

**2021**

**ZOOLOGY — HONOURS**

**Fifth Paper**

**(Unit - I)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

Answer **any ten** questions.

1. (a) State briefly the role of CAP-cAMP complex in the lac operon in *E.coli*.  
(b) What is IPTG? 4+1
2. (a) What are restriction endonucleases?  
(b) Mention the various types of endonucleases with their characteristic features. 2+3
3. (a) Distinguish v-onc and c-onc.  
(b) Explain with suitable example how point mutation converts protooncogene to oncogene. 3+2
4. Write short notes on (**any two**) : 2½+2½
  - (a) c-DNA library
  - (b) LINE and SINE
  - (c) Cosmid
  - (d) Metastasis.
5. With suitable illustrations briefly describe the Extrinsic pathway of Apoptosis. 2+3
6. Which of the following merozygotes will produce β-galactosidase if lactose is present
  - (a)  $I^+O^cZ^+Y^+//I^S O^+Z^+Y^+$
  - (b)  $I-O^+Z^+Y^+//I-O^+Z^-Y^+$ . 2½+2½
7. Cancer cells do not require growth factor – Explain. Compare transposon and retrotransposon. 2+3
8. Why sickle cell anaemia is called a molecular disease? Mention the salient features of P element. 2+3
9. How Retinoblastoma [Rb] protein control mammalian G<sub>1</sub>-S transition? What is Philadelphia Chromosome? 3½+1½

**Please Turn Over**

10. With the help of suitable illustrations briefly describe the Holliday Model of recombination. 2+3
11. What is DNA fingerprinting? Define insertion and replacement vector. 2+(1½+1½)
12. With suitable diagram explain Nucleotide excision repair (NER) and Base excision repair (BER). 3+2
13. State the role of histone acetylation in eukaryotic gene regulation. Mention the features of Taq DNA polymerase. 3+2
14. Narrate the phases of PCR cycle with suitable illustrations. What is RNA editing? 3+2
15. Write brief explanatory notes on (*any two*) : 2½+2½
- (a) IS-element
  - (b) Western Blot
  - (c) *Bcl-2* family
  - (d) RT-PCR.
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