



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours 5th Semester Examination, 2021-22

**ZOOACOR12T-ZOOLOGY (CC12)**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates should answer in their own words and adhere to the word limit as practicable.  
All symbols are of usual significance.*

1. Answer any **eight** questions from the following: 2×8 = 16
- (a) What is interference and coincidence?
  - (b) Differentiate between epistasis and dominance.
  - (c) Define complete and incomplete linkage.
  - (d) What are Heterozygous and Hemizygous allele?
  - (e) What is Haplotype?
  - (f) Differentiate mutagen from carcinogen.
  - (g) Distinguish between frameshift and non-sense mutation.
  - (h) What is dosage compensation? How is it achieved?
  - (i) What is Robertsonian translocation? Give example.
  - (j) What is 'P' elements in drosophila?
  - (k) What do you understand by loss-of-function mutation?
  - (l) Give a note on conjugation.
2. Answer any **three** questions from the following: 3×3 = 9
- (a) What are the two different genetic cause of Trisomy 21? What are the known risk factor for having a child with Down syndrome?
  - (b) Discuss the role of Ac-Ds system as transposable genetic elements.
  - (c) What are spontaneous and induced mutation? What is clastogen?
  - (d) Describe the Holliday model of recombination.
  - (e) Discuss the fine structure of gene as revealed through the work on rII locus in T4 bacteriophage.

3. Answer any **three** questions from the following: 5×3 = 15
- (a) How the sex of mammals is determined? Describe the mechanism. 1+4
- (b) What are the different kinds of polyploids? How will you distinguish between autopolyploids and allopolyploids? 2+3
- (c) Briefly discuss about transformation and transduction in bacteria. 5
- (d) Singed bristles(Sn), Cross-veinless wing (Cv) and Vermilion eye colour (V) are due to recessive mutant alleles in *D. melanogaster*. When a female heterozygous for each of the three genes was test crossed, the following progeny were obtained. 5

Singed, Cross veinless, Vermilion	→	3
Vermilion	→	34
Cross veinless, Vermilion	→	392
Cross veinless	→	61
Singed, Cross veinless	→	32
Singed, Vermilion	→	65
Singed	→	410
Wild type	→	3

What is the correct order of these three genes? What are the genetic map distances between Sn and Cv, Sn and V and Cv and V? What is coefficient of coincidence?

- (e) Write the difference between sex-linked, sex-influenced and sex-limited inheritance with example. 5

**N.B. :** *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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