Total No. of Questions : 6]

SEAT No. : ____

P1200

[Total No. of Pages : 2

[5431]-11
M.Sc.
BIOCHEMISTRY
BCH - 170 : Biomolecules
(2008/2010 Pattern) (Semester - I)

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

Instructions to the candidates:

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

SECTION - I

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

a) Derive Henderson - Hasselbalch equation and write note on buffers.
b) Differentiate between oxidative and hydrolytic rancidity.
c) Write note on isomeric forms of glucose.
d) Give two general reaction of sugar with a suitable example.
e) Draw the structure of triacy-glycerol.
f) Add a note on interaction of water with biomolecules.

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

a) Discuss the biological significance of structural carbohydrate.
b) Differentiate between reducing sugar and non reducing sugar with example.
c) Give the significance of carbohydrate in our body.
d) What are coenzymes? List out coenzyme forms of B complex vitamins with their significance.

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

a) Properties of amphipathic lipids.
b) Give the reactions of glucose that lead to formation of various sugar acids.
c) Different classes of lipids with examples.

P.T.O.

SECTION - II

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

a) Discuss reactions of Lysine & proline with ninhydrin reagent.

b) Differentiate between α helix & α-plated structures of proteins.

c) Why aminoacids are referred as ampholytes.

d) What is roel fo carboxypeptidase in end group analysis.

e) Write note on features of peptide bond.

f) Differentiate between monomeric and oligomeric proteins.

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

a) Classify amino acids based on R group.

b) Elaborate on steps involved in amino acid sequencing.

c) Discuss features of Ramchandran plot.

d) Explain the titration curve of aminoacids with non polar R group.

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

a) Classify proteins based on composition.

b) Write note on super secondary structure.

c) Explain the steps involved in synthesis of oligopeptides by solid phase method.

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Total No. of Questions :6]

SEAT No. : ____

P1201

[Total No. of Pages : 3

[5431]-12
M.Sc.
BIOCHEMISTRY
BCH-171: Enzymology and Physiological Biochemistry (2008 Pattern)
Enzymology and Biophysical Techniques (2010 Pattern)
(Semester-I)

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

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Answers to both the sections should be written on separate answer sheets.***

SECTION-I

(Enzymology)

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

a) Discuss in detail the effect of substrate concentration on enzyme catalyzed reaction.

b) What is the effect of pH on enzyme catalyzed reactions?

c) How do the differences in specificity between chymotrypsin and related protease arise?

d) Give the significance of enzyme inhibitors.

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

a) Define apoenzyme, coenzyme, holoenzyme and isoenzyme with example.

b) Describe the regulation of carbamoyl phosphate synthesis in E. *Coli.*

c) Explain the mechanism of action of serine proteases.

d) Describe the kinetics of allosteric enzymes.

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

a) How substrate cycle and interconvertible enzyme cycle amplify the initial signal? Explain with suitable example.

b) Describe allosteric behavior of phosphofructokinase.

c) Explain acid-base and covalent catalysis.

P.T.O.

SECTION-II

(Physiological Biochemistry) (2008 Pattern)

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

a) Explain in brief the anatomy, physiology and life cycle of RBC.

b) Describe how the renal tubule produces dilute or concentrated urine.

c) Describe the functions of liver with special emphasis on composition and role of bile.

d) Explain the physiological importance of water and any two minerals.

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

a) Describe in detail the significance of BPG in adapting to higher altitude.

b) What is internal and external respiration? How is carbon dioxide transported in blood?

c) What is acid-base imbalance? Explain the mechanism of any two body's buffer system.

d) Explain the effect of pH and temperature on oxygen binding.

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

a) What do you understand by 'chloride shift'

b) Write a note on plasma proteins.

c) What is anion gap? Comment upon its significance.

SECTION-II

(Biophysical Techniques) (2010 Pattern)

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

a) Describe the principle of DNA cellulose and MAK chromatography.

b) What is SDS PAGE? Add a note on its working principle and significance.

c) Write the principle and application of HPLC.

d) Describe the method and applications of finger printing.

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

a) Explain the basic components of a UV-VIS spectrophotometer.

b) Describe the principle and application of hydroxyapatite chromatography.

c) How casn molecules with the same charge at varying amounts be separated by chromatography?

d) Explain any two applications of dialysis.

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

a) What are the applications of purified enzymes? How enzymes are separated on the basis of their solubility.

b) Describe any two applications of molecular sieve chromatography.

c) Why the porous matrix of agarose is gels an essential component of molecule separation by gel electrophoresis?

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Total No. of Questions : 6]

SEAT No. :

P1202

[Total No. of Pages : 4

[5431]-13

M.Sc.

BIOCHEMISTRY

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) ***Answer to both the sections should be solved in separate answer sheets.***
3) ***Figures to the right side indicate full marks.***

SECTION - I

(Microbiology)

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

a) What are the differences between prokaryotic and eukaryotic cells?

b) How will you use filtration technique for control of microorganisms?

c) Discuss the methods of preservation of bacterial culture.

d) Discuss structure of bacterial membrane.

e) What are the contributions of Louis pasteur and Edward Jenner?

f) Draw a well labeled diagram of an animal cell and explain the function of any three cell organelles.

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

a) Methods of isolation of bacterial culture.

b) Explain moist heat sterilization.

c) Explain how the host microbe interaction are responsible for causing infection.

d) Explain symbiotic nitrogen fixation.

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

a) Cultivation of anaerobic bacteria.

b) Replication of bacterial viruses.

c) Alcohol production.

P.T.O.

SECTION - II

(Cell Biochemistry of Eukaryotes)

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

a) What is cell differentiation? Explain the different events occurring during it.

b) Explain in details cell-cell adhesion.

c) Define the term fertilization. What is the significance of fertilization?

d) Describe structure and functions of cell wall

e) Describe Density gradient centrifugation process.

f) What is stem cells and what are the major types of stem cell?

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

a) Explain the role of collagen elastin and fibronectin.

b) Give detailed account of different phases of mitosis.

c) Describe the structure and function of the nucleus.

d) Write a note on cytoskeleton and its components.

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

a) Cell cycle.

b) Freeze fracture.

c) cell-cell reorganization in plants.

Total No. of Questions : 6]

P1202

[5431]-13
M.Sc.
BIOCHEMISTRY
BCH - 172 : Cell Biochemistry
(2008 Pattern) (Semester - I)

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

Instructions to the candidates:

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

SECTION - I

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

a) Give the classification of microorganisms.

b) Explain the theory of phase contrast microscopy.

c) Give the structure of Peptidoglycans and other cell wall components.

d) Explain the nutrients required for cultivation of Bacteria.

e) How physical agents are used for control of microbial growth.

f) Give the different methods used for obtaining Pure cultures.

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

a) What is Cell cycle? Describe different phases of cell cycle.

b) What do you understand by the term 'sub-cellular fractionation'?

c) Describe various types of gradients used during centrifugation.

d) Explain in detail ultrastructure of mitochondrian and give its metabolic functions.

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

a) Cell adhesion

b) Prophase I of meiosis

c) Lysosomes

SECTION - II

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

a) Describe the structure and function of the nucleus.

b) Write a short note on cellular differentiation and its importance.

c) What is the significance of mitochondria to an eukaryotic cell? Explain in detail the structure and function.

d) Define the term fertilization. What is the significance of fertilization?

e) Describe structure and functions of plant cell wall.

f) Describe Density gradient centrifugation process.

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

a) Describe the types, structure and functions of endoplasmic reticulum.

b) Write a note on major groups of fungi.

c) Give detailed account of different phases of mitosis.

d) Describe the structure and function of the chloroplast.

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

a) Bacteria and its biological importance.

b) Density gradient centrifugation process.

c) Tight Junction.

Total No. of Questions : 6]

SEAT No. : ____

P1203

[Total No. of Pages : 2

[5431]-21
M.Sc.
BIOCHEMISTRY
BCH - 270 : Bioenergetics and Metabolism
(2008/2010 Pattern) (Semester - II) (Old and New)

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

Instructions to the candidates:

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

SECTION - I

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

a) Differentiate between cyclic and non-cyclic photophosphorylation.

b) Discuss the role of electron carries in mitochondrial respiration.

c) Outline the steps involved in oxidation of acetyl-coA to CO2 and show its regulation.

d) Explain the role of glycogenin in glycogen synthesis.

e) Discuss the regulation of glycolysis and gluconeogenesis.

f) List out enzymes involved in fatty acid synthase complex.

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

a) What is free energy, entropy and enthalpy?

b) Write a note on lactose intolerance and galactosemia.

c) What are the types of oxidation of fatty acid.

d) Explain the steps involved in pentose phosphate pathways.

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

a) Steps involved in synthesis of ascorbic acid.

b) Inhibitors and uncouplers of ETC.

c) Significance of glyoxalate pathway.

P.T.O.

SECTION - II

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

a) Write note on the end products obtained due to Catabolism of odd number Carbon atom fatty acids.

b) Define Ketogenesis. Write note on acetylcoA as a Precursor in Ketogenesis.

c) Discuss the catabolism of purines to Uric acid.

d) Outline the reactions of Urea cycle.

e) List of the steps involved in biosynthesis of polyamins.

f) What is the role of ribonucleotide reductase in our body?

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

a) Give the significance of transamination and oxidative deamination in amino acid metabolism.

b) How are porphyrins formed from succinylcoA and glycine.

c) Write note on salvage pathways for purine and Pyrimidine biosynthesis and give its significance.

d) What are polyamines? How are they synthesised?

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

a) Synthesis purine nucleotides like AMP and GMP.

b) Role of CDP in phospholipid biosynthesis.

c) Biosynthesis of phenylalanine.

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Total No. of Questions :4]

SEAT No. : ____

P1204

[Total No. of Pages : 4

[5431]-22
M.Sc.
BIOCHEMISTRY
BCH- 271 : Techniques for Characterization of Biomolecules
(2010 Pattern) (Semester-II)

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) Write a note on gamma counter.

b) Explain the basic components of NMR.

c) Write the principle of pycnometer.

d) Describe any one application of biosensor.

e) How standard sedimentation coefficient is determined?

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

a) Give the principle and applications of MALDI-TOF-MS.

b) Describe the applications of ORD.

c) How the fluidity of the interior of the erythrocyte membrane is studied by ESR spectroscopy.

P.T.O.

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

a) Explain the basic components of biosensors.

b) Give the principle and applications of GC-MS.

c) What are the different methods used for measurement of concentrations distribution in an analytical centrifuge cell?

d) Explain why liquid scintillation counter is more efficient than GM counter.

e) Describe the principle of fluorescence.

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

a) Explain the applications of X-ray diffraction.

b) Describe the types of radiations used in Biochemistry.

c) Write a note on viscosity.

d) What are the applications of atomic absorption spectroscopy?

e) Explain the factors that affect the resolution of autoradiography.

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Total No. of Questions :6]

[5431]-22
M.Sc.
BIOCHEMISTRY
BCH- 271 : Biophysical Techniques
(2008 Pattern) (Semester-II)

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

Instructions to the candidates:

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

SECTION-I
(Biophysical Techniques I)

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

a) Describe in detail the principle and application of dialysis.

b) Give the principle of lyophilization process.

c) "Thin-layer chromatography is superior to other types of chromatographic methods". Explain this statement.

d) What is Ion Exchange Chromatography? Give its application.

e) Explain the role of IEF in the separation of proteins.

f) Write a note on lyophilization applications in various industries.

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

a) Give the principle of Gel Filteration Chromatography.

b) How does HPLC give rapid separation and high resolution?

c) Write short note on membrane filters and their applications in research and industry.

d) Describe the principle and applications of SDS PAGE.

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

a) Southern blotting.

b) Metal chelate chromatography.

c) Applications of U.V. spectrophotometer.

SECTION-II

(Biophysical Techniques II)

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

a) Describe in detail Differential centrifugation technique.

b) Enumerate the applications of radioactivity in biochemistry.

c) Explain the working of Ostwald's Viscometer in measuring viscosity of various liquids.

d) Elaborate on types of rotors used in ultracentrifuges and give their significance.

e) Discuss the effects of macromolecules on the viscosity of a solution.

f) Write a note on types of radiations and their features.

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

a) Define partial specific volume. How can it be measured?

b) What are gamma counters? Give their uses.

c) Discuss the principle, technique and uses of Autoradiography.

d) What is Diffusion coefficient? How it can be measured?

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

a) Liquid scintillation counters.

b) Molecular weight determination by sedimentation.

c) Radiation dosimetry.

Total No. of Questions : 6]

SEAT No. :

P1205

[Total No. of Pages : 2

[5431]-23
M.Sc.
BIOCHEMISTRY
BCH - 273 : Membrane Biochemistry and Genetics (2010)
Membrane Biochemistry and Nucleic Acids (2008)
(Semester - II)

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) Structural features and role of gramicidin as a transport antibiotics.

b) Lipids as a major constituents of biological membrane.

c) Structure and significance of bacterial cell wall.

d) Types of transport process. Compare these with respect to energetics involved.

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

a) Sodium channel and its significance.

b) Calcium premp and its physiological significance.

c) ABC transporters and their role.

d) Co transport of chloride and bicarbonate in human.

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

a) Phosphotransferase system.

b) Gap junction and its significance.

c) Nuclear pore complex.

P.T.O.

SECTION - II
(Nucleic Acids Genetics)

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

a) What plasmids? Give its type and mechanism of transfer with example.

b) Explain the concept of operon with tryptophan operon as example.

c) Compare denaturation and renaturation of DNA.

d) Write note on genetic mutations.

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

a) Explain bacterial transduction in detail.

b) Describe the assembly of virus. Comment on use of bacterial viruses.

c) Genetic code is degenerate explain.

d) What is transposition? Explain with suitable example.

Q6) Attempt any two: **[10]**

a) Write note on genatype, phenotype, law of segregation.

b) Explain tetrad analysis.

c) Compare A, B and Z forms of DNA.

Total No. of Questions : 4]

SEAT No. : [ ]

P1206

[Total No. of Pages : 2

[5431]-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) ***Answers to both the sections should be written on separate answer sheets.***
3) ***Figures to the right indicate full marks.***

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

a) Design an experiment to prove that there are nicks in DNA.

b) What do you understand by term gene? Discuss the role of each segment that constitute gene.

c) Explain the action of rifamycin, chloramphenicol, heparin and puromycine on protein synthesis.

d) What is origin locus? Give its characteristics.

e) What do you understand by degradosome? Explain its role.

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

a) Give a flowsheet that will explain a typical gene expression.

b) Enlist the different functional ribosomal active sites and state there functions.

c) What are transposons? Give their role in E-coli.

d) Give the mechanism of activation of amino acids.

e) Describe in detail various DNA repair mechanism.

P.T.O.

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

a) Explain the process of initiation, elongation and termination in RNA synthesis.

b) Recombination of DNA is usually beneficial for the survival of E-coli, Explain.

c) Distinguish between adeno and retro virus.

d) How okazaki fragments are formed during DNA replication?

e) Describe in detail the structure and function of clover leaf model of tRNA.

Q4) Write short notes on any four of the following: **[20]**

a) Nucleosomes.

b) SOS repair mechanism.

c) Mechanism of splicing.

d) Protein targeting to lysosomes.

e) Detailed structure of HIV-1 Virus and its gene.

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Total No. of Questions :6]

SEAT No. : ____

P1207

[Total No. of Pages : 2

[5431]-32
M.Sc.
BIOCHEMISTRY
BCH-371: Medical Biochemistry and Immunology
(2008 & 2010 Pattern) (Semester-III) (New)

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

Instructions to the candidates:

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

SECTION-I

(Medical Biochemistry)

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

a) Explain the medical importance of analgesic and write a note on their mechanism of action with example.

b) Discuss the etiology, clinical features and treatment of myocardial ischaemia.

c) Explain the term carcinogenesis with the help of common causative agents.

d) Discuss the role of antibiotics that effects translation and transcription in prokaryotes.

e) Elaborate the mechanism that leads to the activation of the zymogen fibrinogen to fibrin.

f) Discuss the significance of hydrolytic enzymes of lysosomes in human physiology.

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

a) Explain the cascade mechanism involved in the intrinsic pathway of apoptosis after release of Cytochrome C from mitochondria.

b) What is the normal level of Cholesterol in blood? Explain how hypercholesterolemia is a causative factor for cardiovascular Problems.

c) Discuss the mechanism of action of antibiotics like tetracyclin and erythromycin at the molecular level.

d) What is the normal composition of cerebrospinal fluid? How is cerebrospinal fluid useful in diagnosis of diseases?

P.T.O.

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

a) Fibronectins.

b) Hallucinogens.

c) Alzheimer's disease

SECTION-II

(Immunology)

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

a) Differentiate between cell mediated and humoral immunity.

b) What are monoclonal antibodies? How are they developed?

c) Elaborate on the cascade of proteolytic reaction that occur during compliment activation.

d) Elaborate on primary and secondary lymphoid organ and their significance with neat diagram.

e) List out different classes of antibodies and give their features.

f) Explain the principle, procedure and uses of competitive ELISA technique.

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

a) Elaborate on the mechanism of development of any one auto immune disease.

b) Explain with example live and attenuated vaccines? Explain the principle of Vaccination.

c) Discuss the etiology and development of AIDS.

d) List out the four major types of hypersensitivity reactions and discuss their features.

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

a) Principle of Immunofluorescence and uses.

b) Rocket Immunoelectrophoresis

c) Phagocytosis

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Total No. of Questions : 4]

SEAT No. :

P1208

[Total No. of Pages : 3

[5431]-33

M.Sc.

BIOCHEMISTRY

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 necessary diagrams wherever necessary.***

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

a) Discuss the structure and function of acetyl cholinesterase.
b) Explain the events of synaptic transmission.
c) Describe the processes through which an action potential is produced.
d) What are mechanically gated channels? Explain their role with example.
e) Describe the ions channels and integral-protein pumps that contribute to generation of a resting membrane potential.

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

a) Compare the functions of the sensory, motor and association areas of the cerebral cortex.
b) How does environment affect brain development?
c) What is the primary function of the cerebellum? What role does the cerebellum play in learning new motor activities?

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

a) Describe the organization of the nervous system.
b) What are the specificity and selectivity of AMPA glutamate receptors?
c) Describe the functional relationships involved in the blood-brain and blood CSF barriers.

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

a) Acetylcholine receptor
b) Limbic system
c) Biochemistry of touch
d) Myelin sheath
e) Colour vision

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P.T.O.

Total No. of Questions : 6]

P1208

[5431]-33

M.Sc.

BIOCHEMISTRY

BCH - 372 : Signal Transduction Pathways

(2008 Pattern) (Semester - III)

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

Instructions to the candidates:

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

SECTION - I

(Signal Transduction Pathways I)

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

a) Describe in detail the acceptable sliding filament modes of muscle contraction.

b) Describe in detail the events in visual excitation.

c) Explain the term: depolarization, hypopolarization and hyperpolarization.

d) Describe the organization and functional parts of the cells within various taste buds.

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

a) Write a short note on contractile proteins in cells other than muscle filaments.

b) Explain the structure, function and mechanism of action of acetylcholinesterase.

c) Write a short account on turnover and regulation of neuropeptides.

d) Explain the Molecular organization of thick and thin filaments.

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

a) Structure of eye.

b) Chemotaxis.

c) Nerve poisons

SECTION - II

(Signal Transduction Pathways II)

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

a) Explain in detail how coordination between nervous and endocrine systems is brought about.

b) What are neurotransmitters? Describe in detail the metabolism of neurotransmitters.

c) How is action potential generated and propagated.

d) Explain in detail the chemical composition of brain.

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

a) Describe in detail the structure and function of synapse.

b) Describe the carbohydrate and lipid metabolism in brain.

c) Describe neuroanatomy of brain.

d) Write a note on blood brain barrier.

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

a) Peripheral nervous system.

b) Calcium signalling.

c) Zinc fingers.

Total No. of Questions : 4]

SEAT No. :

P1209

[Total No. of Pages : 2

[5431]-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) ***Answers to both the sections should be written on separate answer sheets.***
3) ***Figures to the right indicate full marks.***

SECTION - I

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

a) Explain medical applications of toxicology.

b) Give impact of organophosphorus carbamate on ecosystem.

c) Explain pathogenesis of hypotension. Give its clinical manifestation.

d) Compare the inhibition of acetylcholinesterase caused by organophosphorus & carbamate insecticides.

e) Explain carcinogenicity of arsenic.

f) How will you evaluate toxicity of a substance?

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

a) Write a note on snake venom.

b) Explain with example animal & plant toxins.

c) Give mechanism of phase I and phase II reactions.

d) What are toxic effects of Ozone and peroxyacetyl nitrate

e) Give the mechanism of cytochrome P450.

P.T.O.

SECTION - II

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

a) Distinguish between

i) Local and Systemic toxicity.

ii) Reversible and irreversible toxicity.

b) Explain the factors that influence the metal toxicity.

c) Discuss with examples the antagonistic effects.

d) Which of the main toxicological studies are performed to build up the toxicological profile of toxic agent?

e) What is the averal impact of DDT and ecosystem?

Q4) Write short notes on any four of the following : **[20]**

a) Renal dysfunction due to lead.

b) Additive and synergistic effects.

c) Cell injury caused by various toxicants.

d) Mutagenicity.

e) Detoxication and toxication reactions.

Total No. of Questions : 6]

SEAT No. :

P1210

[Total No. of Pages : 3

[5431]-41
M.Sc.
BIOCHEMISTRY
BCH - 470 : Biochemical Endocrinology & Tissue Culture (2008 Pattern)
Biochemical Endocrinology & Plant Biochemistry (2010 Pattern)
(Semester - IV)

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

Instructions to the candidates:

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

SECTION - I
(Biochemical Endocrinology)

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

a) Describe the regulation of thyroid hormone synthesis.

b) What are pituitary hormones. Explain the role of any four hormones.

c) Write a note on insulin.

d) What are prostaglandins? Explain their functions.

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

a) Differentiate the functions of male and female sex hormones.

b) Write a note on pathophysiology of growth hormones.

c) Describe the functions of any five gastro-intestinal hormones.

d) Explain the role of zinc fingers.

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

a) What are the hormones secreted by the adrenal cortex? What are their respective functions.

b) Explain the regulatory relationship between the major endocrine glands and their target tissues.

c) How are posterior pituitary hormones synthesized, transported and secreted?

P.T.O.

SECTION - II
(Tissue Culture) (2008 Old Pattern)

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

a) What do you mean by callus culture?

b) What are the basic requirements of tissue culture laboratory.

c) What are the different methods of cell preservation?

d) Explain the different sterilization techniques used in tissue culture laboratory.

e) Explain somoclonal variation.

f) Explain primary and secondary cell culture.

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

a) Explain the role of growth regulators.

b) Explain the term cybrid.

c) Give the advantage and disadvantage of natural and synthetic medium.

d) Discuss the characteristic of transformed cell.

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

a) Cloning.

b) Protoplast fusion.

c) Foetal calf serum.

SECTION - II
(Plant Biochemistry) (2010 New Pattern)

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

a) Explain the oxygenase activity of rubisco.

b) Give the function of cytokinins.

c) What is the role of ethylene oxide in food ripening?

d) Write a note on biosynthesis of starch.

e) Give the difference between light and dark cycle.

f) Give the localization of photosystem in thylakoid membrane.

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

a) Explain the role of magnesium in plant growth.

b) Write a note on nitrogenase system.

c) Explain the process of cryopreservation.

d) Give the method for isolation of protoplast.

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

a) Alkaloids.

b) Preparation of explants.

c) Z-scheme of photosynthesis.

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Total No. of Questions : 4]

SEAT No. :

P1211

[Total No. of Pages : 2

[5431]-42
M.Sc.
BIOCHEMISTRY
BCH - 472 : Genetic Engineering
(2008 and 2010 Pattern) (Semester - IV)

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

Instructions to the candidates:

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

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

a) Explain lambda phage vectors and its advantage over plasmid vectors

b) Write note methods for on screening of recombinants.

c) Give principle and applications of RFLP.

d) Role of genetic engineering in producing insect resistant plants.

e) Explain Replica plating and its importance.

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

a) Write note on RNAi technology and its importance.

b) Write note on role of restriction enzymes in genetic engineering.

c) What are cloning vectors? Explain any one example of insect vector.

d) Explain chromosome walking in detail.

e) Enlist and explain applications of genetic engineering in medicine.

P.T.O.

Q3) Answer in brief [Any Four]: **[20]**

a) Write note on mammalian viral vectors.

b) Explain role and importance of reverse transcriptase enzymes in genetic engineering.

c) Explain principle of PCR. Enlist its different types.

d) Write note on pBR322 vector.

e) Give advantages of cDNA library over genomic libraray.

Q4) Write short notes on any four of following: **[20]**

a) Microarray

b) Colony hybridization

c) Epigenetics

d) Southern blotting

e) Genomic library

Total No. of Questions : 6]

SEAT No. : ____

P1212

[Total No. of Pages : 2

[5431]-43

M.Sc.

BIOCHEMISTRY

BCH-471 : FERMENTATION TECHNOLOGY AND FOOD TECHNOLOGY

(2008/2010 Pattern) (Semester-IV)

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

Instructions to the candidates:

1) ***Answers to both sections should be written on separate answer sheets.***
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) What is Batch culture? Give the advantage and disadvantage of batch culture.

b) What are different methods of strain improvement? Explain.

c) For isolation of microorganism for fermentation,what should be the important characteristics of the microorganisms.

d) Describe various methods of feedback control.

e) What are different carbon sources used in fermentation?

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

a) Write note on maintenance of aseptic conditions in fermentation.

b) Explain the design of fermentor with well labelled diagram.

c) How microorganisms are isolated by enrichment culture technique?

d) Discuss different physical methods of effluent treatment.

e) Explain the importance and methods of isolation of intracellular product recovery.

P.T.O.

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

a) What are different methods of preservation of industrially important microorganisms?

b) What are the basic requirements for expression of foreign DNA in microorganisms?

c) Compare advantages and disadvantages of continuous and fed-batch fermentation

SECTION-II

(Food Technology)

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

a) How to analyze food for its quality?

b) What are the different chemical changes occurring during food spoilage.

c) How will you proceed for starch production?

d) What is primary feed stock?

e) Explain biochemistry of food spoilage

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

a) What are flavoring agents? Explain.

b) Explain the role of enzymes in food processing.

c) Explain the manufacturing of natural and synthetic syrup

d) What is meant by primary feed stock?

e) How food is genetically modified?

Q6) Answer any one of the following. **[10]**

a) Explain the principle of food preservation.

b) Write note on single cell protein.

c) Explain the chemical occurring changes in food spoilage.