

2020

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 **question no. 1** and **any two** questions from the rest.

1. Answer **any two** questions : 10×2
- (a) What is Philadelphia chromosome?
  - (b) Define APC / cyclosome.
  - (c) State the use of SDS in SDS-PAGE.
  - (d) Why P53 is regarded as tumour-suppressor gene?
  - (e) Distinguish Taq DNA polymerase and DNA polymerase-I.
  - (f) What are 'chi sites'?
  - (g) Comment on the function of RecA.
  - (h) What is Cooley's Anemia?
2. Write short notes on (**any two**) : 7½×2
- (a) Western Blot
  - (b) Expression vector
  - (c) Genetic cause of Thalassemia
  - (d) Histone acetylation
  - (e) LINE and SINE
  - (f) Genomic DNA Library.
3. (a) Define restriction endonuclease.
- (b) What are 'iso-schizomer' and 'neo-schizomer'?
- (c) Explain the process and utility of 'Colony hybridization' process in RDT (Recombinant DNA Technology). 3+(3+3)+(5+1)

**Please Turn Over**

4. (a) Delineate any one process of conversion of proto-oncogene to oncogene.  
(b) Explain the extrinsic pathway of apoptosis.  
(c) State two important properties of transformed cells. 6+6+3
5. (a) Briefly describe the principle, procedure and application of affinity chromatography.  
(b) Explain with suitable diagram, the process of homopolymer tailing and its significance. (3+3+3)+(5+1)
6. (a) Explain the principle of electrophoresis.  
(b) State the characteristic features of IS element with diagram.  
(c) How does TGE induce 'Inversion'?  
(d) State the characteristic features of Ty element. 3+(3+2)+4+3
7. (a) Describe the basic steps of PCR with suitable diagram (allele specific).  
(b) Explain catabolite repression with reference to lac operon.  
(c) 'O<sup>c</sup>' mutation is epistatic but I<sup>s</sup> hypostatic. – Explain. (5+3)+4+3
8. (a) Explain with suitable diagram DNA damage checkpoint in eukaryotes.  
(b) Explain how sickle cell anemia and sickle cell trait can be distinguished experimentally.  
(c) What is transpositional recombination? 6+5+4
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