

**M.Sc. Part-II Semester-III (CBCS) Examination**  
**ZOOLOGY**  
**MOLECULAR CYTOGENETICS-I**  
**Paper-IX**

Time : Three Hours]

[Maximum Marks : 80

**N.B.:**— (1) All questions are compulsory.

(2) All questions carry equal marks.

(3) Illustrate your answers with suitable diagrams wherever necessary.

1. Give an account of the following :

- (a) Adaptation versus mutation
- (b) Transcription coupled DNA repair
- (c) Mutations induced by radiation
- (d) Mismatch DNA repair mechanism.

**OR**

- (e) Phenotypic effects of mutation
- (f) Hot spots of mutation
- (g) Basic features of mutation
- (h) Detection of mutagens-The Ames test.

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2. Give an account of the following :

- (i) Agents used in somatic cell fusion
- (j) Radiation hybrid panels and gene mapping
- (k) Mechanisms of DNA methylation
- (l) Polycomb mechanisms and epigenetic control of gene activity.

**OR**

- (m) Methyl-CpG recognition
- (n) Mechanism of cell fusion
- (o) Demethylation of DNA in mammals
- (p) Prions and epigenetic inheritance.

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3. Describe the oncogenes.

**OR**

Describe the mobile DNA.

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4. Give an account of the following :

- (q) Lesch-Nyhan syndrome
- (r) Down syndrome
- (s) Cri-du-chat syndrome
- (t) Huntington disease

**OR**

- (u) Dosage compensation
- (v) Alkaptonuria
- (w) Prader-Willi syndrome
- (x) Cystic fibrosis.

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5. Describe carrier detection.

**OR**

Describe structure of mitochondrial DNA and Kearn-Sayre syndrome.

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