

GUJARAT TECHNOLOGICAL UNIVERSITY**B.E. Sem-IV Remedial Examination Nov/ Dec. 2010****Subject code: 140401****Subject Name: Molecular Biology and Genetics****Date: 01 / 12 / 2010****Time: 03.00 pm – 05.30 pm****Total Marks: 70****Instructions:**

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

- Q.1** (a) Explain post transcriptional modification of m-RNA. **07**
 (b) Explain mechanism of meiotic crossing over in detail with a neat diagram. **07**
- Q.2** (a) Explain replication mechanism in eukaryotes. **07**
 (b) Four comb shapes namely rose, pea, walnut and single in poultry are known to be governed by two gene loci. The genotype R-P- produces walnut comb, R-pp produces rose comb, rrP- produces pea comb, rrpp produces single comb. Determine the proportion of comb types that would be expected in offspring from following crosses. (1) Rrpp x RrPP (2) rrPp x RrPp. **07**
- OR**
- (b) Give an account on Gonadal sex differentiation. **07**
- Q.3** (a) Describe the experiment that proved DNA as genetic material in akaryotes. **07**
 (b) Explain Bateson and Punnet's coupling and repulsion hypothesis. **04**
 (c) Define : Plasma gene, Monohybrid Cross, Epistasis **03**
- OR**
- Q.3** (a) Describe law of independent assortment with a suitable illustration of dihybrid croos. **07**
 (b) Explain eukaryotic gene structure. **04**
 (c) Define : Synapsis, Test cross, Y- linkage **03**
- Q.4** (a) Explain transcription mechanism in prokaryotes. **07**
 (b) Explain posttranscriptional modification of r-RNA. **04**
 (c) Define : monocistronic m-RNA, Primosome, Codon **03**
- OR**
- Q.4** (a) Explain transcription mechanism in eukaryotes. **07**
 (b) Write a short note on denaturation of DNA. **04**
 (c) Define : polycistronic m-RNA, Replicosome, Anticodon **03**
- Q.5** (a) Explain initiation mechanism of translation in both prokaryotes and eukaryotes. **10**
 (b) Explain any four enzymes of DNA replication in prokaryotes. **04**
- OR**
- Q.5** (a) Write a short note on genetic code and its properties. **07**
 (b) Describe the acylation of t-RNA **07**