JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- 2024
M.Sc.(Microbiology)-I Semester (BT))

COURSE CODE(CREDITS): 21MS1MB112(3) **MAX. MARKS: 15**
COURSE NAME: Molecular Biology
COURSE INSTRUCTORS: Dr Anil Kant **MAX. TIME: 1 Hour**

Note: (a)*All questions are compulsory.*
(b)Marks are indicated against each question in square brackets.
(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.1 [1.5 x 2=3]

a. Enlist biological processes with brief explanations which form the core of subject matter of molecular biology.
b. Briefly explain one experiment which proved that DNA is the genetic material.

Q.2 [2.0 x 3=6]

a. Why it can be believed that hydrogen bonding between complementary nucleotides are not only forces that stabilize nucleic acids. Mention other types of forces contributing for their stability.
b. Explain any two of following properties of nucleic acids and at least one consequent application on its basis in research and technology. i) Spectrophotometric properties ii) Hybridization iii) Buoyant density
c. Why Optical Density of DNA increase upon denaturation? What is the melting temperature of DNA and how can it be estimated?

Q.3 Attempt any two of the following [3.0 x 2=6]

a. Outline the one of the following experiment conducted by i) Maria Schnoss and Ross Inman 1960 ii) John Cairns in 1963
b. Why can DNA replication occur continuously only on one template strand of dsDNA? How it occurs on other strand. Briefly explain an experiment which proved discontinuous replication in E.coli?
c. Discuss salient features of origin of replication of "oriC". What is a replicon and how many of these exist in the E.coli genome?