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M.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

First Semester

Biotechnology

Paper I — GENETICS AND CELL BIOLOGY

(Regulation 2011)

Time : Three hours

Maximum : 70 marks

Answer ONE question from each Unit.

All questions carry equal marks.

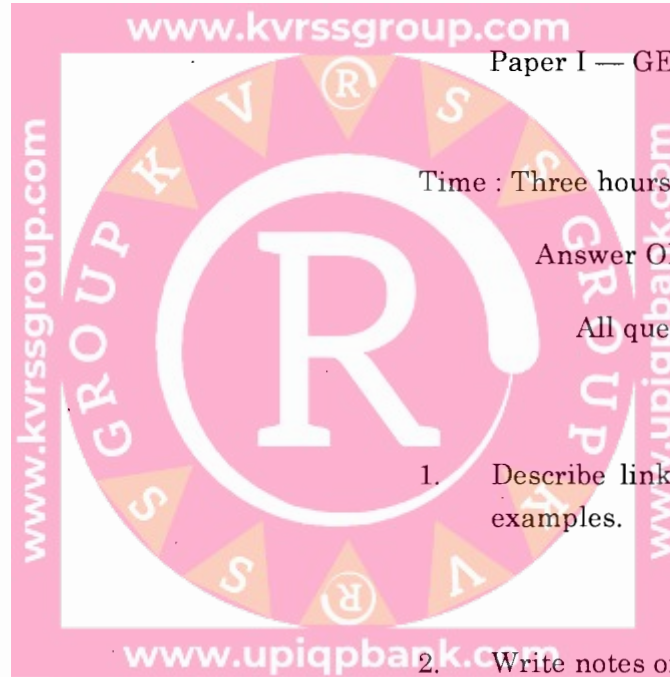
UNIT I

1. Describe linkage and crossing over with suitable examples.

Or

2. Write notes on :

- (a) RNA as genetic material
- (b) Gene as a unit of expression.



UNIT II

3. Describe mapping of bacterial chromosome by conjugation and transduction.

Or

4. Write notes on :

- (a) Role of rec proteins.
- (b) Mapping of bacterial chromosome by transformation.

UNIT III

5. Describe in detail the Eukaryotic cell.

Or

6. Write notes on :

- (a) Mitochondria
- (b) Plasmalemma.

UNIT IV

7. Describe the Ultra structure of Nucleus.

Or

8. Write notes on :

- (a) Biology of Cancer
- (b) Special chromosomes.

UNIT V

9. Write an account on Intracellular signaling proteins.

Or

10. Write notes on :

- (a) Cell-cell interactions.
- (b) Structure and functions of microtubules.



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Paper II — BIOMOLECULES

(Regulation 2011)

Time : Three hours

Maximum : 70 marks

Answer ONE question from each Unit.

All questions carry equal marks.

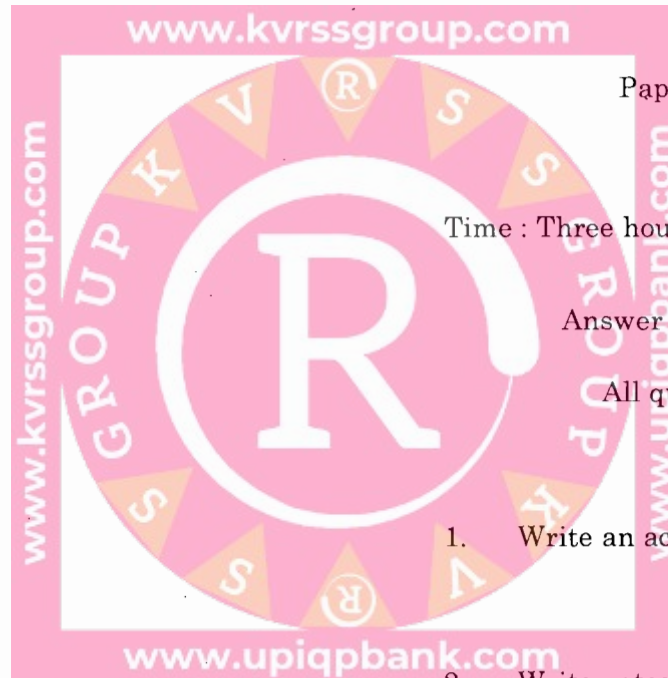
UNIT I

1. Write an account on Amino sugars.

Or

2. Write notes on :

- (a) Bacterial cell polysaccharides
- (b) Acid derivatives of monosaccharides.



UNIT II

UNIT V

3. Write an account on the classification of amino acids.

Or

4. Write notes on :

- (a) Structure and confirmation of peptide bond.
(b) Site directed mutagens.

UNIT III

5. Write an account on classification and biological functions of proteins.

Or

6. Write notes on :

- (a) Secondary and tertiary structure of proteins
(b) Protein folding and significance.

UNIT IV

7. Describe the characterization of natural fats.

Or

8. Write notes on :

- (a) Protoporphyrin
(b) Chlorophylls.

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9. Write an account on the structure of Pyrimidines.

Or

10. Write notes on :

- (a) Structure of RNA
(b) Cot values.

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UNIT III

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5. Write an account on Pulse-field gel electrophoresis.

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6. Describe the methods of recovery of DNA from agarose gels.

Paper III — TOOLS AND TECHNIQUES IN BIOLOGY

(Regulation 2011)

UNIT IV

Time : Three hours

Maximum : 70 marks

7. Describe the principle, methodology and applications of UV-visible Spectroscopy.

Answer ONE questions from each Unit.

Or

All questions carry equal marks.

UNIT I

8. Write an account on electromagnetic spectrum of light.

1. Describe the Basic principles of sedimentation.

UNIT V

Or

2. Explain the principle, methodology and applications of differential centrifugation.

9. Describe the safety measures in handling radioisotopes.

UNIT II

3. Describe the principle, methodology and applications of HPLC.

10. Describe the nature and types of radioactivity.

Or

Or

4. Explain the principle and describe the methodology and applications of Ion exchange chromatography.

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Paper IV — ENZYMOLOGY

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Maximum : 70 marks

Time : Three hours

Answer ONE question from each Unit.

All questions carry equal marks.

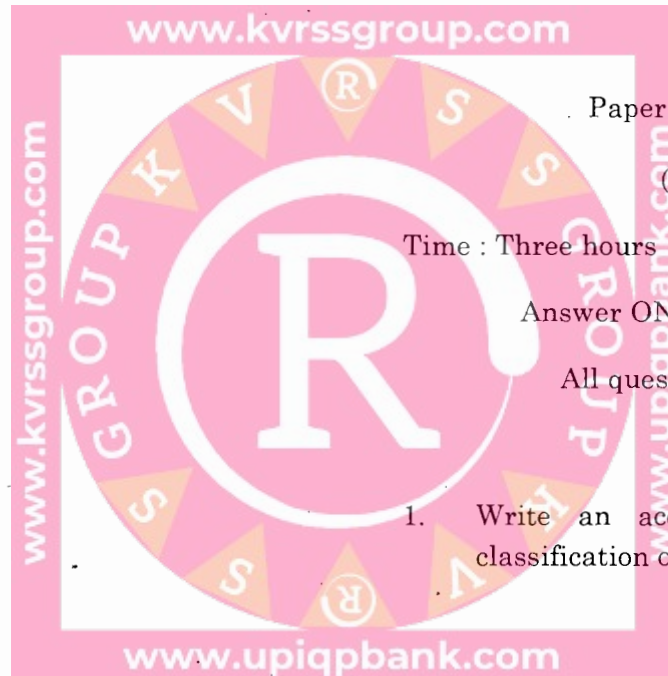
UNIT I

1. Write an account on the nomenclature and classification of enzymes.

Or

2. Write notes on :

- (a) The law of mass action and order reactions.
- (b) Fisher and Koshland models.



UNIT II

3. Explain the transformation of Michaelis Menten equations.

Or

4. Write notes on :
(a) Lineweaver Burk.
(b) Hanes plots.

UNIT III

5. Enumerate reversible inhibitions.

Or

6. Write notes on :
(a) Coupled kinetic assay
(b) Purification of enzymes.

UNIT IV

7. Describe the enzyme modifications by chemical procedures.

Or

8. Write notes on :
(a) Chymotrypsin and ribonuclease
(b) Mechanism of enzyme action.

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UNIT V

9. Write an account on immobilized enzymes and applications.

Or

10. Write notes on :
(a) Rybozymes
(b) Isozymes.



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Paper V — GENERAL MICROBIOLOGY

(Regulation 2011)

Time : Three hours

Maximum : 70 marks

Answer ONE question from each unit.

All questions carry equal marks.

UNIT I

1. Describe the differences between prokaryotic and Eukaryotic cell.

Or

2. Describe the general characters of Fungi and Archaeobacteria.

UNIT II

3. Describe the structure and functions of capsule and Flagella.

Or

4. Write notes on :

- (a) Cell wall
- (b) Nucleoid
- (c) Plasmids.

UNIT III

5. Describe the methods of cultivation and purification and detection of bacteria.

Or

6. Write an account on classification and nomenclature of RNA Viruses.

UNIT IV

7. Describe the methods of preparation of media for the growth of bacteria and Algae.

Or

8. Describe the methods of identification of Bacteria.

UNIT V

9. Write an account on nutritional mutants and their use in metabolic studies.

Or

10. Describe the synchronous cultures and continuous growth of microbes.