Total No. of Questions :8]

SEAT No. :

P1942

[Total No. of Pages :3

[5324] - 101

M.Sc.

BIOCHEMISTRY

BCH - 170 : Biomolecules

(2013 Pattern) (Semester - I) (Credit System)

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

Instructions to the candidates:

1) ***Answer to the two sections should be written in seperate answer books.***
2) ***Question 4 and Q No.8 are compulsory. Out of the remaining, attempt any two questions froms section I and any two from section II.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***All questions carry equal marks.***

SECTION - I

Q1) Answer the following:

a) Write any three chemical reactions of carbohydrates. **[3]**

b) Explain the significance of glucose and fructose. **[3]**

c) Draw structure of

i) Cellulose

ii) Glucopyranose.

iii) Maltose

iv) Fructofuranose. **[4]**

Q2) Answer the following:

a) Explain the term rancidity. **[2]**

b) Explain the biological role of vitamins as coenzyme. Give example. **[3]**

c) Explain the classification of lipids with suitable example. **[5]**

P.T.O.

Q3) Answer the following:

a) What is epimer. Give an example. **[2]**

b) Explain the different water soluble vitamins with their significance. **[4]**

c) What is meant by LDL, HDL, VLDL, explain with example. **[4]**

Q4) Attempt <u>any one</u> of the following:

a) Explain the propertives of water in details. **[5]**

b) Give basic structure and classification of carbohydrates. **[5]**

SECTION - II

Q5) Answer the following:

a) Explain the acid-base properies of aminoacids with respect to titration curve. **[3]**

b) Explain α–helixal structure of protein with example. **[3]**

c) Describe any two techniques involved in protein seperation. **[4]**

Q6) Answer the following:

a) Give importance of primary structure of proteins. **[2]**

b) Explain sangers method for protein sequencing. **[3]**

c) Write note on solid- phase synthesis. **[5]**

Q7) Answer the following:

a) What are Globular proteins? Give two examples. **[2]**

b) Draw structure of tripeptides **[3]**

i) Ala - Tyr - Val

ii) Gly - Val - Lev

iii) Phe - Ala - Gly

c) Give an account of x - ray diffraction technique. **[5]**

Q8) Attempt <u>any one</u> of the following:

a) Write note on end group analysis. **[5]**

b) Discuss the quaternary structure of proteins. **[5]**

Total No. of Questions : 8]

SEAT No :

P 1943

[Total No. of Pages : 2

[5324]-102
M.Sc.
BIOCHEMISTRY
BCH - 171 : Enzymology and Biophysical Techniques
(2013 Pattern) (Semester - I) (Credit System)

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

Instructions to the candidates:

1) ***Answer to both the sections should be written on separate answer sheets.***
2) ***Q.4 & Q.8 are compulsory.***
3) ***Attempt any two questions from Q1 to Q3 any two from Q5 & Q7.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Enzymology

Q1) Answer the following:-

a) What is active site at an enzyme? Give its function **[2]**

b) Explain ISO-enzymes with suitable example. **[4]**

c) Define enzyme turnover? Give its significance. **[4]**

Q2) Attempt the following:

a) Distinguish between co-enzyme and prosthetic group. **[3]**

b) Give classification of enzyme inhibitor. **[3]**

c) Explain M.W.C. model for regulation at enzyme activity. **[4]**

Q3) Attempt the following:

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

b) Explain ubiqutin cycle for proton degradation. **[3]**

c) Describe the effect of various factors on enzyme activity. **[5]**

P.T.O.

Q4) Attempt any one of the following:

a) Describe mechanism of reaction catalysed by serine protease. **[5]**

b) Derive michelis menten equation. **[5]**

SECTION - II

Biophysical Techniques

Q5) Answer the following:

a) State lamberts and beer's law. **[2]**

b) What is affinity chromatography? Explain its application in biological chemory with suitable example. **[4]**

c) Enlist various methods of cell types explain any one in detail. **[4]**

Q6) Attempt the following:

a) How you determine molecular weight of protein by using SDS-PAGE? **[3]**

b) Describe the principle of ISO-electric focussing. **[3]**

c) Write a short note on dialysis. **[4]**

Q7) Attempt the following:

a) What is principle of thin layer chromatography? **[2]**

b) What is freeze drying? Give its application. **[3]**

c) What is gel electrophoresis? How proteins are separated by using polyacrylanucle gel electrophores. **[5]**

Q8) Attempt any one of the following:

a) Distinguish between parllon & adsorption chromatography. **[5]**

b) What are cation & anion exchanges? How Jon exchange chromatography is used in protein purification. **[5]**

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Total No. of Questions : 8]

SEAT No : ____

P 1944

[Total No. of Pages :2

[5324]-103
M.Sc.
BIOCHEMISTRY
BCH- 172: Microbiology and Cell Biology
(2013 Pattern) (Semester - I) (Credit)

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

Instructions to the candidates:

1) ***Answer any two question from question No.1 - 3 and any two from question No. 5 - 7.***
2) ***Question No.4 and 8 are compulsory.***
3) ***Answer both the section on seperate answer sheets.***

SECTION - I
Microbiology

Q1) Answer the following :

a) Note on gram staining. **[2]**

b) Explain bacterial growth curve. **[4]**

c) Explain electron microscope and its limitation. **[4]**

Q2) Attempt the following :

a) Why penicillin is more effective against gram positive than gram negative bacteria. **[2]**

b) Write a note on exotoxin and endotoxins. **[4]**

c) How the host microbe inheraction taken place to cause on infection. Explain. **[4]**

Q3) Answer the following :

a) Classify plant and animal viruses. **[2]**

b) Give the method for industrial production of Vinegar. **[3]**

c) discuss in detail bright field and dark field microscopy with application. **[5]**

P.T.O.

Q4) Answer <u>any one</u> of the following :

a) Explain the replication of Herpes simplex virus. **[5]**

b) Explain the physical and chemical agents in control of micro-organism. **[5]**

SECTION - II

Cell Biology

Q5) Answer the following :

a) What are the different classes of Chromosomer. **[2]**

b) Write a note on structure and function of Cloroplast. **[3]**

c) Difference between mitosis and meiosis. **[4]**

Q6) Attempt the following :

a) Write a note on major groups of fungi. **[5]**

b) What is difference between prokaryotic and eukaryotic cell. **[3]**

c) Why mitochondria is termed as “Power House” of the cell. **[2]**

Q7) Answer the following :

a) What is stem cell and what are its types. **[3]**

b) Define the term fertilizaion what is the significance of fertilization. **[5]**

c) Differentiate between active and passive transport. **[2]**

Q8) Answer any one:

a) Write a note on density gradient centrifugation. **[5]**

b) Write a note on organogenesis. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P1945

[Total No. of Pages : 2

[5324]-201

M.Sc. (Biochemistry)

BCH - 270 : BIOENERGETICS AND METABOLISM

(2013 Pattern) (Semester - II) (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 comulsory.***
3) ***Attempt any two qeustions from Q. 1 to Q. 3 and any two questions from Q. 5 to Q. 7.***
4) ***Figures to the right indicate full marks.***

SECTION - I

(Bioenergetics and Metabolism - I)

Q1) Answer the following:

a) Give short account of high energy phosphate compounds. **[2]**

b) Write a note on bacterial photosynthesis. **[3]**

c) Describe the reactions involved in citric acid cycle. **[5]**

Q2) Attempt the following:

a) Write short account of photorespiration in C_3 plants. **[3]**

b) Describe Calvin cycle. **[3]**

c) What are photosynthetic pigments? Describe their role in photosynthesis. **[4]**

Q3) Attempt the following:

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

b) Discuss metabolism of glucose in anaerobic condition. **[4]**

c) Write a short note on glyoxylate cycle. **[4]**

Q4) Attempt any one of the following:

a) Discuss the fundamental reactions of photosynthesis. **[5]**

b) Explain the energetic and regulation of TCA cycle. **[5]**

P.T.O.

SECTION - II

(Bioenergetics and Metabolism - II)

Q5) Answer the following:

a) How histidine biosynthesis takes palce? **[2]**

b) Write a note on glutamyl cycle. **[3]**

c) Describe the steps involved in cysteine biosynthesis. **[5]**

Q6) Attempt the following:

a) What is fate of uric acid in different animal species? **[3]**

b) Explain the various reactions involved in pyrimidine degradation. **[3]**

c) Write a note on porphyrins. **[4]**

Q7) Answer the following:

a) What are ketone bodies and when are they produced? **[2]**

b) Describe the steps involved in heme degradation. **[4]**

c) Write a note on decarboxylation of amino acids. **[4]**

Q8) Attempt any one of the following:

a) Explain conversion of nucleoside monophosphate to nucleoside triphosphate. **[5]**

b) What is oxidative deamination? Explain with example. **[5]**

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Total No. of Questions : 8]

SEAT No : ____

P 1946

[Total No. of Pages :2

[5324]-202
M.Sc.
BIOCHEMISTRY
BCH - 271 : Techniques for Characterization of Biomolecules
(2013 Pattern) (Semester-II) (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) ***Questions No. 4 and 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 side indicate full marks.***

SECTION-I

Biophysical Methods

Q1) Answer the following:

a) What is the principle of zonal centrifugation? **[2]**

b) Describe the applications of diffusion coefficient. **[4]**

c) What are the factors affecting on viscosity? Explain any one in detail. **[4]**

Q2) Attempt the following:

a) Write a note on free radicals and radiolysis of water. **[3]**

b) Describe the theory of X-ray diffraction. **[3]**

c) Describe any one application of sedimentation with example. **[4]**

Q3) Answer the following:

a) Explain the types of radiations used in biochemistry. **[2]**

b) Write a note on autoradiography. **[3]**

c) Describe the factors affecting on sedimentation. **[5]**

P.T.O.

Q4) Attempt any one of the following:

a) Write a note on radiation dosimetry. **[5]**

b) Describe the method for determination of sedimentation coefficient. **[5]**

SECTION-II

Structure determination of Biomolecules

Q5) Answer the following:

a) What is polarization of fluorescence? **[2]**

b) Describe the advantages of atmospheric pressure photoionization. **[4]**

c) Enlist the applications of infrared spectroscopy. **[4]**

Q6) Attempt the following:

a) What are the components of MALDI - TOP - MS? Write the function of any four components in brief. **[3]**

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

c) Explain any one application of ORD and CD. **[4]**

Q7) Answer the following:

a) Write a note on conductometric biosensors. **[2]**

b) Write any one application of MALDI - TOP - MS in brief. **[3]**

c) Describe the special uses of fluorescence in biology and biochemistry. **[5]**

Q8) Attempt any one the following:

a) Describe the applications of ESR. **[5]**

b) What is LC-MS? Explain the mobile phases used in LC-MS. **[5]**

Total No. of Questions :8]

SEAT No. :

P1947

[Total No. of Pages : 3

[5324]-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) ***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 Q.1 to Q3 and Q5 to Q7.***
4) ***Question 4 and 8 are compulsory.***

SECTION-I

Biostatistics and Computer

Q1) Answer the following :

a) Compute standard deviation of the following data : **[4]**

12	10	7	6	11	5	7	6	8	10

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	2	5	10	16	9	4	1

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

Q2) Answer the following :

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

3, 6, 4, 2, 6, 7, 8, 9, 1, 3, 5, 8, 4, 2, 6, 2.

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

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

c) Define the following terms : **[4]**

i) Median

ii) First quartile

iii) Seventh decile

P.T.O.

Q3) Answer the following :

a) When two dices are rolled simultaneously. State the possible outcomes of the random experiment. What is the probability of getting both heads on uppermost face? **[3]**

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

c) 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

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

a) Explain data types in C language with example.

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

SECTION-II

Bioinformatics

Q5) Attempt the following :

a) NCBI **[4]**

b) EBI **[4]**

c) Define orthologs and paralogs **[2]**

Q6) Distinguish between the following :

a) Pubmed and Pubmed Central. **[4]**

b) PAM and BLOSUM Matrix **[3]**

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

Q7) Answer the following :

a) Write a note on BLAST **[4]**

b) DDBJ **[3]**

c) PIR **[3]**

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

a) What is pairwise sequence alignment? Explain it in detail.

b) What is multiple sequence alignment? Explain it in detail.

Total No. of Questions : 8]

SEAT No : ____

P 1948

[Total No. of Pages :2

[5324]-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) ***Answers 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
(Membrane Biochemistry)

Q1) Answer the following:

a) What are membranes associated diseases? Explain with suitable example. **[2]**

b) Write a note on group of translocation. **[3]**

c) Describe different ways of association of proteins with membrane. **[5]**

Q2) Attempt the following:

a) Describe the role of Na^+ K^+ ATPase in membrane permeability. **[3]**

b) Write a note on ionophores. **[3]**

c) What is glycosylation and why is it important? **[4]**

Q3) Answer the following:

a) How is receptor mediated endocytosis different from phagocytosis? **[2]**

b) Write a note on bacterial cell envelope. **[4]**

c) Describe the modes of penetration of antimicrobial agents. Explain with example. **[4]**

P.T.O.

Q4) Attempt any one of the following:

a) Describe Singer-Nicholson's fluid model of membrane structure. **[5]**

b) Explain the role of binding proteins in control of transport processes. **[5]**

SECTION-II
(Genetics)

Q5) Answer the following:

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

b) Write a short note on genetic code. **[3]**

c) What are differences between auxotroph and prototroph? Explain with example. **[5]**

Q6) Attempt the following:

a) What did Meselson and Stahl conclude from their experiment? Explain experiment in brief. **[3]**

b) Write a short note on bacterial conjugation. **[3]**

c) What are the four different types of chromosomal mutations? **[4]**

Q7) Answer the following:

a) What is Mendel's theory of inheritance? Explain with suitable example. **[2]**

b) Write a short note on denaturation of DNA. **[4]**

c) What is a cloning vector? Explain its role. **[4]**

Q8) Attempt any one of the following:

a) What does a complementation test determine? Explain with suitable example. **[5]**

b) Describe the various forms of DNA. **[5]**

Total No. of Questions :6]

SEAT No. :

P1949

[Total No. of Pages :3

[5324] - 301

M.Sc.

BIOCHEMISTRY

BCH - 370 : Molecular biology

(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 three questions from Q1 to Q4.***
4) ***Question 5 and 6 are compulsory.***

Q1) Explain the following:

a) Role of helicase in DNA replication. **[2]**

b) Formation of pyrimidine dimer. **[3]**

c) Role of Rec A and Ruv C involved in recombination. **[2]**

d) Nucleotide repair system. **[3]**

Q2) Answer the following:

a) Explain steps involved in charging of t-RNA. **[3]**

b) Explain RNA capping and its significance. **[3]**

c) Write note on prokaryotic transcriptional inhibitor. **[4]**

Q3) Answer the following:

a) Justify t-RNA is called adapter molecule. **[3]**

b) Explain types of DNA polymerase involved in replication. **[3]**

c) Explain composite and non-composite transposons. **[4]**

P.T.O.

Q4) Answer the following:

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

b) Write note on signal hypothesis for protein trageting. **[3]**

c) Define transposition and transposon. **[2]**

d) Explain the role and significance of ribosome in protein synthesis. **[3]**

Q5) Attempt any two.

a) DNA replication is semiconservative. Explain. **[5]**

b) Write note on chromatin remodeling. **[5]**

c) Explain how Ames test can be used for detecting carcinogenesis. **[5]**

Q6) Attempt any two.

a) Explain and distinguish between prokaryotic and eukaryotic mRNA. **[5]**

b) Write note on Adenovirus. **[5]**

c) Explain the protein targeting to plasma membrane and peroxisomes. **[5]**

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Total No. of Questions : 8]

SEAT No : ____

P 1950

[Total No. of Pages :2

[5324]-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 labelled diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Question 4 & 8 are compulsory.***
4) ***Solve any two question from Q. No. 1 to 3 and any two questions from Q. No. 5 to 7.***

SECTION-I

(Medical Biochemistry)

Q1) Attempt the following:

a) Write in brief about anti fungal drugs. **[2]**

b) Write a note on mycobacterium & enlist antibiotics used against it. **[4]**

c) Describe the life cycle of influenza virus. **[4]**

Q2) Answer the following:

a) Give the type of mutation seen in sickle cell anaemia be thatering. **[2]**

b) Explain in detail extrinsic and intrinsic mechanism of apoplosis. **[4]**

c) Elaborate on puronycin and streplonycine. **[4]**

Q3) Answer the following:

a) What are hemoglobinopathies. **[2]**

b) Explain the mode of action of antibiotics that inhibit the biosynthesis of cell wall with example. **[4]**

c) Explain LSD. **[4]**

P.T.O.

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

a) Describe critically the inter pretation of diagnosis of the following enzyme in serum.

i) LDH

ii) Creatinine kinase

iii) Aspartate transaminase

b) Describe the concept of programmed cell death.

SECTION-II

(Immunology)

Q5) Answer the following:

a) List out antibodies (IgG) with its special function. **[2]**

b) Classify immuno diffusion techniques and elaborate on the procedure of any one technique. **[4]**

c) Discuss the etiology and development of AIDS. **[4]**

Q6) Answer the following:

a) Give the mechanism of phagocytosis. **[2]**

b) Explain hypersensitivity reactions in detail. **[4]**

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

Q7) Answer the following:

a) Explain primary lymphoid organ. **[2]**

b) Describe the principle of Immuno fluorescence and give its uses. **[4]**

c) Elaborate on the mechanism of development of any one auto immune disease. **[4]**

Q8) Answer any one of the following:

a) Differentiate between the characteristic feature and production of mono clonal & polyclonal antibodies. **[5]**

b) Explain vaccination principle with live and attenuated vaccines. **[5]**

Total No. of Questions : 8]

SEAT No : ____

P 1951

[Total No. of Pages :2

[5324]-303

M.Sc.

BIOCHEMISTRY

BCH- 372: Neurochemistry and Biochemistry of Specialized Tissues (2013 Pattern) (Credit System) (Semester - III)

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

Instructions to the candidates:

1) ***Answers 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) How is neurotransmitter uptake from the synaptic cleft? **[2]**

b) List the functions of the reticular formation. **[4]**

c) What is calpain ? Explain the role of calpain and other proteins in memory and learning process. **[4]**

Q2) Attempt the following :

a) Describe the mode of action of GABA, serotonin, and dopamine on post synaptic membrane. **[3]**

b) How does hypothalamus communicate and integrate signals. **[3]**

c) Describe the synthesis, storage and degradation of any one neurotransmitter. **[4]**

Q3) Answer the following :

a) Write a note on Circadian rhythms. **[2]**

b) What are neuropeptides? Explain with one example. **[3]**

c) How does the brain identify sensations as touch, pressure, heat, and pain?. **[5]**

P.T.O.

Q4) Attempt any one of the following :

a) Which spinal cord tracts are ascending tracts? Which are descending tracts? **[5]**

b) Describe the function of diverging, converging, reverberating and parallel after-discharge circuits. **[5]**

SECTION - II
(Biochemistry of Specialized Tissues)

Q5) Answer the following :

a) What is resting potential? **[2]**

b) Write a note on biochemical basis of hearing. **[4]**

c) Give the role of *che* gene products in bacterial chemotaxis. **[4]**

Q6) Attempt the following :

a) Briefly describe the structure of neuron with diagram. **[3]**

b) Explain the kinetics of desensitization and recovery of acetylcholine receptor. **[3]**

c) Describe energy use in muscle cells and list the three sources for ATP production in muscle. **[4]**

Q7) Answer the following :

a) What is chemotaxis? **[3]**

b) Write a note on colour vision. **[3]**

c) What are the receptors involved in perception of small? Explain their sensitivity and selectivity in detail. **[5]**

Q8) Attempt any one of the following :

a) Describe the organization and functional parts of the rod cells within the retina. **[5]**

b) Compare the properties of actin in skeletal muscle and in non-muscle cells. what is “actin-based motility? **[5]**

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Total No. of Questions : 8] **SEAT No. :**

P1952 **[Total No. of Pages : 2**

[5324]-304
M.Sc.
BIOCHEMISTRY
BCH-373: TOXICOLOGY AND PLANT BIOCHEMISTRY
(2013 Pattern) (Semester-III) (Credit System)

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

Instructions to the candidates

1) ***Answer to both sections should be written on separate sheets.***
2) ***Question No. 4 and 8 are compulsory.***
3) ***Attempt any two questions from Q.1 to Q.3 and any two from Q.5 to Q.7.***
4) ***Figurs to the right indicate full marks.***

SECTION-I
(Toxicology)

Q1) Answer the following:

a) How soil and water pollutants are degraded? **[2]**

b) Explain the factors that influence the metal toxicity. **[4]**

c) Give the pathogenesis and clinical manifestations of

i) 'liver cirrhosis and' ii) Renal dys function by necessary. **[4]**

Q2) Answer the following:

a) Define acute, subacute, chronic and subchronic toxicity. **[2]**

b) Explain with example additive, synergistic to potential effect. **[4]**

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

Q3) Answer the following: **[10]**

a) Define biotransformation.

b) Which of the main toxicological studies are performed to build up the toxicological profile of toxic agents.

P.T.O.

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

a) Explain the mechanism of toxic effects caused by amphibian toxins.

b) What is response curve ? Give the significance of LD50 and MLD.

c) Comment on membrane as a major barrier for the entry of toxicants.

SECTION-II

(Plant Biochemistry)

Q5) Answer the following:

a) Give the cyclic election flow through photosystem I. **[2]**

b) What are secondary metabolits? Elaborate on their various function giving example. **[4]**

c) Discuss in detail plant to plant signaling. **[4]**

Q6) Answer the following:

a) Give the function of cytokinins. **[2]**

b) Explain how plants counter drought stress. **[4]**

c) What are the events taking place during fruit repening? **[4]**

Q7) Answer the following:

a) What are flavonoids. **[2]**

b) Describe in detail the phenomenon of allelopathy **[4]**

c) Elucidate the Cu pathway of carbon fixation. Describe its significance. **[4]**

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

a) Explain how plants counter drought stress.

b) Give application of plant breeding in crop improvement with suitable example.

Total No. of Questions : 8]

SEAT No. :

P1953

[Total No. of Pages : 2

[5324]-401
M.Sc.
BIOCHEMISTRY
BCH - 470 : Physiological Biochemistry and Endocrinology
(2013 Pattern) (Semester - IV) (Credit System)

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

Instructions to the candidates:

1) ***Answer to both the sections should be written in separate answer sheets.***
2) ***Question no. 4 and 8 are comulsory.***
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

(Physiological Biochemistry)

Q1) Attempt the following:

a) What is intestinal and file secretion? **[2]**

b) Describe the conditions that cause excessive bleeding in humans. **[3]**

c) Discuss the various roles of kidney. **[5]**

Q2) Attempt the following:

a) Write the anatomy of kidney. **[3]**

b) Give the list of clotting factors. **[3]**

c) Discuss the mechanism involved in water balance. **[4]**

Q3) Attempt the following:

a) What is extrinsic pathway of blood clotting. **[2]**

b) Write a note on diuretics. **[4]**

c) Explain the absorption of carbohydrates, lipids, proteins and minerals. **[4]**

Q4) Attempt any one of the following:

a) Give an account of plasma proteins and their role in the body. **[5]**

b) Describe the various systems involved to mention the pH of blood. **[5]**

P.T.O.

SECTION - II

(Endocrinology)

Q5) Attempt the following:

a) What are the functions of thyroxine? **[2]**

b) Write a note on calcium signaling. **[3]**

c) Describe the mechanism of action of insulin. **[5]**

Q6) Attempt the following:

a) Write a note on disorders of thyroid gland. **[3]**

b) Explain the role of any three gastro-intestinal hormones. **[3]**

c) Write the significance of altering kinase activity in target cells. **[4]**

Q7) Attempt the following:

a) What is target cell-insensitivity? **[2]**

b) What are secondary messengers? Explain the role of CAMP. **[4]**

c) Describe the factors involved in the regulation of synthesis of glucocorticoids. **[4]**

Q8) Attempt any one of the following:

a) Describe the functions of hypothalamic hormones. **[5]**

b) Write a note on classification of hormones based on mode of action. **[5]**

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Total No. of Questions : 8]

SEAT No : ____

P 1954

[Total No. of Pages :2

[5324]-402
M.Sc.
BIOCHEMISTRY
BCH - 471 : FermentationTechnology and Tissue culture
(2013/14 Pattern) (Semester-IV) (Credit System)

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

Instructions to the candidates:

1) ***Answers to both sections should be written in separate answer sheets.***
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 No. 4 and 8 are compulsory.***

SECTION-I (25 Marks)

Fermentation Technology

Q1) Answer the following:

a) What are different biological methods of effluent treatment? **[3]**

b) Explain applications of fermentation in industry. **[4]**

c) What is batch culture. **[3]**

Q2) Answer the following:

a) How will you proceed for isolation of resistant mutants? **[4]**

b) Explain different methods and importance of media sterilization. **[4]**

c) Define continuous culture with an example. **[2]**

Q3) Answer the following:

a) Explain design of fermentor. **[3]**

b) What are effects of precursors in fermentation process? **[4]**

c) What are different carbon sources used in fermentation? **[3]**

P.T.O.

Q4) Write short note on any one: **[5]**

a) Role of agitation and aeration in fermentation.

b) Strain improvement.

SECTION-II (25 Marks)

Tissue Culture

Q5) Answer the following:

a) Enlist the steps of cryopreservation. **[2]**

b) Describe various physical and chemical reagents used for sterilization. **[4]**

c) Give the process of agrobacterium mediated hairy root culture. **[4]**

Q6) Answer the following:

a) Describe the characteristics of primary cell culture and established cell lines. **[3]**

b) Describe somatic cell hybridisation. **[3]**

c) Explain the term organ culture. Describe various methods involved in organ culture. **[4]**

Q7) Answer the following:

a) What are cytokinines? Give example. **[2]**

b) Give the advantages of serum as a constituent in culture media. **[4]**

c) Discuss the techniques used for maintainence of fibroblast culture. **[4]**

Q8) Write short notes on ANY ONE: **[5]**

a) Explain plants weaving and hardening.

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

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Total No. of Questions : 8]

SEAT No : ____

P 1955

[Total No. of Pages :2

[5324]-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) ***All questions are compulsory.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Solve any two questions from Q. 1 to Q. 3 and Q. 5 to Q. 7.***
5) ***Question 4 and 8 are compulsory.***

SECTION-I

Q1) Answer the following:

a) Define Plasmid and Cosmids? **[2]**

b) Write note on role of restriction enzymes in genetic engineering. **[4]**

c) What are cloning vectors? Explain any one example of insect vector. **[4]**

Q2) Answer the following:

a) Explain the term transformation. **[2]**

b) Write note on construction of genomic library. **[4]**

c) Explain Blue White Screening. **[4]**

Q3) Answer the following:

a) What is role of LacZ gene in cloning? **[2]**

b) Write a note on pyrosequencing. **[4]**

c) Explain methods of identification of transformed and non transformed cells. **[4]**

P.T.O.

Q4) Explain in detail:

a) Write Note on lambda phage vectors? Also give its advantages over plasmid vector. **[5]**

OR

b) Write note on regulation of gene expression. **[5]**

SECTION-II

Q5) Answer the following:

a) What are cry proteins? **[2]**

b) Write note on recombinant proteins in *E. Coli*. **[4]**

c) Explain different applications of PCR. **[4]**

Q6) Answer the following:

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

b) Write note on recombinant vaccines. Explain one in detail. **[4]**

c) Explain in-vitro mutagenesis. **[4]**

Q7) Answer the following:

a) What are recombinant hormones? Give an example. **[2]**

b) Explain pest resistance with example. **[4]**

c) Write note on RFLP and its application. **[4]**

Q8) Explain in detail:

a) Explain applications of genetic engineering in medicine and agriculture. **[5]**

OR

b) Describe methods for transfer of transgene in animal cell. **[5]**

Total No. of Questions :8]

SEAT No. :

P1956

[Total No. of Pages : 2

[5324] - 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) Anwer 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 to 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.

a) What is kwashiorkor? Enlist symptoms and causes. **[5]**

b) Describe the nutritional status of dairy product and cereals in India. **[5]**

SECTION - II

Food Technology

Q5) Anwer the following.

a) List the toxic substances present in plant food. **[2]**

b) What are flavoring agents? Explain their role in food technology. **[4]**

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.

a) Explain how food is modified genetically. **[5]**

b) Discuss the role of different enzymes used in food processing. **[5]**

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