

2016

## ZOOLOGY – HONOURS

## Fifth Paper

## (Unit – II)

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 four** from the rest

1. Answer **any five** of the following : 2×5
- (a) What is a nucleic acid probe? State its importance.
  - (b) What are fosmids?
  - (c) What is adaptor? Mention its utility.
  - (d) What is isoschizomer? Give example.
  - (e) Define electroporation.
  - (f) What is SOS repair of DNA damage?
  - (g) What is Philadelphia Chromosome?
  - (h) Write at least two mechanisms of epigenetic regulation of gene expression.
  - (i) Mention the source of Taq Pol and state one of its drawback.
2. (a) Concentration of glucose in a medium containing *E.coli* can regulate the cellular level of cAMP — Explain.
- (b) If three alternatives for the synthesis of the acetylase enzyme in the lac operon of *E.coli* are either inducible or constitutive or no synthesis at all, which of these three alternatives would you expect to find in the following merozygotes :
- (i)  $i^- o^c z^+ ac^+ / F' i^+ o^+ z^- ac^-$
  - (ii)  $i^s o^+ z^- ac^+ / F' i^- o^c z^- ac^+$  4+3+3
3. (a) Narrate the phases of a PCR cycle with suitable illustration.
- (b) Explain the process of DNA damage checkpoints.
- (c) Briefly describe the construction of c-DNA library. 3+3+4
4. Discuss the role of cyclin and cyclin dependant kinases (CDKs) during cell cycle progression. What are the checkpoints of cell cycle? Why these are important in eukaryotes? 4+6
5. (a) Distinguish v-onc and c-onc.
- (b) Explain with suitable example how point mutation converts proto-oncogene into oncogene.
- (c) Describe the process of mismatch repair.
- (d) What is RNA – editing? 2+2+4+2

[Turn Over]

6. Write brief notes on **any four** of the following :

$2\frac{1}{2} \times 4$

- (a) DNA – Fingerprinting
- (b) Insertional inactivation
- (c) LINE and SINE
- (d) APC
- (e) Expression vector.

7. (a) How sickle-cell anemia and sickle-cell trait could be detected experimentally?

- (b) Why Benzer selected r-II Locus for complementation study?
- (c) Explain "Gene Augmentation therapy" and "Antisense

Therapy".

$3 + 2 + (2\frac{1}{2} + 2\frac{1}{2})$

8. (a) Mention the salient features of P-element. State its evolutionary role.

3+2

(b) What are restriction endonucleases? Mention various types of such endonucleases with features.

2+3