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**PG CBCS**  
**M.SC. Semester- III Examination, 2021**  
**ZOOLOGY**  
 PAPER: ZOO 303C (SPL PAPER)  
 (GENETICS & MOLECULAR BIOLOGY)

**Full Marks: 40****Time: 2 Hours****Write the answer for each unit in separate sheet****UNIT: ZOO 303C.1****(Genetics)****Answer any TWO questions of the following:****2X10=20**

1. i) Explain the roles of identified genes that are important in the clearance of apoptotic cells in *C. elegans*.  
 ii) Draw and describe the apoptotic pathway in *Drosophila*. 5+5
2. i) Describe briefly the summary of events of Wnt4/Beta-catenin loop specifying mammalian ovary development.  
 ii) What is the function of *sry* gene? 5+5
3. i) What is the composition of 'snurps'?  
 ii) What is the consensus sequence of mammalian and yeast intron exon boundaries?  
 iii) How B2 complex is formed in Yeast spliceosome cycle? 2+2+6
4. What is epigenetic expression? What are the common types of epigenetic modification? How lifestyle can influence epigenetic change from one generation to the next? 2+5+3
5. What is Holliday model? Why does this junction occur? How does Holliday model of recombination repair DNA break? 2+3+5

**UNIT: ZOO 303C.2****(Molecular Biology)****Answer any TWO questions of the following:****2X10=20**

1. What are the major mechanisms of DNA repair and how long does it take for DNA to repair?? What happens if DNA repair mechanisms fail? Which enzyme participates in DNA repair? 5+3+2
2. What could interfere with a signal transduction pathway? What are the 3 stages of signal transduction? How altering receptor would affect the signalling pathway? 3+4+3
3. What are the three types of transposable elements? What consequences might occur if a transposable element was inserted in an exon of a protein coding gene? What happens to the donor site after transposable element excision? 3+4+3
4. Where do oncogenes come from? How are oncogenes activated? Why are tumour suppressor genes important? How Damage to the p53 gene can lead to cancer? 2+2+3+3
5. What are the limitations of gene therapy? Is germline gene editing ethical? What type of epigenetic mark is responsible for genomic imprinting? How did epigenetics evolve? 2+2+3+3

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