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Your Roll No.....

1350

B.Sc. (Hons.)/III

A

ZOOLOGY—Paper IX

(Cell and Molecular Biology)

(Admissions of 2004 and onwards)

Time : 3 Hours

Maximum Marks : 55

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *Five* questions in all, including

Question No. 1 which is compulsory.

1. (a) Distinguish between the following :

(i) DNA polymerase-I and DNA polymerase-III.

(ii) Rifampicin and α -amanitine.

(iii) Autocrine and paracrine signaling.

(iv) Peroxisomes and glyoxysomes.

(v) Primary constriction and secondary constriction.

P.T.O.

(vi) Heterochromatin and euchromatin

(vii) Microtubules and microfilaments.

(viii) Axonemal dynein and kinesin.

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(b) Comment on the importance of the following :

(i) Signal codons

(ii) Cathepsin

(iii) Glucose-6-phosphatase

(iv) Human Y chromosome

(v) Chaperones.

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(c) Mention the characteristic function of the following :

(i) Kinetochore

(ii) Nucleotide ligase

(iii) Chromophore

(iv) Clathrin

(v) Caspases

(vi) Cadherins.

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2. (a) Compare the fluid mosaic and the unit membrane models of plasma membrane. 5
- (b) Describe the different polymorphic forms of the lysosomes. 4
3. Write on :
- (a) The arrangement of the respiratory chain complex and the phosphorylating system in the mitochondria. 6
- (b) Features of the mitochondria that support the symbiont hypothesis. 3
4. (a) Discuss the post transcriptional modification of *m*-RNA in eukaryotes. 3
- (b) The role of ribosomes *t*-RNA and protein factors in the process of protein biosynthesis. 6
5. (a) Describe the nucleosomal organization of chromatin and its packaging. 5
- (b) Puffs on the polytene chromosomes are sites of gene activity and are related to differentiation. Comment. 4

6. (a) Illustrate the molecular events during the cell cycle. 4
- (b) Write on the role of the endomembrane system in the process of cell secretion. 3
- (c) Mention *two* examples of tumours induced by viruses. 2
7. Write short notes on any *three* of the following :
- (i) Apoptosis
- (ii) Semi-conservative replication
- (iii) Autoradiography
- (iv) Signal transduction
- (v) Regulation of gene action in Bacteria. 3.3.3