Q.P. Code:

2 ½ Hours

Total Marks: 75

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. Use of **log tables** and **non-programmable calculator is allowed**.
5. For **Q.2, Q.3 and Q.4** attempt A and B **OR** C and D.

Q.1 Do as directed (Any fifteen) 15

1. Define molecular diagnostics.
2. Name any one membrane used for immobilizing DNA during blotting.
3. Define Restriction Endonucleases.
4. Fixed embedded tissue has to be deparaffinized by soaking in _____.
5. After release of DNA from the cell, further purification requires removal of contaminating proteins, lipids, carbohydrates, and cell debris. This is achieved by using mixture of _____ and chloroform.
6. _____ is a strong denaturant of RNAses and can be used instead of high salt buffers.
7. What does PCR stands for?
8. Give one application of thermostable DNA Pol.
9. What is a spin column?
10. Give the mode of action of Shrimp alkaline phosphatase.
11. What is an amplicon?
12. Give the use of β- agarase.
13. Give an application of Exonuclease – I.
14. The polymorphism in which one or more nucleotide changes affect the size of restriction enzyme products is called _____.
15. Give the full form of SNP.
16. Give an application of 'Markers' in genetic mapping.
17. Sickle cell anaemia is caused by a single base pair change in the gene for _____ polypeptide of haemoglobin.
18. State true or false : *N. gonorrhoeae* is a sexually transmitted pathogen.
19. Give the full form of CFTR.
20. Define Informed Consent.

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Q. 2 A	Discuss the protocol for isolation of RNA.	08
Q. 2 B	Explain with the help of a diagram organic DNA isolation method?	07
	OR	
Q. 2 C	Explain the procedure of Southern blotting.	08
Q. 2 D	What are probes? Explain the methods of probe labelling.	07
Q. 3 A	Describe the technique of PCR.	08
Q. 3 B	Discuss the formation of primer-dimer in PCR and its disadvantages.	07
	OR	
Q. 3 C	Explain RT-PCR in detail.	08
Q. 3 D	Discuss Ligase chain reaction.	07
Q. 4 A	Diagrammatically explain the application of RFLP in parentage testing.	08
Q. 4 B	Write a brief note on information that should be provided in a 'Research informed consent.'	07
	OR	
Q. 4 C	Describe molecular testing for *Neisseria*.	08
Q. 4 D	Explain the components of Genetic counselling process.	07
Q. 5	Write Short notes on any three of the following	15

a. Virology of HIV.

b. Role of dUTP-UNG system as a method of control of PCR contamination.

c. Use of psoralen to control PCR contamination.

d. Isolation of DNA on solid media.

e. Measurement of nucleic acid quality and quantity using Spectrophotometry.

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