

**M.D. DEGREE EXAMINATION**  
**BRANCH XIII – BIOCHEMISTRY**  
**PAPER II – CELL PHYSIOLOGY, MOLECULAR BIOLOGY AND**  
**HUMAN GENETICS**

*Q.P. Code: 202044*

**Time: Three Hours**

**Maximum: 100 Marks**

**I. Essay Questions:**

**(2 x 15 = 30)**

1. Explain the fluid mosaic model of biological membrane. Briefly write about the transport mechanisms. Add a note on the artificial membranes and its applications.
2. What is Genetic code? Discuss the features of the genetic code. Add a note on mitochondrial DNA.

**II. Short notes:**

**(10 x 5 = 50)**

1. Receptor mediated endocytosis
2. DNA damaging agents
3. Analysis of DNA sequence
4. Gene knockout and its applications
5. Biochemical and molecular basis of
  - a. ataxia telangiectasia
  - b. xerodermapigmentosum
  - c. Fanconi syndrome
  - d. familial breast cancer
  - e. familial adenomatous polyposis
6. Blotting Techniques
7. Isolation of nucleic acids
8. Types and functions of RNA
9. Functions and regulation of Cyclins
10. Surface glycoproteins and their biological significance

**III. Reasoning Out:**

**(4 x 5 = 20)**

1. Why DNA is synthesised in a discontinuous manner in lagging strand?
2. The role of ubiquitination on misfolded proteins
3. Membranes are referred as Dynamic structures
4. Insulin receptor binds more insulin when membrane fluidity increases

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