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**M.E. / M.TECH. DEGREE EXAMINATIONS, MAY 2019**

Second Semester

**BY18203 - GENETIC ENGINEERING AND GENOMICS***(Biotechnology)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

**PART A - (10 X 2 = 20 Marks)**

1. What are cosmids?
2. Define *invitro* packaging?
3. Define Chromosome walking.
4. Outline on oligo dT priming.
5. State the significance of pyro sequencing.
6. What is the importance of nanopore sequencing?
7. Define Hot Start PCR.
8. What is site directed mutagenesis?
9. Define DNA microinjection.
10. What is the significance of Knockout mice?

**PART B - (5 X16 = 80 Marks)**

11. (a) (i) Write on restriction and modification enzymes. (8)
- (ii) Explain two major types of plasmid vectors. (8)
- (OR)**
- (b) (i) Write in detail on BAC and YAC Vectors. (8)
- (ii) Write in detail on high expression of proteins using expression vectors. (8)
12. (a) (i) Explain on construction of genomic DNA library. (8)
- (ii) Write briefly on cDNA library. (8)

**(OR)**

- (b) (i) Explain in detail on different types of screening strategies in rDNA techniques. (8)
- (ii) Write an overview on microarray techniques and its applications. (8)
13. (a) (i) Discuss in detail on Sanger's method of DNA sequencing. (8)
- (ii) Explain top down and bottom up approach of Genome sequencing methods. (8)
- (OR)**
- (b) (i) Explain on next generation and illumina sequencing methods. (8)
- (ii) Write in detail on Chemical method of DNA sequencing. (8)
14. (a) (i) Elaborate on general PCR technique and its applications. (8)
- (ii) Explain on inverse and multiplex PCR systems. (8)
- (OR)**
- (b) (i) Write in detail on Nested and Asymmetric PCR techniques. (8)
- (ii) Explain the principle and applications of Real Time PCR system. (8)
15. (a) (i) Write on Transfection of Embryonic Stem Cells. (8)
- (ii) Elaborate on CRISPR/Cas9 system in gene editing process. (8)
- (OR)**
- (b) (i) How do you introduce foreign DNA into animal cells using viral vectors? Explain with an example. (8)
- (ii) Write an essay on Gene Therapy and its current status all over the world. (8)