



**2020/TDC(CBCS)/ODD/SEM/  
ZOOHCC-502T/034**

**TDC (CBCS) Odd Semester Exam., 2020  
held in March, 2021**

**ZOOLOGY**

**( 5th Semester )**

Course No. : ZOOHCC-502T

**( Principle of Genetics )**

Full Marks : 50

Pass Marks : 20

Time : 3 hours

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

**SECTION—A**

1. Answer any *ten* questions of the following :  
2×10=20

(a) Who was Mendel and in which year Mendel's paper on experiments on plant hybridization was published?

(b) Name the botanists/geneticists who are considered as rediscoverer of Mendel and why they are called so.



( 2 )

- (c) Differentiate between incomplete dominance and codominance with suitable examples.
- (d) What is pleiotropism? Elucidate.
- (e) Define linkage. Who put forward the concept of linkage?
- (f) What is meant by linkage map?
- (g) What is meant by genetic recombination? Elucidate.
- (h) What is meant by interference in context to gene-mapping and coefficient of coincidence?
- (i) Define mutation. Who coined this term 'mutation'?
- (j) Differentiate between spontaneous and induced mutation.
- (k) Give a short note on aneuploidy.
- (l) What is meant by tautomerization? Elucidate.
- (m) What is genic balance mechanism of sex determination? Who proposed the theory?
- (n) What is Klinefelter's syndrome?
- (o) Citing suitable example, explain the hormonal mechanism of sex determination.

( Continued )

( 3 )

- (p) What is meant by mitochondrial inheritance?
- (q) What is meant by polygenic inheritance? Cite one example.
- (r) What is transposon and what is its significance?
- (s) What is meant by bacteriophage and plasmid?
- (t) What is complementation test? Elucidate.

SECTION—B

Answer any five questions

2. What is multiple allele? Write the characteristics of multiple alleles. Discuss the phenomenon of multiple allelism in the light of inheritance of blood group in man.  
1+2+3=6
3. Write short notes on epistasis and sex-linked inheritance.  
3+3=6
4. Define crossing-over. When the phenomenon occurs in living organisms? Discuss the mechanism of crossing-over and its molecular basis.  
1+1+4=6

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( Turn Over )



( 4 )

5. Write short notes on the following :  $3 \times 2 = 6$   
(a) Complete and incomplete linkages  
(b) Cytological basis of crossing-over
6. What is meant by gene or point mutation?  
Discuss different types of gene mutations.  $1 + 5 = 6$
7. Write short notes on the following :  $3 \times 2 = 6$   
(a) Chromosomal aberrations  
(b) Chemical mutagens
8. Discuss sex chromosomal mechanism of sex determination in animals. 6
9. What is plasmagene? Discuss the phenomenon of extra-chromosomal inheritance in eukaryotes citing suitable examples.  $1 + 5 = 6$
10. What is transformation? Discuss the experiment of Griffith and mechanism of transformation.  $1 + 5 = 6$
11. What is transduction? Briefly discuss the process emphasizing on generalized and specialized transduction.  $1 + 5 = 6$

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