2020

ZOOLOGY — HONOURS

Paper: CC-12

(Principle of Genetics)

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 fifteen questions:

2×15

- (i) What is Incomplete Dominance and Codominance? Give examples of both.
- (ii) What is criss-cross pattern of inheritance?
- (iii) ABO blood grouping is an example of multiple alleles but MN blood grouping is not. Why?
- (iv) What is isoallele? Give example.
- (v) Which is called a pleiotropic gene? Give example.
- (vi) State location and function of SRY gene in man.
- (vii) What are Multiple alleles? How do they differ from Pseudoallele?
- (viii) What will be the sex of *Drosophila* with following genotypes–2AXX, 3A2X, 3A3X and 2A3X?
- (ix) What is Gynandromorph?
- (x) Distinguish between Autopolyploidy and Allopolyploidy.
- (xi) Name the non-coding RNAs that have been implicated in Dosage compensation of *Drosophila* and Human.
- (xii) Distinguish between Pericentric and Paracentric Inversion.
- (xiii) What are Base analogs? Give two examples.
- (xiv) What is the characteristic feature of r mutant of T₄ bacteriophage used in Benzer's experiment?
- (xv) What is complementation test and why it is used?
- (xvi) When a gene is said to be epistatic? What is the difference between epistasis and dominance?
- (xvii) What are nutritional mutant? Give example.
- (xviii) Drosophila has four pairs of chromosomes. How many linkage groups does it have?
- (xix) Define Recombination frequency. What is 'CC'?

Please Turn Over

T(5th. Sm.)-Zoology-H/CC-12/CBCS (2)		
(:	xx)	What are XIST and XIC?
(x	xi)	What are chemical mutagens? Give two examples.
(x	xii)	What is P-element in Drosophila?
(xx	iii)	State the characteristic features of prokaryotic IS elements.
(xx	iv)	Distinguish between Transition and Transversion.
(xxv)		What are linked genes? How linked genes can be separated?
(xxvi)		Define Linkage Map. What is genetic map unit (m.u)?
(xx	vii)	Two genes A and B are linked. The other homologous chromosome contain their a and b alleles. Give combinations of alleles in gametes with and without crossing over.
(xxv	iii)	$Human\ males\ are\ constitutionally\ hemizygous\ and\ females\ are\ functionally\ hemizygous\ \ Justify.$
(xx	ix)	What is retrotranspon? Give example.
(x:	xx)	Compare LINE and SINE.
2.	Hov	v X chromosomal inactivation takes place in case of dosage compensation in human?
3. What is the role of PAR of human Y chromosome? State the role of SRY gene in human sex determination in brief.		
4. What is Attached X-method? How it is used in <i>Drosophila</i> to detect sex linked visible mutation? 2+3		
5. What is Prototroph and Auxotroph? Describe the steps of detection of biochemical mutation in <i>Neurospora</i> through suitable diagram. 2+3		
	Compare the sex determination mechanism of <i>Drosophila</i> and Human. State the role of SxI gene in <i>Drosophila</i> sex determination. 3+2	
7.	What locu	at is Cistron? Explain the phenomenon of complementation with special reference to Benzer's rII as.
8.	Define IS element in bacteria. Briefly describe AcDs elements in maize. 2+3	
9.	Hov	v is extra-chromosomal inheritance manifested in shell spiralling of snail?