STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI –600 086
(For candidates admitted from the academic year 2023 – 2024)

M. Sc. DEGREE EXAMINATION, APRIL 2024
BIOINFORMATICS
SECOND SEMESTER

COURSE : CORE
PAPER : MOLECULAR BIOLOGY
SUBJECT CODE : 23BI/PC/MB24
TIME : 3 HOURS MAX. MARKS: 100

Q. No.	SECTION A (10 x 1=10) All questions to be answered (Objective type)	CO	KL
1	Transcription of each set of rRNA genes by RNA polymerase I produces a) a single 45S rRNA precursor molecule b) a single 5S rRNA precursor molecule c) a single 18S rRNA precursor molecule d) a single 28S rRNA precursor molecule	CO1	K1
2	DNA replication occurs in a) S phase b) G phase c) G2 phase d) M phase	CO2	K2
3	The amino acids for protein synthesis is activated by the enzyme _____ a) rRNA synthetase b) aminoacyl-tRNA synthetase c) tRNA synthetase d) aminoacyl-mRNA synthetase	CO1	K1
4	RNA polymerase holoenzyme initiates transcription which involves a) recognition of the -10 sequence and -35 sequence b) recognition of the -10 sequence only c) recognition of the -35 sequence only d) none of the above	CO2	K2
5	Unwinding of DNA is done by a) Helicase b) ligase c) Hexonuclease d) Topoisomerase	CO1	K1
6	Of the ____ different possible codons, ____ specify amino acids and ____ signal stop. a) 20, 17, 3 b) 180, 20, 60 c) 64, 61, 3 d) 61, 60, 1	CO2	K2
7	During translation, which site in the ribosome allows for tRNA molecules to enter the complex? a) A site b) E site c) R site d) P site	CO1	K1
8	When studying a human virus in the laboratory, the best way to culture the virus would be to use: a) Bacteria b) Mice c) Chicken eggs d) Human cell culture	CO2	K2
9	Normal cells can be converted to cancer cells by treatment with _____ a) carcinogenic compounds b) endonucleases c) exonucleases d) kinases	CO1	K1
10	Endocrine messengers are also called _____ a) hormones b) receptors c) antibody d) antigen	CO2	K2

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Q. No.	SECTION B (10 x 2= 20) **Answers in about 50 words**	CO	KL
11	Types of DNA	CO3	K3
12	Crossing over	CO4	K4
13	Chloroplast genome	CO3	K3
14	Prions	CO4	K4
15	Okazaki fragments	CO3	K3
16	RNA editing	CO4	K4
17	Ribosomes	CO3	K3
18	Gene silencing	CO4	K4
19	Signaling molecules	CO3	K3
20	G-protein coupled receptors	CO4	K4
Q. No.	**SECTION C (4 x 10= 40)** **Answer in about 600 words - Internal choice**	**CO**	**KL**
21	a) Explain the types and organisation of chromosomes. **OR** b) Illustrate the stages of mitosis and meiosis.	CO4	K4
22	a) Discuss the significance of bacterial genetics. **OR** b) Brief the mechanism of DNA replication in prokaryotes.	CO5	K5
23	a) Give a detailed account on operons with examples. **OR** b) Describe the mRNA transcription in brief.	CO4	K4
24	a) Write about genetic basis of cancer. **OR** b) Discuss the post translational modifications.	CO5	K5
Q. No.	**SECTION D (2x 15=30)** **Answer any TWO questions in about 1200 words**	**CO**	**KL**
25	Elaborate the types of transposons and its mechanism of action.	CO5	K6
26	Comment on the following: i) DNA methylation ii)Viral genome iii) Histone modification	CO5	K6
27	Explain the translational regulation in eukaryotes.	CO5	K6
28	Discuss the oncogenesis and immunotherapy in detail.	CO5	K6

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