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CENTRAL UNIVERSITY OF KARNATAKA

School	Life Science
Department	Life Sciences
Program	BSc(minor)
Semester	III

Course Code: **ULSTM30200** Subject: : **INTRODUCTION TO BIOCHEMISTRY**	Max. Marks: 60	Duration: 2 hrs 30 min	Credits: 4

Set B

END SEMESTER EXAMINATIONS, MONTH DECEMBER, YEAR *2025*

INSTRUCTIONS:

1. Read the question carefully
2. Make diagrams wherever required
3. Answer precisely

I. Answer any 8 questions. 2x 8 = 16

1. How to identify protein secondary structure using 4 quadrants graph
2. Lock and key and induced fit theory Mechanism
3. Define the mechanism of chaperons in protein folding
4. Define chiral carbon and anomers with examples.
5. Define Feed back and allosteric enzyme regulation
6. Expand FAD and dGMP
7. Define lipids with examples.
8. Expand HDL and LDL
9. Define Purines and pyrimidines.
10. What is the mean base pair per turn in A DNA
11. Define Tangier disease

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II. Describe in detail with valid points 11 x 4 = 44

1. A. Derive the MM Equation (5+6)
   B. Temperature, pH, concentration of substrate and enzyme affecting its activity
   OR
   C. Define pH, Buffer and chemical bond interactions
   D.Define metabolism, catabolism and anabolism
2. A. Classification of carbohydrates with examples (5+6)
   B. Define stereoisomers, anomers and epimers with examples
   OR

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C. Define Ketoses and aldoses with examples
D. Discuss different forms of protein structures

3. A. Define membrane lipids and storage lipids (5+6)
B. Differences between A, B, Z forms of DNA
OR
C. Pyrimedine synthesis
D. Regulation of Pyrimedine synthesis

4. A. Define Niemann-Pick and Tay-Sachs diseases
B. Define reducing and nonreducing sugars with examples (5+6)
OR
C. Write Molish and Anthrone tests to identify carbohydrates
D. Write any four specific tests for carbohydrate analysis

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School	LIFE SCIENCES
Department	LIFE SCIENCE
Program	UG
Semester	V
Course Code	ULSTC50301

End Semester Examination, November-2025

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Course: Non-Chordates **Code:** ULSTC50301	Max. Marks: 60	Duration: 2 hr 30 min	Credits:4

Read the instructions carefully

1. Write the answers in a concise manner.
2. Make flowchart if necessary.

Section I: Answer *any eight*. Write 2-3 important points and cite examples if required. **(8 x 2 = 16)**

1. Ammonotelic
2. Compound Eye
3. Trochophore larva
4. Respiratory system in Echinoderamata
5. Canal system in Porifera
6. Rostellum
7. Chitin
8. Dioecious
9. Radula
10. Ctenidia

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Section II: Write a comprehensive and descriptive note on following (use diagrams) **(4 x 11 = 44)**

11. Draw the all classification system. Discuss the merit & demerits of each classification system.

OR

Briefly discuss the characteristics and classification system of Protozoa. Draw the life cycle of *Plasmodium* or *E. histolytica*.

12. Briefly discuss the characteristics and classification system of Platyhelminthes. Draw the life cycle of *F. hepatica* or *T. solium*.

OR

Briefly discuss the characteristics and classification system of Mollusca. How molluscan larvae is evolutionary linked to Annelid larvae.

13. Briefly discuss the characteristics and classification system of Annelida. Discuss the sense organs of Earthworm.

OR

Briefly discuss the characteristics and classification system of Ctenophora. Why Ctenophora was separated from Cnidaria

14. Discuss the types of excretory product found in animal kingdom. Compare between Protostomes and Dueterostomes in tabular form.

OR

Briefly discuss the characteristics and classification system of Arthropoda. Draw the mouthparts and digestive system of Cockroach.

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School	LIFE SCIENCES
Department	LIFE SCIENCE
Program	UG
Semester	V

001069

END SEMESTER EXAM, NOVEMBER - 2025

Course: Biosafety, Bioethics and IPR **Code:** ULSTC50302	Max. Marks: 60	Duration: 2 hr 30 min	Credits:4

INSTRUCTIONS:
1. Read the instructions carefully
2. Answer to the point
3. Make diagrams essentially while answering descriptive questions
4. Mention the correct question number for each answer. Misnumbered answers may lead to loss of marks.

SECTION-A: 16 marks

Section I: Answer any eight. Explain in 2-3 lines. **[8 x 2 = 16]**

1. Benefit sharing
2. Traditional Knowledge
3. Monopoly
4. Biosafety regulations
5. Containment
6. Risk Assessment
7. RCGM
8. Principles of Bioethics
9. Synthetic biology
10. Genetic Engineering

SECTION-B: Long Answer Type Questions. **[4 x 11 = 44]**

Following all four questions are compulsory and each question carries 11 marks [5+6=11].

11. A. Write the pros and cons of public and private funding in tabular form. (6)
    B. Discuss the pro and cons of monopoly in scientific knowledge system. (5)

12. A. What are the key features of globalization? (6)
    B. What was the impact of globalization on various aspects of Indian society? (5)

13. A. Write a note on Good Laboratory Practices focusing its history, need, objectives with its principles and practices. (6)
    B. What is IPR? What are the different types of IPR? Describe the procedure for obtaining a patent and importance of patent information. (5)

14. A. Describe comprehensive outline for public education initiative aimed at promoting bioethics awareness. (6)
    B. What are the legal, institutional and Socioeconomic impacts of biotechnology? (5)

15. A. What is Containment? Describe principle and potential risks associated with containment. (6)
    B. Write a detailed note on operational guide for BSL-4 facility for work with RG 4 microorganisms.

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School	Life Science
Department	Life Sciences
Program	BSc Life Science
Semester	V

END SEMESTER EXAMINATIONS, MONTH *NOVEMBER*, YEAR *2025*

Course Code: ULSCC50303	Subject: IMMUNOLOGY	Max. Marks: 60	Duration: 2 hrs 30 min	Credits: 4

INSTRUCTIONS:
1. Read the question carefully
2. Make diagrams wherever required
3. Answer precisely

I. Short answer questions: Write any 8 (50 to 80 words) **8 × 2 = 16 M**

a. Define Cell mediated immunity
b. Development of TH cells
c. Define interferon's
d. Define Active and passive immunity
e. Define PAMP and DAMP
f. Expand PEG and BCG
g. Define Immune dysfunction
h. Define autoimmune disorders
i. Characteristics of adaptive immunity

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II. Answer any 4 with core concepts **4 x 11 = 44 M**

a. i. Components of immune system ii. Myeloid and lymphoid lineages (4+7)
b. i. Barriers to infection ii. Development of B cells (6+5)
c. i. Discuss any four autoimmune disorders ii. Immune assays and its types (5+6)
d. i. Three types of Complement activation ii. Tissue rejection (7+4)
e. i. Lymphoid organs (primary, secondary, tertiary) ii. Development of B cells
f. i. Experimental procedure for serum and plasma (5+6)
ii. Explain experimental Procedure for estimation of hemoglobin

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School	Life Science
Department	Life Sciences
Program	BSc Life Science
Semester	V

END SEMESTER EXAMINATIONS, MONTH *NOVEMBER* YEAR *2025*

Course Code: ULSTM50202 Subject: INTRODUCTION TO IMMUNOLOGY	Max. Marks: 60	Duration: 2 hrs 30 min	Credits: 4

INSTRUCTIONS:
1. Read the question carefully
2. Make diagrams wherever required
3. Answer precisely

I. Short answer questions: Write any 8 (50 to 80 words) **8 × 2 = 16 M**

a. Name the type of cells used in hybridoma technology
b. Define inflammation
c. Subsets of TH cells
d. Define cell and humor mediated immunity
e. Define innate and adaptive immunity with example
F. Define MHC1 and MHC 2
g. Define cytokines and cytokine therapy
h. Define adjuvants with example.
i. Expand BCG and DTP

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II. Medium Answer questions: write any 4. (200 to 250 words) **4 × 11 = 44 M**

a. i. Differences in Isotype, allotype and idiotype antibodies (4+7)
ii. Three complement systems
b. i. Hematopoiesis ii. Primary and secondary responses (4+7)
c. i. Generation of monoclonal antibodies
ii. Graft rejection with four types (4+7)
d. i. Type 1,2,3 and 4 allergic reactions ii. Immune assays and it types (4+7)
e. i Haemoglobinometer to estimate haemoglobin. (4+7)
ii. Procedure for ABO blood typing
f. i. procedure for differential blood count (4+7)
ii. Procedure for plasma and serum separation

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School	Life Science
Department	Life Sciences
Program	BSc Life Science
Semester	V Repeater

END SEMESTER EXAMINATIONS, MONTH *NOVEMBER* YEAR *2024*

Course Code: ULSTM50202 Subject: INTRODUCTION TO IMMUNOLOGY	Max. Marks: 60	Duration: 2 hrs 30 min	Credits: 4

INSTRUCTIONS:
1. Read the question carefully
2. Make diagrams wherever required
3. Answer precisely

I. Short answer questions: Write any 8 (50 to 80 words) **8 × 2 = 16 M**

a. Define phagocytosis
b. Define inflammation
c. Expand DAMP and PAMP
d. Define cytokines with example
e. Define active immunity with example
F. Define APC
g. Define Haptens
h. Define cytokine therapy
i. Expand HAT and MALT

II. Medium Answer questions: write any 4. (200 to 250 words) **4 × 11 = 44 M**

a. i. Differences in Isotype, allotype and idiotype antibodies (7+4)
   ii. Adaptive immunity characteristics
b. i. Lymphoid and myeloid lineage ii. Immune responses (5+6)
c. i. Hybridoma technology
   ii. Xenograft, allograft, isograft rejection with four types (5+6)
d. i. Gell and Coombs allergic four reaction ii. ELISA principle and it types (5+6)
e. i. Experimental procedure to estimate hemoglobin by hemoglobinometer (5+6)
   ii. Blood typing procedure
f. i. Costimulatory molecules ii. Development of B and T cells (5+6)

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School	LIFE SCIENCES
Department	LIFE SCIENCE
Program	UG
Semester	VII

END SEMESTER EXAM, NOVEMBER - 2025

Course: Introduction to Molecular Biology **Code:** ULSTM70300	Max. Marks: 60	Duration: 2 hr 30 min	Credits:4

INSTRUCTIONS:
1. Read the instructions carefully
2. Answer to the point
3. Draw diagrams essentially while answering descriptive questions.
4. Mention the correct question number for each answer. Misnumbered answers may lead to loss of Marks.

SECTION-A: 16 marks

SECTION A: Answer any eight. Explain in 2-3 lines. **[8 x 2 = 16]**

1. Svedberg Unit
2. Nitrogenous bases
3. Aminoacyl-tRNA Synthetases
4. Codon
5. RNA
6. Helicase
7. Promoter
8. RNA Polymerase
9. Shine dalgarno sequence
10. Silent mutation

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SECTION-B: Long Answer Type Questions. (any four) **[4 x 11 = 44]**
Following all four questions are compulsory and each question carries 11 marks [5+6=11].

11. A. Write down the process of eukaryotic transcription process along with diagram. (6M)
    B. Write a detailed note on Phage X174. (5M)
12. A. Explain the studies of Scientist Khurana and Nirenberg in triplet binding assay for decoding genetic code. (6M)
    B. Explain the process of prokaryotic termination. (5M)
13. A. Write in detail the structure of t-RNA with respect to functional significance along with diagram. (6M)
    B. Write down the difference between translation in prokaryotes and eukaryotes. (5M)
14. A. Explain in detail structure of mitochondrial DNA along with its evolutionary lineage and maternal inheritance. (6M)
    B. Describe the Robert Griffith experiment for DNA as a transforming principle or genetic material. (5M)
15. A. Describe the role of Okazaki fragments in discontinuous strand of replication. (6M)
    B. Write down the role of various enzymes involved in DNA replication. (5M)

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