2/EH–63 (ii) (Syllabus–2015)

2016

(April)

ZOOLOGY

(Elective/Honours)

SECOND PAPER

(Cell Biology and Genetics)

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer Question No. 1 and *any* **four** from the rest

1. Answer any *three* of the following : 4×3=12

(a) Microfilaments and microtubules are composed of specialized proteins. Elaborate.

(b) In eukaryotes, nucleolus is the site of ribosome formation. Explain.

(c) Explain sickle-cell anemia.

(Turn Over)

(d) Define codominant and complementary genes.

(e) The diploid ($2n$) number of an animal is 10. How many chromosomes would be expected in monosomic, nullisomic and trisomic?

2. (a) With the help of labelled diagram, give a brief account of the ultrastructure of mitochondria. 6

(b) Write a note on Na-K-pump. 5

3. (a) Distinguish between euchromatin and heterochromatin. 5

(b) Write a note on the structure and significance of polytene chromosome. 6

4. (a) Give a brief account of meiotic prophase–I. 6

(b) Distinguish between active and passive immunity. Which is more advantageous? 4+1=5

5. (a) Deduce Mendel's principle of independent assortment with the help of suitable cross. 6

(b) Explain multiple alleles with reference to ABO blood group in man. 5

(Continued)

6. (a) What is linkage? Explain complete and incomplete linkage. Linkage is an exception to Mendel's which law? 1+4+1=6

(b) What is inversion? Discuss pericentric and paracentric inversions. 1+4=5

7. Write short notes on any *two* of the following : 5½×2=11

(a) Golgi complex

(b) Cell cycle

(c) Synaptonemal complex

(d) Chromosomal basis of sex determination

8. Discuss mitosis with suitable illustrations. Write a note on its significance. 5+3+3=11

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