

2 0 1 7

ZOOLOGY

(Major)

Paper : 4·2

(Genetics)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following as directed : 1×7=7

(a) The term 'gene' was introduced by
Johannsen in 1905/1907/1909.

(Choose the correct answer)

(b) In which stage of cell division the
synaptical complex is formed?

(c) Which amino acid is coded by the
genetic codon 'GAG' and 'GUG' ?

(d) The test cross is used to determine
whether the individual exhibiting
dominant characters are homozygous or
heterozygous.

(State True of False)

(2)

(e) The diagrammatic representation of karyotype is termed as _____.

(Fill in the blank)

(f) Which enzyme closes the gap and joins the resynthesized segment to the polynucleotide chain?

(g) The person possessing XXY-sex chromosomes instead of XY has the syndrome known as

(i) Turner's syndrome

(ii) Klinefelter's syndrome

(Choose the correct answer)

2. Give brief answers to the following : $2 \times 4 = 8$

(a) What is 'Okazaki fragment' ?

(b) Write down the significance of linkage.

(c) Write the differences between euchromatin and heterochromatin.

(d) Distinguish between homozygous and heterozygous.

3. Answer any *three* questions from the following : $5 \times 3 = 15$

(a) Give a brief account of chemical structure of DNA.

5

(b) What is sex determination? Write a note on 'genic balance theory' of sex determination. 2+3=5

(c) Differentiate between backcross and test cross with suitable example. $2\frac{1}{2}+2\frac{1}{2}=5$

(d) What are the different methods of genetic recombination in bacteria? 5

4. What is linkage? Describe complete and incomplete linkage with suitable examples. 2+4+4=10

Or

Explain various autosomal and sex-chromosomal genetic disorders in man. 5+5=10

5. Give a detailed account of the structure and functions of different types of Ribonucleic acid. 10

Or

Enumerate the major cytogenetic effects of ionizing and non-ionizing radiations. 5+5=10

2 set

6. What do you mean by interaction of gene?
Describe epistasis and lethal gene with
suitable example. 5+5=10

Or

What is TATA box? Describe various types of
transcription process in protein synthesis. 2+8=10
