Total No. of Questions : 8]

SEAT No. :

P2856

[Total No. of Pages : 2

[5531]-101
M.Sc.
BIOCHEMISTRY
BCH-170 : Biomolecules
(2013 Pattern) (Semester - I) (Credit System) (5 Credits)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Solve any two questions from Q.1 to Q.3 and Q.5 to Q.7.***
4) ***Q.4 and Q.8 are compulsory.***
5) ***All questions carry equal marks.***

SECTION - I
(Biomolecules - I)

Q1) Answer the following :

a) Give the structure of a heterodisaccharide. **[3]**

b) Write a note on rancidity of lipids. **[3]**

c) List out the coenzyme forms of Vitamin B complex with their significance. **[4]**

Q2) Answer the following :

a) Define saponification number and give its significance. **[2]**

b) Classify lipids with suitable examples. **[5]**

c) Differentiate between anomers and epimers. **[3]**

Q3) Answer the following :

a) Draw the structure of three phospholipids. **[3]**

b) Define Ka and pKa and give its significance. **[2]**

c) Discuss the source, Functions and deficiency of Vitamin A. **[5]**

Q4) Answer any one of the following : **[5]**

a) Explain the reactions of Glucose with oxidizing and reducing reagents.

b) Discuss the types and significance of lipoproteins.

P.T.O.

SECTION - II

(Biomolecules - II)

Q5) Answer the following

a) Write the structure of two polar amino acids. **[2]**

b) Write note on denaturation of proteins. **[3]**

c) Explain the titration curve of neutral amino acid and its significance. **[5]**

Q6) Answer the following

a) What are nonstandard amino acids? Give examples. **[2]**

b) Classify amino acids based on their R chain. **[5]**

c) Give the significance of rare amino acids. **[3]**

Q7) Answer the following

a) Give the reaction of amino acid with Ninhydrin reagent. **[2]**

b) Write note on features of peptide bond. **[4]**

c) Differentiate between Alpha helix and Beta pleated structures. **[4]**

Q8) Answer any one of the following : **[5]**

a) Explain Bruce Merfield's solid phase synthesis of peptide.

b) Describe the steps involved in determination of primary structure of proteins.

Total No. of Questions :8]

SEAT No. :

P2857

[Total No. of Pages :2

[5531]-102
M.Sc.
BIOCHEMISTRY
BCH - 171 : Enzymology And Biophysical Techniques
(2013 Pattern) (Semester - I) (Credit System) (5 Credits)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer to the two sections should be written in separate answer books.***
2) ***Question No. 4 and 8 are compulsory.***
3) ***Attempt any two questions from Q.1 to Q.3 and any two question from Q.5 to Q.7.***
4) ***Figures to the right side indicate full marks.***

SECTION - I
(Enzymology)

Q1) Answer the following.

a) What is positive co-operativity? Explain with suitable example. **[2]**

b) Differentiate between coenzyme and cofactors with example. **[3]**

c) What are the types of bisubstrate reaction? How bisubstrate reactions involving ternary complex are differentiated from those not involving ternary complexes? **[5]**

Q2) Attempt the following.

a) What is the catalytic triad of chymotrypsin? **[3]**

b) How do the differences in specificity between chymotrypsin and related protease arise? **[3]**

c) What is the effect of acid-base catalysis on an enzyme catalyzed reaction? **[4]**

Q3) Answer the following.

a) What is enzymatic activity? **[2]**

b) Describe any one theoretical model that has been used to describe conformational changes in controlling the activities of enzymes. **[4]**

c) Write a note on enzyme turnover. **[4]**

P.T.O.

Q4) Attempt any one of the following.

a) Discuss in detail effect of substrate concentration on enzyme catalyzed reaction (including Michaelis-Menten equation). **[5]**

b) How does tryosin activate chymotrysinogen? What is the difference between trypsin and chymotrypsin? **[5]**

SECTION - II

(Biophysical Techniques)

Q5) Answer the following.

a) How does the spectrophotometer work? **[2]**

b) Describe any one application of nitrocellulose filter. **[3]**

c) Write the principle and application of HPLC. **[5]**

Q6) Attempt the following.

a) What is SDS? What are its functions in SDS-PAGE? **[3]**

b) Explain the procedure to separate DNA fragments by agarose gel electrophoresis. **[3]**

c) What physical characteristics of a biomolecules influence its rate of movement in an electrophoresis matrix? **[4]**

Q7) Answer the following.

a) Why do we isolate proteins? **[2]**

b) Describe any two methods for immobilization of ligands. **[4]**

c) Differentiate between partition and adsorption chromatography with examples. **[4]**

Q8) Attempt any one of the following.

a) Write a note on isoelectric focusing. **[5]**

b) Briefly describe how paper chromatography works with the unknown mixtures. **[5]**

Total No. of Questions : 8]

SEAT No. :

P2858

[Total No. of Pages : 3

[5531]-103
M.Sc.
BIOCHEMISTRY
BCH-172 : Microbiology and Cell Biology
(2013 Pattern) (Semester - I) (Credit System) (5 Credits)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Solve any two questions from Q. 1 to Q. 3 and Q. 5 to Q. 7.***
4) ***Question 4 and 8 are compulsory.***
5) ***All question carry equal marks.***

SECTION-I

(Microbiology)

Q1) Answer the following:

a) Give the classification of plant and animal viruses. **[2]**

b) Explain different physical agents in control of microorganisms. **[3]**

c) Explain the principle working and application of phase contrast microscope. **[5]**

Q2) Answer the following:

a) Define exotoxin and endotoxin. **[2]**

b) Explain the structure of bacterial membrane. **[3]**

c) How dyes and heavy metals are useful in controlling growth of microbes? **[5]**

P.T.O.

Q3) Answer the following:

a) Difference between procaryotic & eukaryotic cells. **[2]**

b) Explain host microbe interaction in detail. **[4]**

c) Give the different phases of bacterial growth curve. **[4]**

Q4) Answer any one of the following: **[5]**

a) Explain the nitrogen cycle in detail.

b) Define sterilization, antimicrobial agents, sanitizer, disinfectant, and bactericide.

SECTION-II

(Cell Biology)

Q5) Answer the following:

a) What is cell theory? **[2]**

b) Classify fungi and give its biological importance. **[3]**

c) Draw a well labeled diagram of an animal cell and explain the function of any three cell organelles. **[5]**

Q6) Answer the following:

a) Distinguish between heterochromatin and euchromatin. **[2]**

b) Describe the chemical composition of plasma membrane. **[3]**

c) Define the term fertilization. What is the significance of fertilization? Explain. **[3]**

Q7) Answer the following:

a) Enlist the different constituents of nucleus. **[2]**

b) Brief about spermatogenesis and oogenesis with an illustration. **[4]**

c) Write a note on marker enzymes of various cell organelles with suitable examples. **[4]**

Q8) Answer any one of the following: **[5]**

a) Write a note on different types of transport mechanism across plasma membrane.

b) Explain in detail fractionation of cell organelles, by appropriate method.

Total No. of Questions : 8]

SEAT No. :

P2861

[Total No. of Pages : 3

[5531]-203
M.Sc.
BIOCHEMISTRY
BCH-272 : Biostatistics, Computer and Bioinformatics
(2013 Pattern) (Semester-II) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Solve any two questions from Q1 to Q3 and any two from Q5 to Q7.***
4) ***Question 4 and 8 are compulsory.***
5) ***All questions carry equal marks.***

SECTION-I
(Biostatistics and Computers)

Q1) Answer the following:

a) Define mean and mode of grouped frequency distribution. **[2]**

b) Obtain mode of the following data graphically. **[4]**

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	5	10	18	15	6	16	1

c) Find out the arithmetic mean and median of the following data: **[4]**

No. of seeded plants	10	7	6	12	5	7	16	8	20
No. of plants	40	26	47	43	49	60	50	29	30

Q2) Answer the following:

a) Compute median of the following data: **[3]**

8, 9, 11, 12, 5, 6, 3, 8, 9, 10, 14, 12, 15, 16

b) Obtain mean of the following data: **[3]**

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	1	6	4	3	2

c) What do you mean by: **[4]**

i) Mean variants ii) Standard deviations

P.T.O.

Q3) Answer the following:

a) Define probability of an event. **[2]**

b) Draw the histogram of the following data and mention its distribution shape. **[5]**

No. of pods	No. of plants
0-6	4
6-12	8
12-18	15
18-24	20
24-30	12

c) Draw a percentage bar diagram and pie diagram of the following data. **[3]**

Crops	Area in thousand hectares
Rice	3126
Jowar	25
Wheat	256
Bajra	200
Maize	1000

Q4) Answer any one: **[5]**

a) Explain the difference between hardware and software and give its importance.

b) Write a program to accept two numbers and display greatest number between two.

SECTION-II

(Bioinformatics)

Q5) Attempt the following:

a) Define orthologs and paralogs. **[2]**

b) Give the application bioinformatics in pharmacy. **[4]**

c) PDB (Protein data base). **[4]**

Q6) Distinguish between the following:

a) BLASTA and FASTA. **[4]**

b) Global and Local alignment. **[3]**

c) PAM and BLOSUM Matrix. **[3]**

Q7) Answer the following:

a) Write a note on gap penalty. **[3]**

b) Explain how multiple sequence alignment can be used to find out the conserved region of protein sequence. **[3]**

c) Explain how sequence data is generated for Expressed sequence Tags database division of NCBI. **[4]**

Q8) Answer any one of the following: **[5]**

a) Explain why there is a need of heuristics approach in data base sequence search. Explain any one heuristics approach in sequence similarity search.

b) You have isolated one protein, how will you find its shape and structure.

Total No. of Questions : 8]

SEAT No. :

P2862

[Total No. of Pages : 2

[5531]-204
M.Sc.
BIOCHEMISTRY
BCH-273 : Membrane Biochemistry and Genetics
(2013 Pattern) (Semester-II) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer to both sections should be written on separate answer sheets.***
2) ***Question 4 and Question 8 are compulsory.***
3) ***Attempt any two questions from Q. 1 to Q. 3 and any two from Q. 5 to Q. 7.***
4) ***Figures to the right indicate full marks.***

SECTION-I

(Membrane Biochemistry)

Q1) Answer the following:

a) Explain co-transport of chloride in humans. **[3]**

b) Elaborate interaction between protein-lipid in membranes. **[3]**

c) Give the role of gramiciden as a transport antibiotic. **[4]**

Q2) Answer the following:

a) Explain flip-flop nature of membrane. **[2]**

b) What are binding protein. Explain with examples. **[3]**

c) Lipids are major constituent of biological membrane. Explain. **[5]**

Q3) Answer the following:

a) What is osmoregulation? **[2]**

b) What are different types of transport mechanism. Explain role of protein in transport. **[4]**

c) Write in detail structure and significance of miscells. **[4]**

P.T.O.

Q4) Answer any one of the following: **[5]**

a) How do membrane lipids influence curvature of membrane.

b) Write note on sodium channel & its significance.

SECTION-II

(Genetics)

Q5) Answer the following:

a) Explain Watson and Crick model of DNA. **[3]**

b) Give an account of lytic cycle in bacteriophage. **[3]**

c) Explain Hardy-Weinberg principle. **[4]**

Q6) Answer the following:

a) Distinguish between specialized & generalized transduction. **[3]**

b) Explain human teratogenesis. **[3]**

c) What are Auxotroph, Prototroph and conditional mutants? **[3]**

Q7) Answer the following:

a) What is pedigree analysis? Explain with example. **[3]**

b) Define Aneuploidy, euploidy, trisomy. **[3]**

c) Explain law of independent assortment. **[4]**

Q8) Explain any one in detail: **[5]**

a) Explain lactose operon.

b) Discuss Avery, Macleod & Mcarty experiment and its interpretations.

Total No. of Questions : 6]

SEAT No. :

P2863

[Total No. of Pages : 2

[5531]-301
M.Sc.
BIOCHEMISTRY
BCH-370 : Molecular Biology
(2013 Pattern) (Semester - III) (Part - II) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any three questions from Q.1 to Q.4.***
2) ***Q.5 and 6 are compulsory.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***

Q1) Answer the following :

a) What are Okazaki fragments? **[2]**

b) Explain Base excision repair mechanism. **[3]**

c) Define mobile genetic elements and give an example. **[2]**

d) Explain the subunit composition of DNA polymerase III holoenzyme. **[3]**

Q2) Answer the following :

a) Describe mechanism of splicing followed by Group I introns. **[3]**

b) What are telomerase and what is its significance? **[3]**

c) Discuss the process of transcription termination in prokaryotes. **[4]**

Q3) Answer the following :

a) Explain pyrimidine dimer formation. **[3]**

b) Write note on inhibitors of protein synthesis. **[3]**

c) Explain Holiday model of recombination. **[4]**

Q4) Answer the following :

a) Explain the structure of chromatin. **[2]**

b) Write a note on Initiation of translation in eukaryotes. **[3]**

c) Brief about RNA editing. **[2]**

d) Differentiate between adenovirus and retrovirus. **[3]**

P.T.O.

Q5) Attempt any two

a) Describe post translational modifications events in detail. **[5]**

b) Elucidate spliceosome mediated splicing event in Eukaryotic system. **[5]**

c) Explain the role of all the enzymes involved in DNA synthesis. **[5]**

Q6) Attempt any two

a) Write note on capping and poly A tail addition. **[5]**

b) Explain chromatin remodeling. **[5]**

c) Explain the mitochondrial transportation of protein. **[5]**

Total No. of Questions :8]

SEAT No. :

P2864

[Total No. of Pages :2

[5531]-302
M.Sc.
BIOCHEMISTRY
BCH - 371 : Medical Biochemistry and Immunology
(2013 Pattern) (Semester - III) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Solve any two questions from Q.1 to Q.3 and from Q.5 to Q.7.***
4) ***Question 4 and 8 are compulsory.***
5) ***All question carry equal marks.***

SECTION - I
Medical Biochemistry

Q1) Answer the following.

a) What are isoenzymes? Elaborate on its role. **[2]**

b) What are antibiotics? Explain the mechanism of action of streptomycin and tetracycline at the molecular level. **[4]**

c) What are abnormal hemoglobins? Elaborate on the molecular basis of sickle - cell Anaemia. **[4]**

Q2) Answer the following.

a) Elaborate on the normal composition of Cerebrospinal fluid. **[2]**

b) Describe hallucinogens. **[5]**

c) Discuss the mechanism of carcinogenesis. **[3]**

Q3) Answer the following

a) How micro-organism develop resistance to antibiotics. **[2]**

b) Explain the processes of programmed cell death. **[4]**

c) Elaborate the mechanism of fibrin formation. **[4]**

P.T.O.

Q4) Answer any one of the following. **[5]**

a) Give the etiology of cancer.

b) Discuss on artheriosclerosis.

SECTION - II

Immunology

Q5) Answer the following.

a) Define Immunology. **[2]**

b) Explain the MHC molecule in details. **[4]**

c) Explain the importance of immuno-electrophoresis over immono-diffusion techniques. **[4]**

Q6) Answer the following.

a) Define isotype and allotype. **[2]**

b) Describe the classical compliment pathway. **[4]**

c) Describe immunoelectron microscopy. **[4]**

Q7) Answer the following.

a) Give the principle of RIA. **[2]**

b) Enlist the different types of immunity generated in body and explain the correlation between humoral and acquired immunity. **[4]**

c) Explain the structure of immunoglobulin molecule. Give the characteristic function of each class. **[4]**

Q8) Answer any one of the following. **[5]**

a) Explain Recombinant Vaccines and Polyvalent vaccines.

b) Discuss the features of immunodeficiency diseases with example.

Total No. of Questions : 8]

SEAT No. :

P2865

[Total No. of Pages : 3

[5531]-303
M.Sc.
BIOCHEMISTRY
BCH-372 : Neurochemistry and Biochemistry of Specialized Tissues
(2013 Pattern) (Semester - III) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer to the two sections should be written in separate answer books.***
2) ***Question no. 4 and 8 are compulsory.***
3) ***Attempt any two questions from Q. 1 to Q. 3 and any two questions from Q. 5 to Q. 7.***
4) ***Figures to the right side indicate full marks.***

SECTION-I

(Neurochemistry)

Q1) Answer the following:

a) What is a sensory modality? **[2]**

b) Describe the components of an autonomic reflex. **[4]**

c) What are the components of diencephalon? Describe the functions of the diencephalon. **[4]**

Q2) Attempt the following:

a) Describe the functions of spinal cord. **[3]**

b) What is circadian rhythm? Explain the role of biomecules involved in circadian rhythm. **[3]**

c) How is neurotransmitter removed from the synaptic cleft? **[4]**

P.T.O.

Q3) Answer the following:

a) What is long-term potentiation? **[2]**

b) Distinguish between gray matter and white matter. **[3]**

c) Compare the locations and functions of the direct and indirect motor pathways. **[5]**

Q4) Attempt any one of the following:

a) Explain the formation and circulation of cerebrospinal fluid. **[5]**

b) Describe the different ways to classify sensory receptors. **[5]**

SECTION-II

(Biochemistry of Specialized Tissues)

Q5) Answer the following:

a) What is chemotaxis? What is positive chemotaxis? **[2]**

b) Compare the basic types of ion channels, and explain how they relate to graded potentials and action potentials. **[4]**

c) How does the sense of touch work? **[4]**

Q6) Attempt the following:

a) Discuss the mechanism involved in the movement of cilia and flagella. **[3]**

b) Discuss the effects of neurotoxins on the nervous system. **[3]**

c) What is the relationship between ATP and creatine phosphate in the production of energy used for skeletal muscle contractions? **[4]**

Q7) Answer the following:

a) What are the differences between taste and olfaction receptors? **[2]**

b) Define contraction cycle and explain the four steps involved in contraction cycle. **[3]**

c) List the steps of the configuration changes that occur to the photopigments upon absorption of a photon. **[5]**

Q8) Attempt any one of the following:

a) What are motor proteins? Describe the structure and function of any two motor proteins. **[5]**

b) List the sequence of events that generate an action potential. **[5]**

Total No. of Questions :8]

SEAT No. :

P2866

[Total No. of Pages :2

[5531]-304
M.Sc.
BIOCHEMISTRY
BCH-373: Toxicology and Plant Biochemistry
(2013 Pattern) (Credit System) (Semester - III)

Time : 3Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any two questions from Q1to Q3 and ant two from Q5 to Q7.***
2) ***Question number 4 and question number 8 is compulsory.***
3) ***Answers to both the sections should be written on separte answer sheets.***
4) ***Figures to the right indicate full marks.***

SECTION-I

(Toxicology)

Q1) Answer the following.

a) Write the principle of toxicology. **[2]**

b) Explain in detail AIMS test. **[4]**

c) Explain local verses systemic toxicology. **[4]**

Q2) Answer the following.

a) What are animal and plant toxins? **[2]**

b) Explain the components of cytochrome P 450 monooxygenase system. **[4]**

c) Give the forensic application of toxicology. **[4]**

Q3) Attempt the following.

a) Give the classification of toxicology. **[2]**

b) Write a note on reproduction and teratology. **[4]**

c) Explain phase I and phase II biotransformation reaction. **[4]**

P.T.O.

Q4) Answer any one of the following. **[5]**

a) Explain in detail how the route of entry of any chemicals is dependent on its toxicity.

b) Explain in detail how will you perform acute, subacute, chronic and subchronic tests.

SECTION-II

(Plant Biochemistry)

Q5) Answer the following.

a) Give the difference between cyclic and non-cyclic electron flow in photosynthetic system. **[2]**

b) Explain the nitrogen cycle in detail. **[4]**

c) Describe somatic cell hybridisation. **[4]**

Q6) Answer the following.

a) Enlist micro and macro minerals required for plant growth. **[2]**

b) Give the role of hormones in senescence and abscission. **[4]**

c) What are secondary metabolites? Explain in detail chemistry, classification and its application. **[4]**

Q7) Attempt the following.

a) What is the role of cytokinin in plant growth? **[2]**

b) Give the assimilation of nitrates in nitrogen fixation. **[4]**

c) Describe any three plant diseases with respect to pest, symptoms and treatment. **[4]**

Q8) Answer any one of the following. **[5]**

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

b) Explain C_3 and C_4 pathway.

Total No. of Questions :8]

SEAT No. :

P2867

[Total No. of Pages :2

[5531]-401
M.Sc.
BIOCHEMISTRY
BCH-470 : Physiological Biochemistry and Endocrinology
(2013 Pattern) (Credit System) (Semester-IV)

Time : 3Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer to the two sections should be written in separate answer books.***
2) ***Question no 4 and 8are compulsory.***
3) ***Attempt any two questions from Q. 1 to Q.3 and any two questions from Q.5 to Q.7***
4) ***Figures to the right side indicate full marks.***

SECTION-I

(Physiological Biochemistry)

Q1) Answer the following:

a) What is jaundice? What causes Jaundice? **[2]**

b) Describe the basic processes performed by the digestive system. **[3]**

c) Explain the difference between intrinsic and extrinsic pathway of blood clotting. **[5]**

Q2) Attempt the following:

a) What is tubular reabsorption? **[3]**

b) Why Vitamin K is important in blood clotting? **[3]**

c) How do temperature H^+, pCO_2, and BPG influence the affinity of Hb for O_2? **[4]**

Q3) Answer the following:

a) What is the difference between gas exchange and respiration? **[2]**

b) Explain the functions of pancreatic amylase, aminopeptidase, gastric lipase and deoxyribonuclease. **[4]**

c) How the body maintains water balance? **[4]**

P.T.O.

Q4) Attempt any one of the following:

a) Explain the mechanism of transport of oxygen and carbon dioxide in the blood **[5]**

b) Describe the routes and mechanisms of tubular reabsorption and secretion. **[5]**

SECTION-II

(Endocrinology)

Q5) Answer the following:

a) What are the target cells of growth hormone? What are its effects? **[2]**

b) Which hormone stimulates the production of cortisol? How production of cortisol is regulated? **[3]**

c) Explain the structural features of insulin during its synthesis. **[5]**

Q6) Attempt the following:

a) Describe the steps involved in synthesis and release of thyroid hormones. **[3]**

b) Explain the role of cAMP as second messenger. **[3]**

c) What is target cell insensitivity? Describe the relation between over production and target cell insensitivity with example. **[4]**

Q7) Answer the following:

a) Define "releasing" and "inhibiting" hormones. **[2]**

b) Write a note on 'Hormonal-interrelationship'. **[4]**

c) Give the function and mode of action of gastrointestinal hormones. **[4]**

Q8) Attempt any one of the following:

a) What is the difference between type I diabetes mellitus and type II diabetes mellitus? **[5]**

b) How secretion of posterior pituitary hormone is regulated? **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2869

[Total No. of Pages : 2

[5531]-403
M.Sc.
BIOCHEMISTRY
BCH-472 : Genetic Engineering
(2013 Pattern) (Semester-IV) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right side indicate full marks.***
3) ***Solve any two questions from Q1 to Q3 and Q5 to Q7.***
4) ***Question 4 and 8 are compulsory.***
5) ***All questions carry equal marks.***

SECTION-I

Q1) Answer the following:

a) Differentiate between transformation and transfection process. **[2]**

b) Give methods for identification of transformed and non transformed cells. **[4]**

c) Write a note on Restriction endonucleases citing its importance in genetic engineering. **[4]**

Q2) Answer the following:

a) What are difference between cloning vectors and expression vector? **[2]**

b) Write a note on pBR 322 vector. **[4]**

c) Discuss Southern blotting method and its application. **[4]**

Q3) Answer the following:

a) Write a note on blue-white screening. **[2]**

b) How to determine position of exon-intron by using S1 nuclease assay? **[4]**

c) Write a note on Chromosomal walking. **[4]**

P.T.O.

Q4) Answer any one of the following: **[5]**

a) Explain how cDNA library is constructed and how it differs from genomic library?

b) Explain dideoxy method of DNA sequencing.

SECTION-II

Q5) Answer the following:

a) What are the different systems of recombinant protein production? **[2]**

b) What is PCR? Explain the methods of any two types of PCR. **[3]**

c) Discuss the technique of RFLP and its application. **[5]**

Q6) Answer the following:

a) What are the applications of protein engineering? **[2]**

b) Describe chemical and physical methods to produce transgenic animals. **[4]**

c) Explain Antisense RNA technology with any one example. **[4]**

Q7) Answer the following:

a) What do you mean by genome annotations? **[2]**

b) Explain the mechanism of RNAi. **[4]**

c) Write a note on recombinant vaccines citing any one example. **[4]**

Q8) Answer any one of the following: **[5]**

a) Discuss the applications of GE in Medicine and Agriculture.

b) What is in vitro mutagenesis? Describe oligonucleotide based method of introducing mutation.

Total No. of Questions : 8]

SEAT No. :

P2870

[Total No. of Pages : 2

[5531]-404

M.Sc.

BIOCHEMISTRY

BCH-473 : Clinical Nutrition and Food Technology

(2013 Pattern) (Semester-IV) (Credit System) (Optional Course)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answers to both sections should be written on separate answer sheets.***
2) ***Figures to the right side indicate full marks.***
3) ***Solve any two questions from Q1 to Q3 and Q5 to Q7.***
4) ***Question 4 and 8 are compulsory.***

SECTION-I

(Clinical Nutrition)

Q1) Answer the following:

a) Which toxic chemical is present in tea? **[2]**

b) Describe the relationship between dietary cholesterol and lipid metabolism. **[4]**

c) Enlist the organs affected by alcohol consumption with its effect. **[4]**

Q2) Answer the following:

a) What is acidic food? Explain with example. **[3]**

b) Write a short note on irradiation and refining of food. **[3]**

c) Explain the parameters of assess the PEM. **[4]**

Q3) Answer the following:

a) Explain the effect of exercise on metabolic adaptation. **[3]**

b) What are the inborn errors of metabolism? Explain its management. **[4]**

c) What are the effect of food quality on mental development. **[3]**

P.T.O.

Q4) Answer any one of the following: **[5]**

a) What is kwashiorkor? Enlist symptoms and causes.

b) Describe the nutritional status of dairy product and cereals in India.

SECTION-II

(Food Technology)

Q5) Answer the following:

a) List the toxic substances present in plant food. **[3]**

b) What are flavoring agents? Explain their role in food technology. **[3]**

c) Describe the sensory evaluation of food in detail. **[4]**

Q6) Answer the following:

a) Explain how measurement of colors in food is done? **[3]**

b) Explain how the texture of food is analyzed. **[3]**

c) Explain microbial toxins and toxins in animal food. **[4]**

Q7) Answer the following:

a) Write the note on food additives. **[3]**

b) Explain the manufacture of natural and synthetic syrups. **[3]**

c) How will you process for production of starch. **[4]**

Q8) Answer any one of the following: **[5]**

a) Explain how food is modified genetically.

b) Discuss the role of different enzymes used in food processing.