

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2024

M.Sc-I Semester (Microbiology)

COURSE CODE (CREDITS):21MS1MB112 (3)

MAX. MARKS: 35

COURSE NAME: Molecular Biology

COURSE INSTRUCTORS:Dr Anil Kant

MAX. TIME: 2 Hours

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.

Q.No	Question	Marks
Q1	<p>a. Draw a well labeled diagram of a typical eukaryotic promoter and briefly discuss their main features.</p> <p>b. The growing RNA chain in transcription by RNA polymerase II is terminated by chain cleavage and polyadenylation. Give an account of features of termination sequences, protein and enzymes involved and process of termination.</p>	5
Q2	<p>a. What is RNA processing? Categorize different mechanisms involved and different types of introns which are processed?</p> <p>b. Summarize details of spliceosome mediated removal of introns from primary transcripts of nuclear protein coding genes resulting in formation of mature mRNA.</p>	8
	<p>a. Discuss different components involved and mechanism of protein chain elongation during translation in <i>E.coli</i>.</p> <p>b. Draw a neat and clean diagram of formation of eukaryotic, protein synthesis initiation complex eIF4F and enlist its main components along with their functions.</p>	8
Q.3	<p>a. Identify any two of following protein factors/enzymes and their functions i) TFIIF ii) Guanylyl transferase iii) TFIIF</p> <p>b. How following antibiotics/toxin affect protein synthesis i) Ricin ii) Chloramphenicol</p>	6
Q.4	<p>a. Discuss the principle and steps of the polymerase chain reaction cycle?</p> <p>b. Write a brief note on applications of PCR in different fields.</p> <p>c. Explain quantitative PCR, considering at least one method to estimate initial template DNA.</p> <p>d. Estimate the melting temperature of a primer with given sequence, GCATACTAGCTATAGACGAGGC</p>	8