Total No. of Questions :6]

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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) ***Figures to the right side indicate full marks.***

SECTION - I

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

a) Give the quaternary structure - hemoglobin.

b) Write note on isomeric forms of glucose.

c) Why Sucrose does not answer Benedict's test.

d) What are fat soluble vitamins? Give their biological importance.

e) Differentiate between oxidative and hydrolytic rancidity.

f) How are biologically important macromolecules formed from their monomeric subunits? Give suitable example.

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

a) Give Structures of: i) Deoxy Sugar ii) Amino Sugar iii) Fatty acid iv) Homodisaccharide v) Sphingolipids.

b) Discuss the features of different classes of lipids with examples.

c) What are coenzymes? List out coenzyme forms of B complex vitamins with their significance.

d) Discuss the reactions of glucose that lead to formation of various sugar acids.

P.T.O.

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

a) lipid bilayer.

b) Classify lipoproteins based on density and give their significance.

c) Write note on properties of ampipathic lipids.

SECTION - II

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

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

b) Give the Edmans reaction for protein structure sequence analysis.

c) Write a note on rare amino acid with its biological significance.

d) Write a note on peptide bond.

e) An amino acid is 3 zwitter ion. Explain.

f) Why aminoacids are referred as ampholytes?

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

a) Explain the principle and procedure of solid phase synthesis of oligo peptides.

b) Classify amino acid on the basis of their R group.

c) Give the biological function of proteins.

d) Differentiate between proteolysis and denaturation of proteins with suitable example.

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

a) Primary structure of protein.

b) Steps involved in amino acid sequencing.

c) Protein classification based on their functions.

Total No. of Questions : 6]

SEAT No :

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[5324]-12
M.Sc.
BIOCHEMISTRY
BCH-171 : Enzymology and Physiological Biochemistry 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) ***Answers to both the sections should be written on separate answer sheets.***
3) ***Figures to the right indicate full marks.***

SECTION - I

(Enzymology)

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

a) Define Km and Vmax. How can they be measured?

b) How is chymotrypsinogen converted to chymotrypsin?

c) Explain acid-base and covalent catalysis.

d) How activity of any enzyme is controlled by covalent modification? Explain.

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

a) Differentiate between competitive and noncompetitive inhibitions of enzymes.Explain with graph.

b) Discuss catalytic power and specificity of an enzyme.

c) Define the term Kcat. What is its significance?

d) Write a note allosteric enzymes.

P.T.O.

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

a) Explain the mechanism of action of chymotrypsin

b) What do you understand by optimum pH and temperature of an enzyme?

c) Write a note on regulation of enzyme action

SECTION-I

(PHYSIOLOGICAL BIOCHEMISTRY)

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

a) List the various important electrolytes in the body fluids. Discuss any two in details

b) What is external and internal respiration? Explain how carbon dioxide in transported in the blood?

c) Define acid-base imbalance. Describe the role of any buffer systems of the body.

d) Explain in detail the events involved in formation of concentrated urine

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

a) What are diuretics? Explain their mode of action.

b) Explain in detail any two renal function tests.

c) Write an account on 'Excretion of bilirubin in the bile'.

d) Describe the structure an dfunctions of erythrocytes.

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

a) Describe the importance of any three minerals.

b) What is GFR? Explain the factors that affect GFR

c) Write a note on plasma proteins.

SECTION-II

BIOPHYSICAL TECHNIQUES

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

a) Write the principle of MAK chromatography with example.

b) Write a note on SDS PAGE.

c) Describe the principle and method of HPLC.

d) Describe the principle and procedure of finger printing.

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

a) Why is it important to prepare a standard curve for each spectrophotometer?

b) How are proteins eluted from affinity chromatography column?

c) What is the basis for the separation of different compounds by ion exchange?

d) Write a note on 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 molecular size.

b) Give the principle and applications of isoelectric focusing.

c) How is gel filtration chromatography used for molecular weight determination of proteins? Comment on the utility of the method.

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Total No. of Questions :6]

SEAT No :

P1932

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[5324]-13

M.Sc.

BIOCHEMISTRY

BCH-172 :Microbiology and Cell Biochemistry of Eukaryotes

(2010 Pattern) (Semester-I) (Credit System)

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 indicate full marks.***

SECTION-I

(Microbiology)

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

a) Classification of bacterial and nomenclature.

b) Explain nutritional type of bacteria.

c) Give the methods for the measurement of growth.

d) Elaborate on mode of action of antimicrobial agent.

e) Give the industrial production of alcohol.

f) What is phenol coefficient method? Explain it with suitable example.

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

a) Discuss the methods of preservation of bacterial culture.

b) Fluorescence microscopy and its applications.

c) Flagellar structure and arrangement.

d) Types of media used for bacterial growth.

P.T.O.

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

a) What are the usual magnifications obtained with light microscopy? What determines its useful limit?

b) Discuss in detail peptidoglycan synthesis.

c) Why oxygen is toxic to anaerobic bacteria? Add a note on cultivation of anaeroic bacteria.

SECTION-II

(Cell Biochemistry of Eukaryotes)

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

a) Describe the basic structure of chromatin.

b) Show diagrammatically spermatogenesis and oogenesis.

c) Write a note on extracellular matrix and its functions.

d) Write a note on differential centrifugation.

e) Write a note on cell-cell communication between plant cells.

f) Write a note on different phases of mitosis.

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

a) What is the role of histones in the structure?

b) Why mitochondria called as power house, explain.

c) What are different classes of chromosomes?

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

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

a) What are lysosomes? Describe their structure and function.

b) Describe the functions of peroxisomes in animal cell.

c) Write a note on major groups of fungi.

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Total No. of Questions :6]

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[5324]-13

M.Sc.

BIOCHEMISTRY

BCH-172 :Cell Biochemistry

(2008 Pattern) (Semester-I) (Credit System)

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) What are the usual magnifications obtained with light microscopy? What determines its useful limit?

b) Discuss in detail peptidoglycan synthesis.

c) Why oxygen is toxic to anaerobic bacteria? Add a note on cultivation of anaerobic bacteria.

d) Enlist different methods of isolation of pure culture. Explain any one in detail.

e) How UV light is useful in control of growth of bacteria?

f) Give the different physical agents and chemical agents used for growth control of micro organism.

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

a) Explain the principle working and application of transmission electron microscopy.

b) Give the chemical activities of bacteria leading to the accumulation of industrially important products.

c) Explain with example viruses of plant.

d) Give the different growth phases of bacterial.

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

a) Nuclear envelope.

b) Shadow casting.

c) Exotoxins.

SECTION-II

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

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

b) Draw a well labelled diagram of an animal cell and explain the function of any three cell organelles. Other than endoplasmic reticulum.

c) Write a note on fungi and its biological importance.

d) Write a note on structure and function of plant cell wall.

e) Describe the types, structure and functions of endoplasmic reticulum

f) What are lysosomes? Describe their structure and function.

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

a) Define the terms: cell cycle and mitosis. Name the stages of cell cycle. Which is usually the longest stage?

b) Explain in detail fractionation of cell organelles. Enlist their respective marker enzyme.

c) Explain in detail ligand gated ion channels?

d) What is the difference between the nuclear envelop and the cell membrane in terms of structure and function?

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

a) Organogenesis.

b) Gap Junction.

c) Role of pili and flagellum.

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Total No. of Questions : 6]

SEAT No. :

P1933

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[5324]-21

M.Sc. (Biochemistry)

BCH - 270 : BIOENERGETICS AND METABOLISM

(2008/2010 Pattern) (Semester - II) (Credit System)

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) Outline the oxidation of glucose via Pentose Phosphate Pathway (HMP) and give its significance?

b) Discuss PDH (pyruvate dehydrogenase complex)?

c) Elaborate the role of Glycogenin in glycogen synthesis?

d) Write a note on high energy compound.

e) Write a note on C4 pathway.

f) Write a note on fates of pyruvate?

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

a) Explain the role of chloroplast and thylakoid in photosynthesis.

b) What is Pasteur effect?

c) Discuss chemiosmotic hypothesis of peter mitchell in the formation of ATP.

d) Explain all the reaction involved in conversion of lactic to glucose.

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

a) Role of hormone in the regulation of glycogenesis and glycogenolysis.

b) Role of glycogenin in glycogen synthesis.

c) Cyclic and non-cyclic photophosphorylation.

P.T.O.

SECTION - II

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

a) Describe Transamination and Deamination reactions?

b) What is the significance of Glutamine and Alanine in amino group metabolism?

c) Discuss the steps in urea cycle?

d) Elucidate the role of Tetrahydrofolate and S-Adenosyl Methionine?

e) Explain β-oxidation of Stearic acid with energetics?

f) Write a note on Pyrimidine synthesis?

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

a) What are uncouplers? How do they affect ETC and ATP synthesis in mitochondria?

b) Define gluconeogenesis. List out the gluconeogenic precursors.

c) Write note on the defective enzymes that lead to disorders in glycogen Metabolism.

d) Elaborate on the pathway that leads to formation of glucuronate and ascorbic acid.

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

a) ALT and AST.

b) Biosynthesis of triglycerides.

c) Glutathione biosynthesis.

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Total No. of Questions : 6]

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[Total No. of Pages : 4

[5324]-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) Explain Dialysis and reverse dialysis procedure.

b) What are anion exchangers and cation exchangers? Give an example of each.

c) Write any three applications of affinity chromatography.

d) Define Isoelectric pH. What is principle of IEF?

e) Why are 'salting out' procedures often used as an initial purification step following the production of a crude extract by centrifugation

f) How does pulse field electrophoresis separate DNA fragments?

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

a) Describe the method and applications of ligand immobilization for affinity chromatography

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

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

d) Explain the principle and working of U.V. spectrophotometer

P.T.O.

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

a) Gel filteration chromatography

b) Lyophilization

c) SDS PAGE

SECTION - II

(Biophysical Techniques - II)

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

a) Write note on molecular weight determination by sedimentation.

b) What are differences between Differential and Density-gradient centrifugation?

c) What is diffusion coefficient and how it is measured?

d) Discuss the applications of radioisotopes in Biochemistry.

e) What is quenching? List out the factors that are involved in quenching.

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

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

a) Write a note on factors affecting sedimentation velocity.

b) Explain principle and applications of Autoradiography.

c) Differentiate between preparative and analytical centrifuges.

d) How did Meselson and Stall used density gradient centrifugation to prove concept of semiconservative DNA replication.

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

a) Determination of molecular weight by Ostwald's viscometer.

b) Radiation dosimetry.

c) Liquid scintillation counters.

Total No. of Questions : 4]

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[5324]-22
M.Sc. (Biochemistry) (Semester - II)
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.***

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

a) Describe the principle and application of scintillation counter.

b) Write the method of determination of sedimentation coefficient.

c) How fish freshness is determined by amperometeric biosensor?

d) Write any one application of NMR in detail.

e) Describe the application of partial specific volume.

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

a) Describe the applications of ESR.

b) Explain the theory of ORD and describe its applications.

c) Give the principle and applications of MALDI-MS.

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

a) Write the applications of fluroscence.

b) Describe the principle of biosensor.

c) Give the principle of GC-MS.

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

e) Describe the methods for measurement of concentrations distribution in an analytical centrifuge cell.

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

a) Describe the factors that affect the resolution of autoradiography.

b) Describe the application of viscosity.

c) Explain the types of radiations used in biochemistry.

d) Describe the principle of X-ray diffraction.

e) What are the applications of atomic absorption spectroscopy?

Total No. of Questions : 6]

SEAT No : ____

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[5324]-23
M.Sc.
BIOCHEMISTRY
BCH - 273 : Membrane Biochemistry and Genetics (2010)
Membrane Biochemistry and Nucleic Acid (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) ***Answers to the two sections should be written in separate answer books.***

SECTION-I
(Membrane Biochemistry)

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

a) Describe voltage gated ion channels.

b) Anti microbial agents and its transport.

c) Discuss the mechanism of Na-K pump and its function.

d) What is the different between primary and secondary active transport.

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

a) ATP-ADP exchanger system.

b) Note on Quatrain.

c) What are ionophores? Explain with example.

d) Explain Uniport, Antiport, Symport mechanism.

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

a) Explain different types of membrane modes.

b) What is liposomes? How it reaches target during drug transport.

c) Structure and significance of bacterial cell wall.

P.T.O.

SECTION-II

(Nucleic Acid/Genetics)

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

a) Explain regulation of lactose operon.

b) Write note Law of independent assortment with suitable example.

c) What Renaturation of DNA. What factors affect it.

d) What are different types of mutants. Explain with examples.

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

a) Describe structure of RNA. Add note on its types.

b) What is an operon? Describe with suitable example.

c) Describe life cycle of bacteriophage.

d) Describe the semiconservative mechanism of DNA replication.

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

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

b) Write note on mutant isolation and selection.

c) Distinguish and explain generalized and specialized transduction.

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Total No. of Questions :4]

SEAT No. :

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M.Sc.

BIOCHEMISTRY

BCH - 370 : Molecular Biology

(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) Write a note on semiconservative nature of DNA replication.

b) Explain types of point mutations.

c) Elaborate on editing of RNA in detail.

d) Explain glycosylation of proteins.

e) Describe prokaryotic DNA polymerase III structure and role.

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

a) Explain chromatin remodelling.

b) Prokaryotes translation and transcription are coupled, explain.

c) Write in brief about Ames test and its uses.

d) Explain protein targeting to nucleus.

e) Give need for splicing and explain alternative splicing.

P.T.O.

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

a) Write note on retroviruses.

b) Explain the inhibitors of protein synthesis.

c) Explain mechanism of non composite transposition.

d) Why are tRNA called adapter molecule? Explain.

e) Explain the role of different enzymes in homologous recombination.

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

a) Targeting of proteins to chloroplast.

b) Zinc figure domain.

c) Histone proteins.

d) E-coli RNA polymerase.

e) Base excision repair Mechanism.

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Total No. of Questions : 6]

SEAT No :

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[5324]-32
M.Sc.
BIOCHEMISTRY
BCH 371 : Medical Biochemistry & Immunology
(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

Medical Biochemistry

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

a) What are analgesic? Explain with example its mechanism of action.

b) What are lysosomes? Give its physiological role.

c) Explain the process of programmed cell death.

d) Elaborate on the mechanism of fibrin formation.

e) Explain the role of enzymes on myocardial infarction.

f) Give the composition of blood.

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

a) Give the composition of CSF and their biochemical significance.

b) Explain the molecular basis of hemoglobinopathies.

c) Elaborate on the cause and treatment of atherosclerosis.

d) Explain how bacteria develop resistance against antibiotics.

P.T.O.

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

a) Apoptosis.

b) Types of influenza.

c) Ischemic heart disease.

SECTION - II

Immunology

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

a) Explain the structure of immunoglobulin molecules.

b) Give the role of different barriers in innate immunity.

c) How adaptive immunity and antibody immunity are linked with each other?

d) Write the structure of MHC molecules.

e) Explain complement fixation test.

f) Give the difference between monoclonal and polyclonal antibodies.

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

a) Explain Classical and alternative pathways.

b) Explain the role of different cells involved in cell mediated immunity.

c) Enlist the antigen antibodies reactions and explain any one reaction.

d) Explain the different blood group substances.

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

a) Immunodeficiency disease.

b) Hypersensitivity reactions.

c) Types of vaccines.

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Total No. of Questions : 10]

SEAT No : ____

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[5324]-33

M.Sc.

BIOCHEMISTRY

BCH-372 :Neurochemistry

(2010 Pattern) (Semester-III) (Credit System)

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) What are the conformational states of acetylcholine receptor?

b) Discuss the concept of action potential.

c) Explain the events of synaptic transmission.

d) Write a note on colour vision.

e) Explain the role of Na^+-K^+-ATPase in nerve conduction.

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

a) Describe the structural relationships involved in the blood-brain and blood-CSF barriers.

b) What are the specificity and selectivity of NMDA glutamate receptor?

c) How does neural plasticity relate to learning, memory and cognition?

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

a) Describe the components and functions of the diencephalon.

b) What are different regions of the brain? Explain thier function with example.

c) Which environmental factors afffet the development of CNS?

P.T.O.

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

a) Myelination

b) Long term potentiation

c) GABA

d) Biochemistry of hearing

e) Neuropeptides

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M.Sc.

BIOCHEMISTRY

BCH-372 :Signal Transduction Pathways

(2008 Pattern) (Semester-III) (Credit System)

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) Explain the biochemistry of hearing.

b) What is nerve impulse mechanism? Explain.

c) Write in brief about neurotransmission.

d) What is relaxation? How Ca++ is segregated in sarcoplasm reticulum?

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

a) Explain the mechanism of generation of action potential.

b) Explain in detail the biochemistry of retina.

c) Write an account of on neural plasticity learning.

d) Explain in detail the molecular structure of sodium channels and give their role.

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

a) Chemotaxis

b) Colinergic receptors.

c) Cell motility.

SECTION-II
(Signal Transduction Pathways-II)

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

a) Describe in detail the neuranatomy of central nervous system.

b) How carbohydrates, proteins, lipid and amino acids are metabolized in brain.

c) Give the Mechanism of acetylcholine.

d) How are the nervous and endocrine systems coordinated.

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

a) Give the metabolism of any two neurotransmitters.

b) Explain morphology and anatomy of brain.

c) Explain the role of calcium in muscle contraction.

d) Explain the sliding filament theory in brief.

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

a) Blood brain barrier.

b) Sensory modalities and perception.

c) Calcium signaling.

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

P1938 **[Total No. of Pages : 2**

[5324]-34
M.Sc.
BIOCHEMISTRY
BCH-373: Biochemical Toxicology
(2008 & 2010 Pattern) (Semester-III)

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

Instructions to the candidates

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

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

a) Which experiments are performed to build up the toxicolocal profile of the chemical?

b) Explain the mechanism of cell injury caused by toxicant.

c) What do you understand the terms acute toxicity and chronic toxicity? How are they evaluated?

d) Explain the mechanism of xenobiotic metabolism catalized by glutathione S-transferase.

e) What are the toxic effects caused by DDT? Explain the mechanism of toxic effects caused by DDT.

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

a) Explain how teratogenic potential of chemical is screened?

b) What do you understand the terms safety and risk? Under which circumstances the risk is taken?

c) Explain the mechanism of biotransformation catalyzed by sulfotransferase.

d) What are the forensic and clinical applications of toxicology?

e) Explain Phase I and II biotransformation reactions.

P.T.O.

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

a) Distinguish between.

i) Immediate and delayed toxicity.

ii) Venomous and poisonous animals.

b) Explain the biotransformation pathway of benzene leading to cellular injury.

c) Biologic diversity plays an important role in selective toxicity of toxicants. Explain.

d) Give the components of Cytochrome P-450 monooxygenase system.

e) Give the classification of toxic agents with example.

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

a) Ame's test.

b) Plant and animal toxins.

c) Principles of toxicology.

d) Dose response relationship.

e) Teratology & reproduction.

Total No. of Questions : 6]

SEAT No. :

P1939

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[5324]-41
M.Sc.
BIOCHEMISTRY
BCH - 470 : Biochemical Endocrinology and Tissue Culture (2008 Pattern)
Biochemical Endocrinology and 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

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

a) Explain the effect of thyroid hormones.

b) Differentiate the role of ADH and ACTH.

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

d) Explain the functions of prostaglandins.

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

a) Write a note on estrogens.

b) Describe the structural properties of growth hormones.

c) List the different gastro-intestinal hormones and write a brief account of cholesystokinin.

d) What are growth factors. Explain their functions with example.

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

a) Write a note on zinc finger.

b) Describe the structure of insulin. How is it metabolized?

c) What is target-cell insensitivity? Explain the mutations involved in deficient androgen action.

P.T.O.

SECTION - II

(Tissue Culture) (2008 Old Pattern)

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

a) Describe various physical and chemical reagents used for sterilization.

b) Discuss the techniques used for maintenance of fibroblast culture.

c) What are cell repositories? Give its maintenance and importance.

d) Explain plants weaving and hardening.

e) Explain the various techniques used for making primary cell culture.

f) Discuss the factors affecting success of cell culture.

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

a) Discuss the factors affecting success of cell culture.

b) Explain the protocol of callus culture.

c) Describe the characteristic of primary cell culture and established cell lines.

d) Describe the preparation of media and sterilization technique used for media in tissue culture.

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

a) Cytokinines.

b) Embryo culture.

c) Organ Culture.

SECTION - II

(Plant Biochemistry) (2010 New Pattern)

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

a) Give the deficiency disorders related to magnesium and zinc deficiency.

b) State the significance of C4 pathway.

c) Give the assimilation of nitrates in nitrogen fixation.

d) Give the role of hormones in senescence and abscission.

e) Explain the specific disorders of TMV.

f) Explain the structure of chloroplast.

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

a) What are flavonoids? Explain its types and application with example.

b) Explain the Z-scheme of photosynthesis.

c) What is plant breeding? Give application of plant breeding in crop improvement with suitable examples.

d) Explain the biochemical changes occurring during seed germination.

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

a) Secondary metabolites.

b) Role of gibberelin.

c) TMV.

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Total No. of Questions : 4]

SEAT No :

P 1940

[Total No. of Pages :2

[5324]-42
M.Sc.
BIOCHEMISTRY
BCH - 472 : Genetic Engineering
(2008 & 2010 Pattern) (Semester-IV)

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 side indicate full marks.***

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

a) Write note on different methods for screening of recombinants.

b) Explain applications of genetic engineering in agriculture.

c) What are plasmids? Comment on their role in genetic engineering.

d) Write note on colony hybridization.

e) Compare cosmid vector with phage vectors.

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

a) What is blue white screening? How is useful in genetic engineering.

b) Explain principle and applications of microarray.

c) Write note on cDNA library.

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

e) Explain northern blotting technique.

P.T.O.

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

a) Write note on colony hybridization.

b) Explain methods for protein engineering.

c) Enlist applications of PCR with examples.

d) Explain Ti plasmid with its importance in genetic engineering.

e) Write note on cloning yeast vectors.

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

a) pBR322 vector.

b) Transgenic plants.

c) S1 mapping.

d) Restriction enzymes.

e) RFLP.

Total No. of Questions : 6]

SEAT No :

P 1941

[Total No. of Pages : 2

[5324]-43
M.Sc.
BIOCHEMISTRY
BCH - 471 : Fermentation technology and Food Technology
(2008 & 2010 Pattern) (Semester - IV) (Credit System)

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 compulsary.***
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) Write note on strain improvement.

b) What are different chemical methods of effluent treatment?

c) How will you proceed for isolation of auxotropic mutants.

d) Enlist applications of fermentation in industry.

e) Write note on effluent treatment.

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

a) Explain purification of fermentation products

b) Elaborate importance of aeration and agitation in fermentation.

c) What do you mean by optimization of media?

d) Explain effect of oxygen supply on product formation.

e) Write note on industrial application of immobilized enzymes.

P.T.O.

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

a) Write note on instrumentation of fermentor.

b) What is meant by media formulation.

c) What are different methods for preservation of industrially important microorganisms.

SECTION - II

(Food Technology)

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

a) Write note on single cell protein.

b) How is food genetically modified?

c) Explain different chemical changes occurring in food spoilage.

d) What are the different features of food obtained from plant and animal origin?

e) What are different enzymes used in meat tenderization?

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

a) How will you proceed for starch production?

b) Write note on food additives.

c) Explain the manufacturing of natural and synthetic syrup.

d) How to analyze food for its quality?

e) Explain principle of food preservation.

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

a) Give the role of enzymes in food processing.

b) What is Primary Feed Stock?

c) Explain what are flavoring agents.

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