b) What are monoclonal and polyclonal antibodies? How are they prepared?

c) Differentiate between 'T' and 'B' lymphocytes.

d) Draw a well labelled structure of immunoglobulin molecule and give its classification with their features.

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

a) Explain the mechanism of complement fixation.

b) List out the types of Hypersensitivity reaction and give their features.

c) Explain precipitation and lattice mechanism.

d) Give the difference between ELISA and RIA with the experiment of insection study.

***Q6)*** Write a note on any two of the following : **[10]**

a) Western Blotting.

b) Vaccine

c) Coomb's Test.

Total No. of Questions : 4]

SEAT No. :

**P4948**

[Total No. of Pages : 2

# [5024]-33

## M.Sc. (Biochemistry)

## BCH - 372 : Neuro Chemistry

## (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.***
3) ***Draw neat labelled diagram where necessary.***

***Q1)*** Answer any four of the following : **[20]**

a) Explain the characteristics of a neurotransmitter.

b) Differentiate main functional properties of electrical and chemical synapses.

c) Explain the factors that affect development of CNS.

d) Explain the term dipolarization, repolarization and hyper polarization of a membrane in signal transmission.

e) GABA reception.

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

a) Explain the mechanism proposed for short term and long term memory storage.

b) Explain the structure of the hypothalamus,including the major hypothalamic nuclei.

c) Explain the synthetic pathways, inactivation mechanism and neurochemical anatomy and mechanism of receptor transduction for the following neurotransmitters.

i) Catecholamines

ii) Acetylcholine

***P.T.O.***

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

a) Describe the overall function of the basal ganglia

b) Explain the effects of altering either the intracellular or extracellular $Na^+$, $K^+$, $Cl^-$ or $Ca^{2+}$ concentration on the equilibrium potential for that ion.

c) Explain the generation and conduction of action potentials.

***Q4)*** Answer any four of the following : **[20]**

a) Write a short note on rod and cone cells

b) Write a short note on olfactory reception

c) Synaptic plasti city

d) Calcium signalling

e) Blood-brain barrier

**Total No. of Questions : 4]**

**SEAT No. :** ____

**P4947**

**[Total No. of Pages : 2**

# [5024]-34

## M.Sc. 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) Explain various mechanism by which toxicants cause the cellular injury.

b) Distinguish between (i) local and systemic toxicity (ii) poisonous and venomous animals.

c) Explain in brief the allergic reaction and idiosyncratic reaction.

d) Selective toxicity of toxic agents is due to biologic diversity. Explain.

e) What are the aims and objections of the experimental toxicology studies? How acute toxicity of toxicants is determined?

f) Give the significance of occupational toxicology.

***Q2)*** Attempt any four of the following : **[20]**

a) Explain the various enzymatic reaction involved in detoxication of organophosphorus insecticides.

b) Explain the vascular effect on brain and lung

c) Explain the biotransformation pathway of benzene leading to toxic effects.

d) Describe the various route of entry of toxicants with its mechanism.

e) Enlist the toxins secreted by amphibian and mode of their toxic effects.

f) Explain the forensic application of toxicology.

***P.T.O.***

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

a) Explain the endogenous and exogenous factors influence the metal toxicity.

b) Explain the mechanism of glutathione s transferase catalyzed biotransformation.

c) Give two examples of metabolic activation of xenobiotics that leads to cellular injury.

d) Explain phase - I and phase - II biotransformation reaction.

e) Explain the role of industrial toxicant for pollution.

f) Give the mechanism of cytochrome P450.

***Q4)*** Give the pathogenesis and clinical manifestation of any four of the following : **[20]**

a) Perivascular caused by chronic exposure of arsenic.

b) Micro mercurialism by inhalation of mercury vapour.

c) Chronic obstructive disease due to cadmium exposure.

d) Acrodynea by meraeroch salts

e) Shock and hypotension by snake venom

f) Cholestaris due to various chemical agents.

**Total No. of Questions : 06]**

**SEAT No. :** ____

**P2790**

**[Total No. of Pages :2**

# [5024] - 41

## M.Sc. (Semester - IV)

## BIOCHEMISTRY

## BCH - 470 : Biochemical Endocrinology and Plant Biochemistry

## (2010 Pattern)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

1) ***Answer to the two sections should be written in separate answer books.***
2) ***All questions are compulsory.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks***

### SECTION - I

### Biochemical Endocrinology

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

a) Is Vitamin-D a hormone or a vitamin ? Justify your answer .

b) Describe the general mechanism of regulating oxytocin secretion ?

c) How do hypothalamic releasing and inhibiting hormones influence secretions of the anterior pituitary ?

d) What is ACTH? What are its target cells ? What happens if ACTH levels increase?

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

a) Discuss the steps involved in the biosynthesis of glucocorticoids .

b) Describe the major molecular events involved in the uptake and metabolism of iodine by thyroid cells .

***P.T.O.***

c) Steroid hormone receptors are targets for drugs. Justify with suitable example.

d) What is enkephalin? Explain its mode of action .

***Q3)*** Write note on any two of the following : **[10]**

a) What is target cell insensitivity? Explain the mutations involved in dificient androgen action .

b) Describe the current concepts of the molecular mechanism of action of insulin .

c) Discuss the role of G-protein and adenylate cyclase in signal transduction .

## SECTION - II

## ( PLANT BIOCHEMISTRY )

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

a) What is the significance of auxin/cytokinin ratio ?

b) Write a note on photorespiration ?

c) Explain the structure and role of cutin, suberin and waxes .

d) Pharmaceutical and neutraceutical importance of plants .

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

a) Explain source to sink relationship in plants .

b) Elucidate the events taking place during Fruit ripening .

c) What the significance and steps involved in crassuelacean acid metabolism

d) Elaborate the functions of gibberellins .

***Q6)*** Write notes on any two of the following : **[10]**

a) Alkaloids .

b) Abiotic stress in plants .

c) Ethylene .

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**Total No. of Questions : 04]**

**SEAT No. :** ____

**P2791**

**[Total No. of Pages :2**

# [5024] - 42

## M.Sc.

## BIOCHEMISTRY

## BCH - 472 : GENETIC ENGINEERING

## (2008 and 2010 Pattern)

***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) Explain what are λ phage vectors . Also give their importance .

b) Give the strategies to identify clones with recombinant DNA .

c) Explain types and applications of PCR .

d) Give the stratergies used for producing pest resistant plants .

e) Explain southern blotting .

***Q2)*** Answer any four of the following **[20]**

a) Explain the applications of microarray technology .

b) Explain immunological screening of cDNA library .

c) Give role of bacteriophages as vectors . Explain one example .

d) What is meant by epigenetic phenomenon .

e) Write note on colony hybridization .

***P.T.O.***

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

a) Explain the different approches in transfection.

b) Explain RNA interference technology .

c) Give the brief account for production of recombinant proteins .

d) Enlist with functions different enzymes used in genetic engineering .

e) Give the applications of northern blotting technique .

***Q4)*** Write note any four of following **[20]**

a) RFLP

b) Cosmids

c) S-1 mapping .

d) Ti-plasmid

e) M-13 bacteriophage

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**Total No. of Questions : 06]**

**SEAT No. :** ____

**P2792**

**[Total No. of Pages :2**

# [5024] - 43

## M.Sc.

## BIOCHEMISTRY

## BCH - 471 : Fermentation Technology and Food Technology

## (2010 Pattern) (Semester-IV)

***Time : 3 Hours]*** ***[Max. Marks : 80***

***Instructions to the candidates:***

1) ***Answers to the two section should be written in separate answer books.***
2) ***All questions are compulsory.***
3) ***Neat Diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks***

### SECTION - I

### Fermentation Technology

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

a) How continuous sterilization is advantageous over batch sterilization?

b) What is meant by downstream processing? Explain with example .

c) Explain the role of precursors and metabolic regulators during the fermentation process .

d) How will you isolate microorganism by enrichment culture ?

e) Give advantages of continuous fermentation .

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

a) Aeration and Agitation .

b) Use of separation methods for product recovery .

c) Importance of oxygen in fermentation ?

d) Treatment and disposal of effluents .

e) Food drying methods .

***P.T.O.***

***Q3)*** Write note on any two of the following: **[10]**

a) Design of continuous sterilization .

b) Immobilized enzymes in industry .

c) Fed batch culture .

## SECTION - II

## (FOOD TECHNOLOGY )

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

a) Discuss various food additives and their significance .

b) What is food spoilage? What are the preventations .

c) What is primary feed stock? Give its importance .

d) What is genetically modified food? Discuss its merits and demerits .

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

a) What are the different steps involved in starch production .

b) Explain meat tenderization with suitable example .

c) Give the types of toxins and methods used to detect .

d) Give the importance of food flavouring agents .

***Q6)*** Write note on any two of the following: **[10]**

a) Natural and synthetic syrup .

b) Food colors .

c) Single cell protein .

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