

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2150401****Date: 25/11/2019****Subject Name: Advanced Molecular Biology - I****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

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|------------|--|-----------|
| Q.1 | (a) Give functions of: DNA Ligase, Restriction Endonuclease, Linker sequence. | 03 |
| | (b) Explain steps of gene cloning in brief. | 04 |
| | (c) Explain the technique of Southern Hybridization. | 07 |
| Q.2 | (a) Compare sticky and blunt ends generated by RE. | 03 |
| | (b) Explain structure and regulation of Fertility plasmid. | 04 |
| | (c) Explain any one vector in detail along with its markers. | 07 |
| | OR | |
| | (c) Explain the possibilities for insertion of DNA insert into vector. | 07 |
| Q.3 | (a) What are cloning and expression vectors? | 03 |
| | (b) Explain the process of formation of Holliday junction. | 04 |
| | (c) Explain principle and working of PCR. | 07 |
| | OR | |
| Q.3 | (a) Explain principle of electrophoresis. | 03 |
| | (b) How F ⁺ is prime generated in <i>E.coli</i> ? | 04 |
| | (c) Explain double strand break model in recombination. | 07 |
| Q.4 | (a) Compare cDNA and Genomic library. | 03 |
| | (b) What are the methods to induce artificial competence? | 04 |
| | (c) Explain process of transfer of DNA from donor to recipient during conjugation process. | 07 |
| | OR | |
| Q.4 | (a) What are Hfr Strains? | 03 |
| | (b) What is transduction? | 04 |
| | (c) Explain the process of development of natural competence in <i>Streptococcus</i> . | 07 |
| Q.5 | (a) Give properties of good host. | 03 |
| | (b) Explain concept of reverse genetics. | 04 |
| | (c) Explain abortive transduction in detail. | 07 |
| | OR | |
| Q.5 | (a) Compare DNA transfer in conjugation, transduction and transformation. | 03 |
| | (b) Narrate applications of gene therapy. | 04 |
| | (c) Explain specialized transduction in detail. | 07 |
