BIOCHEMISTRY

PAPER – IV

BIO/D/16/03/IV

Time : 3 hours
Max. Marks : 100

Important instructions:

- *Attempt all questions in order.*
- *Each question carries 10 marks.*
- *Read the question carefully and answer to the point neatly and legibly.*
- *Do not leave any blank pages between two answers.*
- *Indicate the question number correctly for the answer in the margin space.*
- *Answer all the parts of a single question together.*
- *Start the answer to a question on a fresh page or leave adequate space between two answers.*
- *Draw table/diagrams/flowcharts wherever appropriate.*

Write short notes on:

1. a) Biochemical basis of insulin signaling and insulin resistance (IR). 5+3+2
   b) How is IR assayed in human subjects?
   c) Health impacts of IR.

2. Diagnostic, therapeutic potential and rational of use of nanoparticles. 3+3+4

3. Recent advancement in diagnostics of tuberculosis with reference to: 5+5
   a) PCR in diagnosis of tuberculosis and drug resistant tuberculosis.
   b) Quantiferon for tuberculosis diagnosis

4. a) With the help of a schematic diagram, write the mechanism of action of Vitamin D in intestine. 5+5
   b) Write how deficiency of Vitamin D is associated with different diseases.

5. a) Tyrosine Kinase and Tamoxifen in treatment of cancer. 7+3
   b) How can pharmacogenic study help in deciding their use (i.e., in selecting patient and predicting their response)?

6. a) List the genes whose activation can convert differentiated cell into stem cells. 4+4+2
   b) How can stem cells be isolated and grown in laboratory from cord blood and adult peripheral blood?
   c) What are biological banks? Comment whether they are useful or not.

7. a) List novel markers of risk of coronary artery disease. 2+5+3
   b) How these risk markers assayed in laboratory.
   c) Write about new diagnostic markers of acute myocardial infarction.

8. a) Principle of immunoassay technique based on chemiluminescence. 5+5
   b) Compare and contrast chemiluminescence based immunoassay with ELISA.

P.T.O.

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9. a) Basic principle of gas chromatography and liquid chromatography. 5+5
   b) How are substances separated by gas chromatography detected?

10. Write definition and techniques used for the study of: 2.5x4
    a) Metabolomics
    b) Genomics
    c) Proteomics
    d) Microbiomics

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