

0706E451

Candidate's Seat No : _____

M.Sc Sem.-2 Examination

P - 407

Toxicology

June 2022

Time : 2-00 Hours]

[Max. Marks : 50

Q.1	Answer the Following Questions (Any Six)	42 Marks
1	Write a short note on eukaryotic transcription process	
2	Please describe in detail along with the figures polymerase chain reaction	
3	Please describe with drawings the steps involved in Sanger sequencing.	
4	Please draw the procedure to generate Knockout Mice.	
5	Describe type of DNA damages. Any five.	
6	Please explain the Base Excision Repair mechanism in prokaryotes	
7	What is the difference between UV light based DNA damage and Reactive oxygen Species (ROS) based DNA damage	
8	Please describe the definition of the restriction enzyme. If you have to digest a 1KB long DNA fragment what are the maximum and minimum fragment sizes can be generated?	
9	There is a plasmid which carries a mutant gene MX, which you need to replace it with the wild type gene WX, please draw how the mutant plasmid will look and how can you replace it with the wild type gene. MX gene can be digested with the enzyme EcoRI. In order to maintain the orientation of the gene you have to treat it with alkaline phosphates enzyme, please display it at correct position.	
10	Write a note on G Protein couple receptors(GPCR)	
Q.2	Answer the Following Short Questions (Any Eight)	8 Marks
1	Which RNA polymerase is responsible for transcription of tRNA gene in eukaryotes?	
2	What is the role of Mg ²⁺ in PCR reaction mixture?	
3	Write down the subunits of histone proteins involved in DNA packaging.	
4	Which RNA polymerase is responsible for transcription of tRNA gene in eukaryotes?	
5	Real-time PCR is an example to study RNA genotoxicity markers. What is the essence of RTPCR assay? A) cDNA conversion. B) Reverse Transcriptase enzyme C) Restriction Enzyme D) CT value calculation	
6	Apurinic or Apyrimidinic sites (AP sites) are observed in the _____ type of the DNA repair. A) Homologous Recombination B) Non-homologous End joining C) Repair on Alkylation D) Base Excision Repair	
7	Holiday Junctions are observed in the _____ type of the repair. A) Homologous Recombination B) Non-homologous End joining C) Repair on Alkylation D) Base Excision Repair	
8	After cloning the antibiotic resistance marker is added in the liquid broth because _____ A) Positive selection of the clones B) Killing plasmid less bacteria C) Plasmid amplification D) All of the above.	
9	DNA damage can happen due to its _____ center. A) Positive center B) Double helix nature C) Electron rich center D) Double strand presence	
10	Cyclobutane rings are found due to pyrimidine dimer. This can be seen _____ type of DNA damage. A) Alkylation damage B) ROS C) UV DNA damage D) During DNA repair	