

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_1-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.
-