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B.Sc./5th Sem (H)/ZOO/23(CBCS)

2023

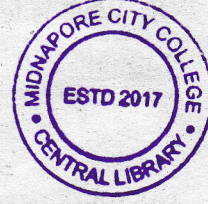
5th Semester Examination

ZOOLOGY (Honours)

Paper : C 12-T

(Genetics)

[CBCS]



Full Marks : 40

Time : Two Hours

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *five* questions : $2 \times 5 = 10$

1. What is Epistasis?
2. State any two examples for extra-chromosomal inheritance.
3. What is Retroposons? Give one example.
4. How Specialized transduction process is different from Generalized one?
5. State the relation between Interference and Coefficient of coincidence.

P.T.O.

(2)



6. What is 'nonsense' mutation? Cite an example.
7. Give one example for each of alkylating agent and intercalating agent.
8. What is testicular feminization syndrome?

Group - B

Answer any *four* questions : 5×4=20

9. What is maternal effect? Explain this phenomenon with the inheritance pattern of shell spiralling in snail. 2+3
10. Briefly discuss the sex determination process in human. 5
11. What is Sex-duction? How does Hfr × F- matings differ from F+×F- matings? 2+3
12. Discuss different types of structural changes in chromosomes (aberrations) with suitable diagram. 5
13. What is Genic Balance Theory? State the role of Late-SXL protein and TRPA protein in *Drosophila* sex determination. 1+2+2
14. What is mutagen? How does chemical mutagen affect human? Describe it with example. 2+3

Group - C

Answer any *one* question : 10×1=10

15. Singed bristles (sn), Crossveinless wings (cv) and vermilion eye colour (v) are due to recessive mutations

(3)

of 3 alleles on X chromosome in fruit fly. When a heterozygous female (F) for each of the 3 genes was test crossed with a singed, crossveinless, vermilion male (M), the following progeny were obtained :

| Class | Phenotype | Number |
|-------|-----------|--------|
| 1. | sn cv v | 3 |
| 2. | + cv v | 392 |
| 3. | ++ v | 34 |
| 4. | + cv + | 61 |
| 5. | sn cv + | 32 |
| 6. | sn + v | 65 |
| 7. | sn ++ | 410 |
| 8. | +++ | 3 |

Total: 1000

Find out the correct order of these three genes on X-chromosome. What are the genetics map distance between sn and cv, sn and v and cv and v? What is the coefficient of coincidence? Calculate the value of Interference? 2+(2+2)+1+1

16. Explain with suitable examples the concept of sex-influenced and sex-limited inheritance. What is linkage group? How many linkage group are present in



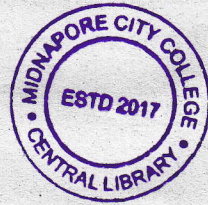
Drosophila? State the name of the following aneuploidy conditions :

(i) $2N - 2$

(ii) $2N - 1$

(iii) $2N + 1$

(iv) $2N + 2$



$(2+2)+(1+1)+(1+1+1+1)$

