

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

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| Course Code: PGBCH-101 | Course Title: Cell Biology & Biomolecules | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

- Q.1:** What are disaccharides? Discuss the energy production in human body.
- Q.2:** Define the role of mitochondria. How it is play role in energy generation
- Q.3:** How biochemistry is the life of matter. Discuss it role in our daily life.

Section - B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

- Q.1:** Discuss DNA structure and its denaturation.
- Q.2:** Write the structure and classification of lipids
- Q.3:** How Mitochondria is power house in our body. Briefly discuss it.
- Q.4:** Write the types of amino acids and discuss about protein synthesis

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

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| Course Code: PGBCH-102 | Course Title: Analytical Biochemistry | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: Write answer of three questions. Each question should be answered in 800 to 1000 Words.

1. What is Chromatography? Discuss about HPLC and its application in biochemistry
2. What do you understand separation of macromolecules; discuss the techniques of biomolecule separation.
3. Discuss the principle and applications of spectrophotometer.

Section - B

Short Answer Questions

Maximum marks: 12

Note: Write answer of four questions in 200 to 300 Words.

1. What do understand by electromagnetic radiation?
2. Discuss gel centrifuge and its applications.
3. What is the difference between atomic and molecular spectroscopy.
4. Write short notes on:
 - a) Chemical shift
 - b) ^{13}C NMR
 - c) Thin layer Chromatography
 - d) Auxochromophore

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

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| Course Code: PGBCH-103 | Course Title : Bioenergetics & Metabolism | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: All questions are compulsory. Each question should be answered in 800 to 1000 Words.

- Q.1:** Discuss about electron transport system.
- Q.2:** Discuss nitrogen fixation and assimilation
- Q.3:** What is Prosthetic group? Write the functions of a prosthetic group.

Section - B

Short Answer Questions

Maximum marks: 12

Note: Write four questions in 200 to 300 words.

- Q.1:** Discuss about photophosphorylation.
- Q.2:** Define the role of enzyme in metabolism.
- Q.3:** Discuss the formation of glucose in metabolic process.
- Q.4:** Write shot notes on products and reactants of cellular respiration

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

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| Course Code: PGBCH-105 | Course Title: Nutrition and physiology | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: All questions are compulsory. Each question should be answered in 800 to 1000 Words.

Q.1: Discuss about essential and non essential elements.

Q.2: Discuss about malnutrition. How measurement of caloric value of food.

Q.3: What is Basal metabolic rate? Discuss the basic concept of metabolic rate.

Section - B

Short Answer Questions

Maximum marks: 12

Note: Write answer of four questions in 200 to 300 words.

Q.1: Describe the dietary sources.

Q.2: Discuss the source of dietary carbohydrates.

Q.3: Describe the composition and functions of plasma.

Q.4: Write short notes

- a) Intestinal and bile secretions
- b) Water soluble vitamin
- c) Types of respiration
- d) Calorific value

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
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| Course Code: PGBCH-106 | Course Title : Biostatistics | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: All questions are compulsory. Each question should be answered in 800 to 1000 Words.

Q.1: What do you mean by the hypothesis in research methodology, Define the limitation of tests of hypothesis?

Q.2: What is research problem? Selecting the problem, necessity of and techniques in defining the problem?

Q.3: What do you mean by research methods? Define the historical research methodology?

Section - B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

Q.1: Write the short notes on analysis of variance and co-variance.

Q.2: Define the central tendency.

Q.3: Define the objectives of research.

Q.4: What do you understand by research and scientific methods?

Q.5: Write the principle of sampling.

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
|-------------------------------|--|--------------------|
| Course Code: PGBCH-107 | Course Title: Clinical Biochemistry | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: All questions are compulsory. Each question should be answered in 800 to 1000 Words.

- Q.1:** Discuss the respiratory and metabolic control of pH. How to maintain disorder of acid base balance.
- Q.2:** Describe role of polymerase chain reaction in diagnosis of diseases.
- Q.3:** Discuss terms precision, sensitivity and specificity in biochemical estimations giving examples.

Section - B

Short answer questions

Maximum marks: 12

Note: Write the answer of four questions in 200 to 300 Words.

- Q.1:** Discuss about DNA and genetic information?
- Q.2:** Discuss the endocrine disorder.
- Q.3:** Define the measurement of plasma protein.
- Q.4:** Write the short notes on
- Measurement of sodium and potassium
 - Electrolyte Metabolism
 - Inborn errors of metabolism
 - Macro and micronutrient

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

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|-------------------------------|---|--------------------|
| Course Code: PGBCH-109 | Course Title: Enzymology and Enzyme Technology | Maximum Marks : 30 |
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Section A

Long Answer Questions

Maximum marks: 18

Note: Attempt all questions. Each question should be answered in 800 to 1000 words.

- Q.1.** What are the enzymes? Discuss about enzymatic reaction mechanisms.
- Q.2.** Discuss the nomenclature and classification of enzymes.
- Q.3.** Write short notes on the following.
- artificial enzymes
 - Enzyme homogeneity
 - Enzyme immobilization

Section B

(Short Answer Questions)

Maximum marks: 12

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

- Q.1.** Explain enzyme inhibition.
- Q.2.** Describe enzyme velocity.
- Q.3.** General properties of enzymes
- Q.4.** Catalytic antibodies

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
|-------------------------------|---------------------------------|--------------------|
| Course Code: PGBCH-110 | Course Title: Immunology | Maximum Marks : 30 |
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Section A

Long Answer Questions

Maximum marks: 18

Note: Attempt all questions. Each question should be answered in 800 to 1000 words.

- Q.1.** Describe the architecture of immune system.
- Q.2.** Describe the types of immunity- innate, acquired, adaptive and cellular immunity.
- Q.3.** Write the short notes on the following.
- Natural killer cells (NK cells)
 - Vaccines
 - Adaptive and cellular immunity

Section B

Short Answer Questions

Maximum marks: 12

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

- Q.1.** Explain the acquired immunodeficiency.
- Q.2.** Explain the structure and functions of antibody.
- Q.3.** Write the notes maturation and selection of T cells
- Q.4.** Explain the Antigens processing and presentation

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
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| Course Code: PGBCH-111 | Course Title: Basic biotechnology | Maximum Marks : 30 |
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Section A

Long Answer Questions

Maximum marks: 18

Note: Attempt all questions. Each question should be answered in 800 to 1000 words.

- Q.1.** Write brief account of microbes in industry and agriculture. How microbes useful in food spoilage and preservation.
- Q.2.** Describe the concept of recombinant DNA technology (RDT).
- Q.3.** Write short notes on the following.
- Recombinant gene construction
 - Polymerase chain reaction (PCR)
 - Gene Cloning

Section B

Short Answer Questions

Maximum marks: 12

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

- Q.1.** Write a note on gene transfer method in plants.
- Q.2.** Explain the role of biotechnology to improve yield and nutritional values of crops.
- Q.3.** Explain the role of biotechnology in pollutants remediation (air, water and soil).
- Q.4.** Explain the transgenic animals.

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
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| Course Code: PGBCH-113 | Course Title: Industrial biotechnology | Maximum Marks : 30 |
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Section A

Long Answer Questions

Maximum marks: 18

Note: Attempt all questions. Each question should be answered in 800 to 1000 words.

Q.1. Describe different enzymes with their general properties.

Q.2. Write short notes on the following.

- a) Fermentation.
- b) Centrifugation
- c) Chromatography

Q.3. What do you mean by fermentation? Describe different types of fermentation process.

Section B

Short Answer Questions

Maximum marks: 12

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

Q.1. What are the roles of micro elements in industrial process?

Q.2. Write short notes on the following.

- a) Sterilization.
- b) Pasteurization

Q.3. Write a short note on enzymes used in baking and pharmaceutical industry.

Q.4. Write a short note on bioreactor.

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
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| Course Code: PGBCH-115 | Course Title: Biosafety and IPR | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum: marks: 18

Note:All questions are compulsory. Each question should be answered in 800 to 1000 Words.

Q.1. Describe genetically modified foods (GMF).

Q.2. What do you mean by patent, intellectual property right (IPR) and international agreement?

Q.3. Write short notes on the following

- a) Eco-labeling
- b) Ecomark
- c) GMO

Section B

Short Answer Questions

Maximum marks: 12

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

Q.1. Explain Cartagena protocol on biosafety.

Q.2. Write short notes on the following.

- a) Antibiotic resistance.
- b) Gene flow

Q.3. Explain benefits of transgenic to human health, society and the environment.

Q.4. Explain convention on biological diversity.

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
|-------------------------------|-------------------------------------|--------------------|
| Course Code: PGBCH-116 | Course Title: Bioinformatics | Maximum Marks : 30 |
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Section 'A'

Long answer questions

Maximum marks: 18

Note: All questions are compulsory. Each question should be answered in 800 to 1000 Words.

- Q.1.** Discuss the importance of bioinformatics studies in modern biology.
- Q.2.** Describe the aim of bioinformatics and its scopes.
- Q.3.** Write short notes on the following.
- (a) SCOP
 - (b) BLAST
 - (c) NCBI

Section B

Short Answer Questions

Maximum marks: 12

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

- Q.1.** Explain the protein 3D structure and its data base.
- Q.2.** Explain the classification scheme of biological databases.
- Q.3.** Discuss the recourses of EMBL.
- Q.4.** Explain the protein data bank.

Uttar Pradesh Rajarshi Tandon Open University

Science Postgraduate Programme (Biochemistry) Assignment Session 2022-23

| | | |
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| Course Code: PGBCH-117 | Course Title: Microbiology and Toxicology | Maximum Marks : 30 |
|-------------------------------|--|--------------------|

Section A

Long Answer Questions

Maximum marks: 18

Note: Attempt all questions. Each question should be answered in 800 to 1000 words.

- Q.1.** What do you mean sterilization? Write the theory and practice of sterilization.
- Q.2.** Write the general characteristics of primary domains and of taxonomic groups belonging to Bacteria.
- Q.3.** What are antimicrobial agents? Discuss about the Penicillins and Cephalosporins

Section B

(Short Answer Questions)

Note: Attempt all questions. Each question should be answered in 200 to 300 words.

Maximum marks: 12

- Q.1.** Write the about microbial growth.
- Q.2.** Write short notes on
 - a) Conjugation,
 - b) Transduction,
 - c) Recombination
- Q.3.** Explain the significance of major histo-compatibility complex (MHC)
- Q.4.** Discuss the Environmental Xenobiotic,