

R09

Code No: 54049

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, April - 2018

MOLECULAR BIOLOGY AND GENETICS

(Biotechnology)

Time: 3 hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

- 1.a) Give an account on the mechanism of bidirectional replication in E.coli.
b) What are topoisomerases? Explain the role of topoisomerases in replication. [7+8]
- 2.a) Explain the clover leaf model of tRNA.
b) Explain the processing of mRNA in Eukaryotic cell. [7+8]
- 3.a) Give an account on the deviation of mitochondrial genetic code from normal genetic code.
b) Give an account on the mechanism of polypeptide chain synthesis in prokaryotic cell. [8+7]
- 4.a) Mendel crossed pea plants producing round seeds with those producing wrinkled seeds. From a total of 7324 F₂ seeds, 5474 were round and 1850 were wrinkled. Using the symbols W and w for genes,
i) symbolize the original P cross ii) the gametes iii) F₁ progeny iv) Represent a cross between 2 F₁ plants (or selfed) v) summarize the expected F₂ under the headings phenotypes, genotypes, genotypic frequency and phenotypic ratios.
b) Briefly explain the organization of DNA in Eucaryotic cells. [8+7]
- 5.a) What is linkage? Explain the chromosomal theory of linkage.
b) Briefly explain two point and three point test cross. [8+7]
- 6.a) What is transduction ? Explain the mechanism of specialized transduction.
b) Explain the difference between lytic and lysogenic cycle. [8+7]
- 7.a) What are chromosomal aberrations? Explain the types of aberrations.
b) What are mutagens? Explain the different types of chemical mutagens. [7+8]
- 8.a) Explain uniparental inheritance in algae.
b) What is photoreactivation? Explain how DNA is repaired by photoreactivation. [7+8]

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