Assignment Question Paper

Session: 2023-24	**Max. Marks: 30**
Program Name: PGBCH	
Course Code:PGBCH-101N	**Course Name: Cell and Biomolecules**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	What is the biochemistry? Write the history and scope of biochemistry.	**2**
2	Discuss in detail the cell wall structure and chemical composition of prokaryotic and eukaryotic cells.	**2**
3	What are the cell organelles? Discuss briefly.	**2**
4	What are the similar difference between bacteria and archaea?	**2**
5	What are the ribosomes? Discuss it role in cell biology.	**2**
6	Why the mitochondria called powerhouse of energy? Write structure and function of mitochondria	**2**
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Distinguish between the functional role of bacterial flagella, pili and fimbirae with suitable examples and structure.	**6**
8	What are proteins? Write the role of amino acids in the formation of secondary, tertiary and quaternary structures of protein with suitable examples.	**6**
9	Write a short note on size, shape and arrangement of cells in microorganism.	**6**

Assignment Question Paper

Session: 2023-24	**Max. Marks: 30**
Program Name: PGBCH	
Course Code: PGBCH-102N	**Course Name: Analytical Biochemistry**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	What is the role of analytical biochemistry in laboratory? Write the basics understanding of spectroscopy	**2**
2	Define chromatography. Explain principle of thin layer, ion exchange, affinity chromatography.	**2**
3	What do you mean by principles of centrifugation? Explain types of centrifuges.	**2**
4	Define electrophoresis? Explain general principles of electrophoresis.	**2**
5	Explain the basic principles and instrumentation of scanning election microscopy (SEM).	**2**
6	Explain X-ray diffraction and principle of NMR.	**2**
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Explain the techniques and applications of visible, UV spectroscopy and atomic adsorption spectroscopy.	**6**
8	Explain the principle and instrumentation of high performance liquid chromatography (HPLC), affinity and ion exchange chromatography.	**6**
9	Explain the general principle of electrophoresis, native-PAGE, SDS-PAGE and agarose gel electrophoresis for DNA.	**6**

Assignment Question paper

Session: 2023-24	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-103N	**Course Name: Bioenergetics and Metabolism**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Discuss the concept of free energy and how it is different from standard free energy?	**2**
2	What is the relationship between equilibrium constant and standard free energy change?	**2**
3	Write a short note on photosynthetic light reactions?	**2**
4	What do you understand by phosphorylation?	**2**
5	Write short notes on- a-Isozymes b-Abzymes	2
6	Differentiate between Coenzymes and cofactors.	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	How do you calculate ΔG for the given reaction?	**6**
8	What is the role of prosthetic group in enzymes? How do prosthetic groups differ from coenzyme?	**6**
9	What is the importance of the light reaction in photosynthesis? What are the two main products of photosynthetic light reactions? How many ATP are produced in light reaction	**6**

Assignment Question Paper

Session: 2023-24	**Max. Marks: 30**
Program Name: PGBCH	
Course Code: PGBCH-106N	**Course Name: Nutrition & Physiology**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	What are basic concepts of nutrition? Discuss the nutrition and physiology of human.	**2**
2	Explain the dietary requirement of carbohydrates, lipids and proteins.	**2**
3	What do you mean by vitamins? Explain water soluble and fat soluble vitamins with examples.	**2**
4	Define blood and blood-composition? Explain erythrocytes, leucocytes and thrombocytes.	**2**
5	What is digestion? Explain different parts of alimentary canal in animal system.	**2**
6	Define respiration with its types? Explain inspiration and expiration.	**2**
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	What is the measurement of caloric value of food? Explain basal metabolic rate (BMR) and factors affecting BMR.	**6**
8	What are the essential and non-essential amino acids? Explain their physiological functions and toxicity of nutrients.	**6**
9	What are roles of enzymes in digestive system? Discuss gastric, pancreatic, intestinal and bile secretions.	**6**

Assignment Question Paper

Session: 2023-24	**Max. Marks: 30**
Program Name: PGBCH	
Course Code: PGBCH-107N	**Course Name: Bio Statistics**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	What do you mean by Statistics? Write its history and scope of bio-statistics.	**2**
2	Explain the role of mode, median and mode in data analysis.	**2**
3	What are the basic concepts of probability? Explain additive, multiplicative law of probability and conditional probability.	**2**
4	What are the source of vital statistics, demographic data and probability distributions?	**2**
5	Explain different types of errors, chi-square tests, t-tests and z-tests.	**2**
	UNIT 6 Short answer type question (approx. 200 -300 words)	
6	Explain analysis of variance, co-variance and ANOVA.	**2**
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	What is the significance of research? Discuss the measures of central tendency, measures of dispersion and measures of asymmetry.	**6**
8	What are the basic concepts of probability? Explain probability mass function and probability density functions.	**6**
9	Write a short on vital statistics. Explain poisson distribution, geometric distribution, normal distribution and exponential distribution.	**6**

Assignment Question Paper

Session: 2023-24	**Max. Marks: 30**
Program Name: PGBCH	
Course Code: PGBCH-108N	**Course Name: Clinical Biochemistry**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	What is the role of clinical biochemistry in laboratory? Write the significance of biochemistry.	**2**
2	Discuss the genetic information in DNA and genetic damage by ionization radiation.	**2**
3	What do you mean by nutrition? Discuss control of water and electrolyte metabolism.	**2**
4	What are the gut hormones and clinical disorder?	**2**
5	What are the electrolytes? Discuss its role in metabolism.	**2**
6	What are the proteins? Explain their structures with their functions.	**2**
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	What are the different roles of biochemistry in laboratory? Explain pH control of respiration and metabolic process.	**6**
8	What are the hormones? Write various roles of different hormones in animal systems with examples.	**6**
9	Write a short note on proteins. Explain their different types and structures.	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-111 N	**Course Name: Enzymology and Enzyme Technology**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	What do you understand by electrophoretic technique for enzyme purification? Write the principle behind this method.	**2**
2	What are allosteric enzymes? Briefly explain its mechanism of action.	**2**
3	Discuss the Criteria for enzyme homogeneity?	**2**
4	What are the methods involved in enzyme immobilization? Briefly explain.	**2**
5	Briefly explain- a) Suicide inhibitors b) Artificial enzymes	2
6	Write short note on- a) Catalytic antibodies b) Cofactors c) Ribozymes d) Enzyme specificity	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	How is centrifugation utilized in the study and production of enzymes, and what specific roles does it play in the isolation, purification, and analysis of enzyme samples?	**6**
8	Explain the Michaelis-Menten equation, its significance in enzymology, and how it describes the relationship between substrate concentration and the rate of enzymatic reactions?	**6**

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Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-112 N	**Course Name: Immunology**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Explain the acquired immunodeficiency.	**2**
2	Explain the Antigens processing and presentation	**2**
3	Describe the types of common vaccines for human.	**2**
4	Write the notes maturation and selection of T cells	**2**
5	What do you understand by clonal selection theory?	2
6	Explain the structure and functions of antibody.	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Write the short notes on the following. a) Natural killer cells (NK cells) b) Vaccines c) Adaptive and cellular immunity	**6**
8	Describe the types of immunity- innate, acquired, adaptive and cellular immunity.	**6**
9	Describe the architecture of immune system.	**6**

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Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-113 N	**Course Name: Basic Biotechnology**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Write short note on the below mentioned techniques – **a-** Biotransformation **b-** Metabolic engineering for metabolite over production	**2**
2	Briefly explain- a-Gene therapy b-Hybridoma technology	**2**
3	Write a note on gene transfer method in plants.	**2**
4	Briefly explain the concept of recombinant DNA technology (RDT).	**2**
5	Explain the role of biotechnology to improve yield and nutritional values of crops.	2
6	What do you understand by plant tissue culture? What are the steps involved in plant tissue culture. What are its applications?	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Discuss about the scope and importance of biotechnology.	**6**
8	Briefly describe GM (Genetically modified) foods and the risk associated with these GM foods.	**6**
9	Give an account of immunological techniques involved in medical biotechnology.	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-116 N	**Course Name: Bio-safety and IPR**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Write short notes on the following. a) Antibiotic resistance. b) Gene flow	**2**
2	Explain benefits of transgenic to human health, society and the environment.	**2**
3	Explain convention on biological diversity.	**2**
4	Explain radiation safety.	**2**
5	Explain Cartagena protocol on biosafety.	2
6	Explain gene flow in natural and artificial ecologies.	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Describe genetically modified foods (GMF).	**6**
8	What do you mean by patent, intellectual property right (IPR) and international agreement?	**6**
9	Write short notes on the following a) Eco-labeling b) Ecomark c) GMO	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-117 N	**Course Name: Environmental Toxicology and Occupational Health Hazardous**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Write shote notes on- a) Acute exposure **b)** Chronic exposure	**2**
2	Explain renal toxicity?	**2**
3	Discuss the accidental poisoning?	**2**
4	Discuss the pesticide and automobile emission.	**2**
5	Discuss the internal poisoning?	2
6	Explain mineral toxicity?	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Discuss the history and scope of toxicology.	**6**
8	Discuss carcinogenesis and types of carcinogens.	**6**
9	Discuss the laws and regulations governing toxicants.	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-118 N	**Course Name: Genetic Engineering**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Write short notes on the following **a)** c-DNA library **b)** Gilbert sequencing	**2**
2	What do you know by gene expression in prokaryotes?	**2**
3	What do you understand by gene expression in Eukaryotes?	**2**
4	Explain DNA fingerprinting.?	**2**
5	Explain uses of monoclonal antibodies.	2
6	Discuss the applications of transgenic plants.	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Discuss the synthesis of c-DNA from m RNA.	**6**
8	Write short notes on- a) M13 Phage b) pUC8 c) pBR322	**6**
9	Discuss real time PCR in detail.	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-120 N	**Course Name: Microbiology and Toxicology**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Explain the significance of major histo-compatibility complex (MHC)	**2**
2	How do you differentiate between synchronous growth and continuous culture?	**2**
3	Write short notes on a) Conjugation, b) Transduction, c) Recombination	**2**
4	What do you know by Denaturing Gradient Gel Electrophoresis (DGGE)?	**2**
5	Discuss the Environmental Xenobiotic,	2
6	Write the about microbial growth.	2
		6*3=18 marks
	Long answer type question (approx. 500 -800 words)	**Marks**
7	What do you mean sterilization? Write the theory and practice of sterilization.	**6**
8	Write the general characteristics of primary domains and of taxonomic groups belonging to Bacteria.	**6**
9	What are antimicrobial agents? Discuss about the Penicillins and Cephalosporins	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-121 N	**Course Name: Industrial Biotechnology**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Write short notes on the following. a) Sterilization. b) Pasteurization	**2**
2	Describe whole cell immobilization.	**2**
3	Write a short note on bioreactor.	**2**
4	Write short notes on the following. a) filtration b) liquid-liquid extraction	**2**
5	Write a short note on enzymes used in baking and pharmaceutical industry.	2
6	What are the roles of micro elements in industrial process?	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Describe different enzymes with their general properties.	**6**
8	What do you mean by fermentation? Describe different types of fermentation process.	**6**
9	Write short notes on the following. a) Fermentation. b) Centrifugation c) Chromatography	**6**

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ASSIGNMENT PAPER

Session: 2024-25	**Max. Marks: 30**
Program Name: M.Sc.- Biochemistry	
Course Code: PGBCH-122N	**Course Name: Bioinformatics**

SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1	Explain the protein data bank.	**2**
2	What do you understand by MSA (multiple sequence alignment)?	**2**
3	Discuss the recourses of EMBL.	**2**
4	Describe the methods involved in phylogeny.	**2**
5	Explain the classification scheme of biological databases.	2
6	Explain the protein 3D structure and its data base.	2
SECTION -B		**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7	Write short notes on the following. (a) SCOP (b) BLAST (c) NCBI	**6**
8	Describe the aim of bioinformatics and its scopes.	**6**
9	Discuss the importance of bioinformatics studies in modern biology.	**6**