Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE- IV$^{th}$ SEMESTER–EXAMINATION – MAY/JUNE- 2012**

**Subject code: 140401** **Date: 23/05/2012**

**Subject Name: Molecular Biology and Genetics**

**Time: 10:30 am – 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.**

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|---|---|---|---|
| **Q.1** | **(a)** | Write a short note on replication in prokaryotes with its enzymology. | **10** |
| | **(b)** | What is denaturation of DNA? Explain it with neat diagram. | **04** |
| **Q.2** | **(a)** | An inhibitor of pigment production in onion bulbs (I-) shows dominant epistasis over another locus, the genotype iiR- producing red bulbs and iirr producing yellow bulbs. If yellow onions are crossed to a pure white strain, what phenotypic ratio is expected in F1 and F2 generations? | **07** |
| | **(b)** | Explain processing of m-RNA. | **07** |
| | | **OR** | |
| | **(b)** | Explain Processing of t-RNA. | **07** |
| **Q.3** | **(a)** | Explain different kinds of crossing over with a neat diagram. | **07** |
| | **(b)** | What phenotypic ratio is expected in F2 generation if color blind man is married to a normal visioned woman? | **04** |
| | **(c)** | Define epistasis, dominance and back cross. | **03** |
| **Q.3** | **(a)** | Explain different types of linkage with a neat diagram. | **07** |
| | **(b)** | What phenotypic ratio is expected in F2 generation if color blind woman is married to a normal visioned man? | **04** |
| | **(c)** | Define linkage, codominance and monohybrid cross | **03** |
| **Q.4** | **(a)** | Explain m-RNA transcription in eukaryotes. | **10** |
| | **(b)** | Define: Promoter, Conservative replication. | **04** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain Structure of t-RNA. | **10** |
| | **(b)** | Define: Okazaki Fragments, Semi conservative replication. | **04** |
| **Q.5** | **(a)** | Write a short note on genetic code and its properties. | **07** |
| | **(b)** | Prove DNA as a genetic material in akaryotes. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain mechanism of translation in prokaryotes. | **10** |
| | **(b)** | Explain Wobble hypothesis. | **04** |

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