RW-6499 **501201**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

IMMUNOBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

Briefly answer the following :—

1. Clonal Selection theory.

2. β-lymphocyte markers.

3. Adjuvants with example.

4. Super antigens.

5. Anaphylatoxins.

6. Hashmito's thyroiditis.

7. MHC halotypes.

8. Isograft Vs Allograft.

9. Oncogenes with example.

10. Edible Vaccines.

Part B (5 × 5 = 25)

Answer **all** questions choosing **either** 'a' **or** 'b'.

All questions carry equal marks.

11. (a) Give a short account on Cancer Immunotherapy.

(*Or*)

(b) Differentiate Type - I and Type II hypersensitivity reaction.

12. (a) Describe class I and Class II MHC molecules.

(*Or*)

(b) Explain the mechanism of combating infection by extracellular bacteria.

13. (a) Explain the mechanism involved in phagocytosis.

(*Or*)

(b) Explain the various types of immunization.

14. (a) What are the factors that favour antigen-antibody interactions.

(*Or*)

(b) Write notes on :

(i) Hapten.

(ii) Epitope.

15. (a) Explain the lymphoid organs and their role in immune system.

(*Or*)

(b) Comment on cell mediated immunity.

Part C (3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Describe in detail the immunology of AIDS.

17. Explain in detail on Auto immune disorder.

18. Compare Classical and alternative pathway.

19. Describe the structure and functions of various immunoglobulins.

20. Write note on the following :—

(i) CD markers (2)

(ii) Innate immunity. (2)

(iii) GALT. (2)

(iv) Cells of immune system. (2)

(V) Acquired immunity. (2)

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RW-6500 **501202**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

RECOMBINANT DNA TECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Write DNA dependent RNA polymerases.

2. Define Ribozymes.

3. What is HACs ?

4. Write the advantages of eukaryotic vectors ?

5. Define adapters and linkers.

6. Write down the methods of selection of clone.

7. Write about nested PCR.

8. Write about Zoo blot.

9. What is Cystic fibrosis ?

10. Write the steps involved in purification of proteins.

Part B (5 × 5 = 25)

Answer **all** questions choosing **either** 'a' **or** 'b'.

All questions carry equal marks.

11. (a) Write down the mechanisms involved in DNA ligation process.

(*Or*)

(b) Write note on :

(i) Exo III nuclease.

(ii) T7 DNA polymerase.

12. (a) Write a note on gene fusion vectors with examples.

(*Or*)

(b) Describe about advantages and disadvantages of YACs.

13. (a) Write down the immunological screening procedure for expressed genes.

(*Or*)

(b) Briefly explain about cloning strategies.

14. (a) Write the principles of pyrosequencing.

(*Or*)

(b) Write a note on DNA footprinting.

15. (a) Explain any one commercial enzyme produced by rDNA technology.

(*Or*)

(b) Discuss about the Human genome projects.

Part C (3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Define Restriction endonucleases and explain the types with examples.

17. Write down the applications of the cosmid, lambda phage and M13 vectors.

18. How to construct genomic DNA libraries through shortgun cloning method ?

19. Explain PCR based site - directed mutagenesis.

20. Explain the methods of production and purification of recombinant Hepatitis B vaccine.

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RW-6501 **501203**

M.Sc. (BIOTECHNOLOGY) DEGREE EXAMINATION, APRIL 2011

PLANT MOLECULAR BIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks

Explain

1. Biodegradable plastics

2. Homoplastomic and Heteroplastomic plants.

3. Signal peptides.

4. Promiscous DNA

5. Binary vector.

6. RAPD-PCR

7. Vir genes.

8. Illegitimate recombination.

9. Gene silencing

10. Transposons

Part B (5 × 5 = 25)

Answer **all** questions, choosing **either** (a) **or** (b)

All questions carry equal marks

11. (a) Comment on the organisation of chloroplast genome.

(*Or*)

(b) Explain the essential regions of plant expression vectors with example

12. (a) How do we identify the intra species variations using PCR based markers?

(*Or*)

(b) Explain the molecular mechanism involved in T-DNA integration to plant genome.

13. (a) What are the strategies adopted for vaccine production in plants?

(*Or*)

(b) Discuss the different cryopreservation techniques.

14. (a) Explain the multistep process of protein folding in plants.

(*Or*)

(b) Discuss the role of some important genes involved in drought tolerance.

15. (a) Discuss about Artificial seed and comment on its applications.

(*Or*)

(b) Explain the structure of chromatin with illustration.

Part C (3 × 10 = 30)

Answer any **three** questions

All questions carry equal marks

16. How the molecular markers are used in the plant improvement ?

17. Explain ethylene's role in fruit ripening and genes involved in the process

18. Write short notes on:

    (a) Virus mediated gene transfer,

    (b) Microinjection,

    (c) Electroporation,

    (d) Particle gun method

19. Explain

    (a) Selectable markers,

    (b) Reporter genes and

    (c) Inducible promoters.

20. Comment on :

    (a) Abiotic stress tolerance

    (b) Herbicide tolerance

    (c) Insect resistance

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RW-6502 **501204**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

LAB III : MOLECULAR GENETICS

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks

1. Define Loci

2. Nucleosomes

3. F-plasmid

4. Give a comment on Insertion sequences

5. Screenable marker

6. Lysogenic cycle

7. T4 phage

8. LOD score

9. Give a comment on Repetitive sequences

10. Types of transposons.

Part B (5 × 5 = 25)

Answer **all** questions. Choosing either (a) or (b)

All questions carry equal marks

11. (a) Write short note on measurement"of growth rate

(*Or*)

(b) Define F-plasmid and explain its structure and functions

12. (a) Explain in detail about the mechanism of recombination.

(*Or*)

(b) Short notes on auxotrophic mutants

13. (a) Short note on chromosomal crossover

(*Or*)

(b) Explain in detail - Transformation.

14. (a) Short note on characters of transposable element

(*Or*)

(b) Describe the importance of transposable element in evolution

15. (a) Explain the methods of inducing mutations

(*Or*)

(b) Short notes on Bacterial conjugation

Part C (3 × 10 = 30)

Answer any **three** questions

All questions carry equal marks

16. Write a detailed account on different genetic markers and its applications.

17. Explain in detail about the different types of mutations.

18. Describe Bacterial conjugation

19. Explain in Hardy-Weinberg principle.

20. Write in detail about Linkage mapping.

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RW-6503 **501205**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

LAB-IV : IMMUNOTECHNOLOGY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks

1. Booster dose

2. Marginal ear vein bleeding

3. Zone of antibody excess

4. Agar diffusion test

5. Density gradient solution

6. Apoptosis

7. Cell synchronization

8. Transformed Cell lines

9. Indirect ELISA

10. IFAT

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b)

All questions carry equal marks

11. (a) Enumerate the applications of monoclonal antibodies in biomedical research.

(*Or*)

(b) Explain the procedure for blood serum and plasma collection.

12. (a) Describe rocket immunoelectrophoresis.

(*Or*)

(b) Give an account on immunohistochemical staining.

13. (a) Explain the procedure for two color immunofluorescence.

(*Or*)

(b) Write the procedure for density gradient agglutination.

14. (a) Describe different approaches in the diagnosis of tuberculosis.

(*Or*)

(b) Elaborate the immunological method of diagnosis of HIV.

15. (a) Explain how C. elegans is useful as a model organism in gene expression studies.

(*Or*)

(b) Explain cell synchronization.

Part C (3 × 10 = 30)

Answer any **three** questions

All questions carry equal marks

16. Describe various routes of antigen administration and immunization protocols.

17. Give a detailed account on diffusion and precipitation assays to delineate antigen antibody relationship.

18. Briefly describe the following :

    a. Total count of blood cells.

    b. Differential count of blood cells.

    c. Lymphocyte count.

    d. Lymphocyte sub-set count.

19. Explain the method of transient and stable transfusion method.

20. Describe the principles and procedure for Western blotting as a diagnostic tool.

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RW-6504 **501504**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

Elective II : MARINE ECOSYSTEM AND PRINCIPLES OF OCEANOGRAPHY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks

1. Estuary

2. Abyssal Zone

3. What is marine Biosphere?

4. Phytoplankton

5. Neaptide

6. ENSO

7. What is hydrological cycle?

8. Nishkin sampler?

9. What is Green House effect?

10. Bioluminescence

Part B (5 × 5 = 25)

Answer **all** questions, choosing **either** (a) **or** (b)

All questions carry equal marks

11. (a) Give an account on Physico-chemical properties of sea water.

(*Or*)

(b) Discuss — Intertidal Ecosystem

12. (a) Coral bleahcing — Discuss.

(*Or*)

(b) Write in detail about molecular methodologies in measuring Marine Biodiversity.

13. (a) Ocean underwater currents — Discuss.

(*Or*)

(b) Give an account on winds and oceanic circulation.

14. (a) What are the factors that regulate dissolution and concentration of gases in sea water?

(*Or*)

(b) Write a note on general sampling procedures.

15. (a) What are the factors influence primary production in marine ecosystem ?

(*Or*)

(b) Write a note on global warming.

Part C

(3 × 10 = 30)

Answer any **three** questions

All questions carry equal marks

16. Give an account on coastal wet lands and its biodiversity.

17. Write on Marine pollution and Impact on marine diversity.

18. Waves and Tides — Discuss.

19. Give an account on oceanographic instruments used in sampling of water, sediments and biota.

20. Describe in detail about climatic change and its influence on marine ecosystem.

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RW-6505 **501101**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

BIOCHEMISTRY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.
All questions carry equal marks.

1. Buffer.

2. Role of co-enzyme A.

3. Active transport.

4. Photosynthesis.

5. Structure of ATP.

6. Redox reaction.

7. Glycolysis and Gluconeogenesis.

8. β - oxidation.

9. Abzymes.

10. Immobilization.

Part B (5 × 5 = 25)

Answer **all** questions by choosing **either** (a) **or** (b).
All questions carry equal marks.

11. (a) Draw the structure and reaction mechanism of NAD+.

(*Or*)

(b) Briefly explain essential amino acids.

12. (a) Write notes on tight reaction.

(*Or*)

(b) Give an account on membrane proteins.

13. (a) State the second and third law of thermodynamics.

(*Or*)

(b) How ATP act as energy carrier.

14. (a) Describe the process of glycolysis.

(*Or*)

(b) Explain TCA cycle.

15. (a) General properties of enzymes.

(*Or*)

(b) Enumerate the various techniques of enzyme immobilization.

Part C (3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Write in detail about the role of TPP.

17. Give an account on biological membranes.

18. Explain the biological oxidation–reduction reactions.

19. De nova synthesis of purine nucleotides.

20. Clinical and industrial application of enzymes.

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RW-6506 **501102**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

MICROBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.
All questions carry equal marks.

1. Write notes on taxonomic classification of microorganism.

2. Brief about the germ theory.

3. What is a gas vesicle ?

4. Define lag phase.

5. Define microbial pathogenicity.

6. Write on classification of drug resistant.

7. What is RFLP ?

8. Define probe.

9. Define fermentation.

10. Define Biodetererioration.

Part B (5 × 5 = 25)

Answer **all** questions by choosing **either** (a) **or** (b).
All questions carry equal marks.

11. (a) Describes the diversity of prokaryotic organisms.

(*Or*)

(b) Explain the Koch's postulates.

12. (a) Describe the general properties of viruses.

(*Or*)

(b) Write notes on photosynthesis.

13. (a) Characteristics of exotoxins and endotoxins.

(*Or*)

(b) Illustrate retrovirus.

14. (a) Write notes on advantages of T-RFLP.

(*Or*)

(b) Explain Molecular methods adopted for screening the microbial diversity.

15. (a) Illustrate endomycorrhiza.

(*Or*)

(b) Briefly explain the effects of oil biodegradation.

Part C (3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Classification of bacteria according to Bergy's manual.

17. Give details on microbial metabolism—Fermentation.

18. Write an essay on Salomnella.

19. What is metagenomics and explain environmental gene surveys.

20. Explain the application of microbes in wine and beer production.

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RW-6507 **501103**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

MOLECULAR BIOLOGY AND GENETICS

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. Which rule states the ratio of purine to pyrimidines in the ds-DNA is always constant at 1 & explain.

2. Define DNA- polymorphism and different forms of DNA.

3. DSO, SSO, SFI, UvrD, Srs2, PcrA.

4. Lac-operon.

5. Expand the following : 76 A > T, g. 100 G > C, r.100 g > c. D111E, ΔF508.

6. Prion mutation.

7. Substantiate the role of isogenic strains.

8. Define Mariner-like elements, Helitron.

9. Sulston Score.

10. P53, pRb, BRACA-1.

Part B (5 × 5 = 25)

Answer **all** questions choosing **either** 'a' **or** 'b'.

All questions carry equal marks.

11. (a) Give a brief account on Meselson and Stahl experiment.

(*Or*)

(b) Define Woobles hypothesis and characteristics of genetic code.

12. (a) Explain an operon concept.

(*Or*)

(b) State a detailed account on hormonal control of gene expression.

13. (a) Describe the process of recombination in the λ life cycle.

(*Or*)

(b) Write a note on genetic engineering.

14. (a) Describe briefly about chemical mutagens and their effect on nucleotide sequence.

(*Or*)

(b) Write an essay on genetic mapping.

15. (a) What is genetic anthropology ? And Explain its role in HGP.

(*Or*)

(b) Write an essay on applications of HGP.

Part C

(3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Substantiate the role of different enzymes in eukaryotic DNA replication.

17. Give a note on polypeptide synthesis in prokaryotes.

18. Write a note on DNA damage and repair mechanism.

19. Give a detailed note on transposon tagging in yeast cells.

20. Name four databases for HGP and explain in detail.

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RW-6508 **501104**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

CELL BIOLOGY

(CBCS–2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Nucleus.

2. Microtubules.

3. Chloroplast.

4. Membrane proteins.

5. Lipid bilayer.

6. Cell junctions.

7. Cell fusion.

8. Apoptosis.

9. Oncogenes.

10. Aging theory.

Part B (5 × 5 = 25)

Answer **all** questions choosing **either** (a) **or** (b)

All questions carry equal marks.

11. (a) Write about lysosomes and its functions.

(*Or*)

(b) Explain the structure and function of mitochondria.

12. (a) Give a short note on biological membrane structure.

(*Or*)

(b) Write about Intracellular protein sorting in chloroplast.

13. (a) Explain the cellular differentiation in plants.

(*Or*)

(b) Briefly explain the types of cell junctions and its function.

14. (a) Describe the nuclear and cytoplasm interactions.

(*Or*)

(b) Describe various types of chaperons and its cellular functions.

15. (a) Explain the role of virus involved in tumour formation.

(*Or*)

(b) Comment on mutation.

Part C (3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Write an essay about structure and function of lysosomes.

17. Give a detailed account on intra cellular protein sorting in mitochondria.

18. Write about the plant cell wall composition, organization and functions.

19. Describe the structural organization and function of proteasomes.

20. Write an essay about hormonal disturbance theory.

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RW-6509 **501105**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

Lab I : ANALYTICAL BIOCHEMISTRY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

All questions carry equal marks.

1. Principle of Bradford's Method.

2. Colorimetry.

3. Optimum temperature.

4. Differentiate the Serum and Plasma.

5. PI value of amino acids.

6. TLC.

7. Downstrem process.

8. Ion exchange chromatography.

9. Name any four radiochemicals used in clinical field.

10. ANOVA.

Part B (5 × 5 = 25)

Answer **all** the questions choosing **either** 'a' **or** 'b'.

All questions carry equal marks.

11. (a) Determine the Carbohydrates by DNSA method.

(*Or*)

(b) Give detailed account on evolution of complementary colour and wavelength of coloured solutions.

12. (a) How will you estimate the blood glucose and determination of fasting, post-prandial and random blood sugar.

(*Or*)

(b) Write about clinical significance of Marker enzymes.

13. (a) Write about biological importance of Buffer.

(*Or*)

(b) Describe about TLC and its applications.

14. (a) Explain basic principle behind gel permeation chromatography.

(*Or*)

(b) Write short note on the Dialysis process.

15. (a) Explain about PAGE.

(*Or*)

(b) What is a *t*-test ? When it is used and for what purpose ? Explain by means of example.

Part C

(3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Write in detail about the principle and applications of spectroflorimetry.

17. Discuss about M-M equation and their significance.

18. How will you produce the extracellular Enzymes from bacteria and fungus.

19. Explain working principle and their applications of paper chromatography.

20. How will you identify the proteins by using 2D gel ?

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RW-6510 **501106**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Lab II—MICROBIOLOGY

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.
All questions carry equal marks.

1. Define differential media with example.

2. HEPA.

3. *Bacillus stearothermophilus.*

4. Distinguish prion, virion, *virus.*

5. Thermal death time.

6. Diauxic growth.

7. Define Allochthonus.

8. Define Probiotics.

9. Define Xenobiotics.

10. Differentiate bacterin and bacteriocin.

Part B (5 × 5 = 25)

Answer **all** questions by choosing **either** (a) **or** (b).
All questions carry equal marks.

11. (a) Enumeration of fungi from air and soil samples.

(*Or*)

(b) Write notes on various chemical agents used for sterilization.

12. (a) Explain in detail about endospore staining.

(*Or*)

(b) Write briefly about the Fontana's staining technique.

13. (a) Explain in detail about metabolic products of Streptomyces.

(*Or*)

(b) GMO and its significance.

14. (a) Define SCP and explain in detail about its mass cultivation.

(*Or*)

(b) Write detail notes on Botulism.

15. (a) Applications of microbes in pharmaceutical industries.

(*Or*)

(b) Define biotransformation and explain about steroid biotransformation.

Part C (3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Write about the composition of various culture media used in the laboratory with their applications.

17. Explain in detail about the principles and applications of Simple and Grams staining.

18. Screening and strain selection for antibiotic producing microorgsnisms.

19. What is meant by quorum sensing and add notes on its signaling pathways.

20. Describe about the applications of 16s rDNA sequencing for the identification of cultivable and uncultivable organisms.

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RW-6511 501501

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

Elective I : BIOPHYSICS AND INSTRUMENTATION

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.
All questions carry equal marks.

1. What is covalent bond ?

2. Write down the physical properties of water.

3. Explain about secondary structure of protein.

4. What are all the three major characters that affect the structure of DNA ?

5. What is (a) GM counter and (b) Dosimeter ?

6. Explain briefly about Gel-Filtration Chromatography.

7. What is the principle of 2D gel electrophoresis ?

8. Explain about types of column used in chromatography and its necessity.

9. How do you prepare sample for electron microscope ?

10. What is X-ray Powder Diffraction ?

Part B (5 × 5 = 25)

Answer **all** questions by choosing **either** (a) **or** (b).
All questions carry equal marks.

11. (a) Write in detail about weak interactions in macromolecules.

(*Or*)

(b) Describe the importance of peptide bonding in protein.

12. (a) What are the forces stabilizing structure of protein ?

(*Or*)

(b) Write in detail about protein folding.

13. (a) What are the application of radioactive isotopes in biological studies ?

(*Or*)

(b) How do you measure radiations ? Explain the devices used to measure radiations.

14. (a) Explain the different types of chromatographic techniques.

(*Or*)

(b) Describe the basic principles and applications of different types of electrophoresis.

15. (a) What is luminescence and how it it being used in the biological studies ?

(*Or*)

(b) Describe the basic principle of Circular Dichroism (CD).

Part C

(3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. Describe the importance of hydrophobic and hydrophilic interactions in biomolecules.

17. Write about the importance of different protein structures.

18. What are radioisotopes ? What are the safety aspects in handling radioactive isotopes in biological research ?

19. Describe the principles and uses of HPLC.

20. Write in detail about the application of fluorescence of microscope.

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RW-6512 **501301**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

BIOINFORMATICS

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.
All questions carry equal marks.

1. Write any four commands for EMBOSS and tell the function of commands.

2. Write a note on HTGS and PIR.

3. Differentiate global and local alignment.

4. Write short notes on BLAST and E-value.

5. Write dynamic programming technique.

6. Explain Hidden Markov model.

7. Explain β Turn and β bend model for protein structure.

8. Mention the role of amino acids in folding.

9. Explain primer design.

10. How genomes can be used to predict evolutionary relationships ?

Part B (5 × 5 = 25)

Answer **all** questions by choosing **either** (a) **or** (b).
All questions carry equal marks.

11. (a) How will you analyze a protein and DNA sequences ?

(*Or*)

(b) Describe role of database om Drug designing.

12. (a) Write about Algorithms for sequence alignment.

(*Or*)

(b) (i) Write a note on database searching.

(ii) Differentiate the tblastn and tblastx.

13. (a) Discuss distance-matrix methods in detail.

(*Or*)

(b) Write about the phylogenetic analysis and discuss about the PHYLIP software.

14. (a) Discuss in detail about *Ab initio* protein modeling.

(*Or*)

(b) Write the Lipinski's rule of Five.

15. (a) Write in detail about RFLP.

(*Or*)

(b) Discuss in detail about the chromosomal mapping.

Part C (3 × 10 = 30)

Answer any **three** questions.
All questions carry equal marks.

16. What are databases ? Discuss in detail. Mention about SwissProt, OMIM, MGD, PUBMED and PUBCHEM.

17. Discuss about Smith-Waterman algorithm and which alignment are used in this algorithm.

18. (a) Explain phylogenetic tree. Describe the types of phylogenetic trees.

    (b) What is Cladistics ? Explain in detail.

19. Discuss in detail about Drug designing. What is the role of scoring function in this ?

20. Write about the Maxam-Gilbert sequencing and High-throughout sequencing.

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RW-6513 **501304**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

LAB–V—RECOMBINANT DNA TECHNOLOGY

(CBCS—2008 Onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. What is PRIBNOW BOX ?

2. What is the role of RNA polymerase ?

3. Shuttle vectors.

4. Define electroporation.

5. What is site directed mutagenesis ?

6. What are adaptors and its uses ?

7. What is GFP ? And its applications.

8. What is a bacmid ? How is it used ?

9. What are bioreactors ?

10. Role of DTT.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b)

All questions carry equal marks.

11. (a) Give an account on regulation of mRNA transcriptions in prokaryotes.

(*Or*)

(b) Describe the similarities and differences between prokaryotic and eukaryotic structural genes.

12. (a) Discuss about baculovirus expression vector systems.

(*Or*)

(b) Describe the method for construction of genomic DNA library and its applications.

13. (a) Give an account on Realtime–PCR and its applications.

(*Or*)

(b) What physical and chemical properties of enzymes are targets for enhancement by directed mutagenesis ?

14. (a) Describe the varies strategies for expressing heterologous proteins in one mammalian cells.

(*Or*)

(b) What are fusion proteins ? Give an account on its cleavage and uses.

15. (a) List out and explain the parameters to monitor the optimized fermentation process.

(*Or*)

(b) Discuss the methods used for protein purification.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. What is an operon ? What its biological significance ? Explain with examples.

17. Give a detailed account on southern blotting techniques.

18. Give a detailed account on oligonuclotide directed mutagenesis.

19. Define cloning ? Discuss cloning in T/A vector. What are its applications ?

20. What is downstream processing. Give a detailed account on various techniques used in the recovery and purification of products.

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RW-6514 **501512**

M.Sc. DEGREE EXAMINATION, APRIL 2011

Biotechnology

Elective—V—FUNCITONAL GENOMICS

(CBCS—2008 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

All questions carry equal marks.

1. What is 'COUPLING' in microarray techniques ?

2. Comment on motor protein.

3. Role of quantum mechanical magnetic in NMR.

4. Explain about ampholytes.

5. What is data clustering ?

6. What is transfection assays ?

7. Significant of MLPA.

8. Note on single-nucleotide polymorphism.

9. Comment on high-throughput screening.

10. PROTOMAP-Explain.

Part B (5 × 5 = 25)

Answer **all** questions, choosing **either** (a) **or** (b)

All questions carry equal marks.

11. (a) Explain in detail about regulation of gene expression.

(*Or*)

(b) Give on human genome project and its Impact on Scientific society.

12. (a) Discuss about the importance of protein analysis in genomics studies.

(*Or*)

(b) Give on working principles of mass spectroscopy in protein identification.

13. (a) What are the significance of reporter gene ?

(*Or*)

(b) What is Immunoaffinity chromatography ? List their applications.

14. (a) How animal models will help to functional genomics studies ?

(*Or*)

(b) What is the impact of gene mutation ?

15. (a) Write about drug metabolisms.

(*Or*)

(b) Discuss about next-generation sequence technology.

Part C (3 × 10 = 30)

Answer any **three** questions.

All questions carry equal marks.

16. Discuss about the transcript analysis with modern scientific techniques.

17. What is protein microarray ? Explain their role in functional genomic studies with example.

18. Give an account on functional characterization of proteins in microbial pathogens.

19. What are environmentally significant microorganisms ? List any two functional genomics studies in environmental microorganisms.

20. Write an essay on drug discovery.

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