II Semester, M.Sc. Examination Feb-2015
BIOTECHNOLOGY

BT 2.1 : MOLECULAR GENETICS

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

Instruction: *Answer all the sections.*

Section A

Answer any **FOUR** questions from the following **4 × 5 = 20**

1. Telomeres.
2. Cytoplasmic inheritance.
3. Conditional mutation.
4. Turner's syndrome.
5. Hardy-Weinberg law.
6. Molecular clock.

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. Mobile Genetic Elements.
8. Holliday Model of recombination.
9. Transduction.
10. Human Genome Project.
11. *Drosophila* – a model system.

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Describe organization of genome in eukaryotes.
13. Write a detailed note on gene mapping by somatic cell hybridization.
14. Discuss polygenic inheritance with an example.
15. Explain preparation and nomenclature of human chromosomes.

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KARNATAKA STATE OPEN UNIVERSITY
II Semester, M.Sc. Examination Feb-2015
BIOTECHNOLOGY

BT 2.2 : MOLECULAR BIOLOGY

Time: 3 Hours

Max. Marks: 80

Instruction: *Answer all the sections.*

Section A

Answer any **FOUR** questions from the following **4 × 5 = 20**

1. Endonucleases
2. Mitochondrial DNA
3. Splicing
4. Inhibition of Translation
5. TATA box
6. RNA interference

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. Genetic code.
8. Differences between prokaryotic and Eukaryotic translation.
9. Eukaryotic RNA Polymerase.
10. Applications of ribozyme technology
11. Catabolic repression

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Explain DNA replication in prokaryotes.
13. Describe post translational modifications with suitable examples.
14. Give an account of Operon concept.
15. Write a note on regulation of gene expression in bacteriophage.

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KARNATAKA STATE OPEN UNIVERSITY

II Semester, M.Sc. Examination Feb-2015

BIOTECHNOLOGY

BT 2.3 : IMMUNO-TECHNOLOGY

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

Instruction: *Answer all the sections.*

Section A

Answer any **FOUR** questions from the following **4 × 5 = 20**

1. Blood group antigens.
2. Anaphylaxis.
3. Tumor markers.
4. Interferons.
5. Subunit vaccines.
6. Hashimoto's disease

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. Types and structure of immunoglobulins.
8. Role of MHC molecules in T cell activation
9. HLA and tissue transplantation.
10. Antibody diversity.
11. Xeno-transplantation and Immuno-suppression theory.

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Explain different types of immunodeficiency disorders.
13. Discuss about the different types of complement activation pathways
14. Describe the cell mediated hypersensitivity reactions.
15. Write a note on structure and functions of organs involved in immune system.

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KARNATAKA STATE OPEN UNIVERSITY
II Semester M.Sc. Examination Feb-2015
BIOTECHNOLOGY

BT 2.4: ADVANCED TECHNIQUES IN BIOTECHNOLOGY

Time: 3 Hours

Max. Marks: 80

Instruction: *Answer all the sections.*

Section A

Answer any **FOUR** questions from the following **4 × 5 = 20**

1. Fluorescence Microscopy
2. RIA
3. DNA based nanostructures
4. Immunoferritin technique
5. E-PCR
6. Nanobiosensors

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. DNA finger printing in forensic science and disease diagnosis.
8. Monoclonal antibodies production and their applications.
9. Applications of nanomaterials.
10. Types of micro arrays and their production.
11. Methods used for whole genome sequencing.

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Explain drug and gene delivery by nanotechnology and their applications.
13. Discuss *in vitro* antigen-antibody reactions used for diagnosis of pathogenic diseases.
14. Describe types and synthesis of nanomaterials with their applications.
15. Write a note on amniocentesis and its applications in diagnosing molecular diseases.

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II Semester M.Sc. Biotechnology Examination (Jan-2016)

BT 2.1: MOLECULAR GENETICS

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

Instruction: *Answer all the sections.*

Section A

Write a short note on any **FOUR** of the following **4 × 5 = 20**

1. Transposons
2. Somatic cell hybridization
3. FISH
4. Genetic counseling
5. Allelic frequencies
6. LINES

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. Explain Eukaryotic chromosome organization.
8. Write a brief note on DNA repair mechanisms.
9. Give an account of Polygenic inheritance.
10. Explain Hardy -Weinberg law.
11. Discuss *Caenorhabditis*- a model system.

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Describe cytoplasmic inheritance with two suitable examples.
13. Write a detailed note on genetic recombination in bacteria.
14. Explain different types of mutations and molecular mechanisms of mutation.
15. Write an explanatory note on human chromosomal abnormalities.

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II Semester M.Sc. Biotechnology Examination (Jan-2016)

BT 2.2: MOLECULAR BIOLOGY

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

Instruction: *Answer all the sections.*

Section A

Write a short note on any FOUR of the following **4 × 5 = 20**

1. Wobbles hypothesis
2. Introns and Exons
3. Inhibitors of translation
4. Antisense RNA
5. Attenuation
6. Structure of mRNA

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. Explain the role of enzymes in DNA replication
8. Describe the hormonal regulation of gene expression
9. Discuss prokaryotic and eukaryotic translation.
10. Write a note on DNA topoisomerase
11. Explain targeting of proteins into nucleus.

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Explain in detail the transcription in prokaryotes.
13. Explain Lac-operon model of gene regulation.
14. Give an account of protein glycosylation.
15. Explain biogenesis of ribosomes

II Semester M.Sc. Biotechnology Examination (Jan-2016)

BT 2.3: IMMUNOTECHNOLOGY

Time: 3 Hours

Max. Marks: 80

Instruction: *Answer all the sections.*

Section A

Write a short note on any **FOUR** of the following **4 × 5 = 20**

1. Bone marrow
2. T-cells clones in vaccine development
3. Tumor specific antigens
4. Innate immunity
5. Interleukins
6. Class I MHC molecules

Section B

Answer any **THREE** questions from the following **3 × 10 = 30**

7. Discuss blood group antigens and Rh incompatibilities
8. Explain classical and alternative complimentary pathway
9. Explain B-cells related disorders
10. Write a note on structure and classification of immunoglobulin molecules
11. Explain xenotransplantation and immune-suppression theory

Section C

Answer any **TWO** questions from the following **2 × 15 = 30**

12. Explain HLA and tissue transplantation
13. Discuss about the type III and type IV hypersensitivity reaction
14. Describe different types of autoimmune disorders.
15. Write a note on structure and function of cells involved in immune system.

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II Semester M.Sc. Biotechnology Examination (Jan-2016)

BT 2.4: ADVANCED TECHNIQUES IN BIOTECHNOLOGY

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

Instruction: *Answer all the sections.*

Section A

Write a short note on any FOUR of the following $4 \times 5 = 20$

1. c- DNA
2. Shotgun sequencing
3. Nano crystals
4. DNA finger printing
5. Immunoblotting
6. Inverted microscopy

Section B

Answer any **THREE** questions from the following $3 \times 10 = 30$

7. Explain immunoferritin technique.
8. Write an account on direct fluorescence antibody technique.
9. Briefly explain Polyclonal antibody generation.
10. Describe nanobiosensors.
11. Explain genome annotation.

Section C

Answer any **TWO** questions from the following $2 \times 15 = 30$

12. Give an account of different types of microscopes and their applications.
13. Explain the principle and applications of radioimmuno assay.
14. Explain immunoelectrophoresis and its types.
15. Write an explanatory note on applications of microarray technology.