BLDE (DEEMED TO BE UNIVERSITY)
Master of Science in Biotechnology

[Time: 3 Hours]   [Max. Marks: 80]

I SEMESTER
PAPER – I (Bioanalytical Techniques)
QP CODE: 7811

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Question (Any – 3)   10 X 3= 30 Marks

1. What is LASERs, their characteristics and they are produced? Give various applications of LASERs.

2. Write an essay on human genome project.

3. What is principle of HPLC? Why width at half height is used for calculating resolution in chromatography?

4. What is Raman scattering? Describe Raman spectroscopy and its applications.

Short Essays: (Any – 7)   5 X 7 = 35 Marks

5. What is the principle of NMR? Which of the following nuclei are NMR active give reasons. Hydrogen, Deuterium, ^{12}C, ^{13}C and ^{19}F.

6. Discuss in detail any one DNA sequencing methods with example.

7. Discuss in details electrophoresis technique.

8. Explain illuminometry and various reaction producing light.

9. Define Bragg's law of x-ray diffraction.

10. What are different application of radioisotopes?

11. Give principle and applications of IR spectroscopy.

12. Discus osmotic property of bio-molecules and consequence.

Short Answers: (Any – 5)   3 X 5 = 15 Marks

13. What is CCD detector? Explain its design.

14. What is the principle of GC?

15. Describe the principle of peptide sequencer.

16. What are various microscopic techniques?

17. Discuss various applications of x-ray crystallography.

18. What are various dyes used for visualization in blotting techniques? Explain the principle.

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I SEMESTER
PAPER – II (Bioinorganic and Biomolecules)
QP CODE: 7812

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Question (Any – 3)   **10 X 3= 30 Marks**

1. What is thermodynamics? Explain the three laws of thermodynamics and drive an equation for each

2. What are carbohydrates, give their classification based on their structure.

3. Explain in detail the steps in Beta-Oxidation of Palmitic Acid.

4. Give classification of protein. Write a note on Peptides and Polypeptides.

Short Essays: (Any – 7)   **5 X 7 = 35 Marks**

5. Write the different types of DNA

6. Write a note on (i) Entropy (ii) Chemical equilibrium

7. What is stereoisomerism, explain with a suitable example.

8. Write a note on Gibbs free energy.

9. What are secondary bonds? Explain with suitable examples.

10. What is ATP and what is its importance in living beings?

11. Biologically important nucleotides and their function.

12. Explain the Gout. Symptoms and treatments.

Short Answers: (Any – 5)   **3 X 5 = 15 Marks**

13. Draw the cyclic structure of pyranose

14. Standard free energy

15. Optical activity

16. Write a brief note on chirality.

17. Electron transport chain.

18. Define peptide bond

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I SEMESTER
PAPER – III (Cell Biology and Genetics)
QP CODE: 7813

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Question (Any – 3)   10 X 3= 30 Marks

1. Eukaryotic Chromosomes
2. Draw Neat Labelled Diagram of Plant and Animal Cell
3. Laws of Mendel
4. Write a note on Sex Determination & Linkage

Short Essays: (Any – 7)   5 X 7 = 35 Marks

5. Plasma Membrane
6. Law of Segregation
7. Ames Test for Mutagenic agents,
8. Meiosis
9. Polytene Chromosomes
10. Co-Dominance
11. Barr bodies
12. Applications of Genetics

Short Answers: (Any – 5)   3 X 5 = 15 Marks

13. Functions of Mitochondria
14. Microtubules
15. Translocation
16. Heterochromatin
17. Dosage Compensation
18. Penetrance

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I SEMESTER
PAPER – IV (Biostatistics, Bioinformatics)
QP CODE: 7814

Your answer should be specific to the questions asked.
Write Question No. in left side of margin.

Long Question (Any – 3)   10 X 3= 30 Marks

1. Explain in detail about BLAST and its variants
2. Explain Poisson distribution and Normal distribution with example
3. Explain in detail about scoring matrices
4. What is data and explain types of data

Short Essays: (Any – 7)   5 X 7 = 35 Marks

5. Write about sequence alignment
6. Write short easy on computer aided drug discovery
7. Specialized databases
8. Application of Tabulation and Diagrammatic presentation of data
9. Define Measures of central tendency
10. Explain F test (ANOVA)
11. Write difference between global and local sequence alignment
12. Sequence homology

Short Answers: (Any – 5)   3 X 5 = 15 Marks

13. FASTA sequence
14. Primary sequence database
15. Central dogma of life
16. Explain Skewness and Kurtosis
17. Importance of phylogenetics analysis
18. Application of chi square test