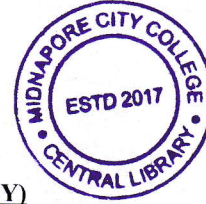


PG (CBCS)
M.SC. Semester- III Examination, 2023
ZOOLOGY
PAPER: C-ZOO 304



(GENETICS AND BASIC AND APPLIED IMMUNOLOGY)

Full Marks: 40

Time: 2 Hours

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

Write the answer for each unit in separate sheet

UNIT: C-ZOO 304.1

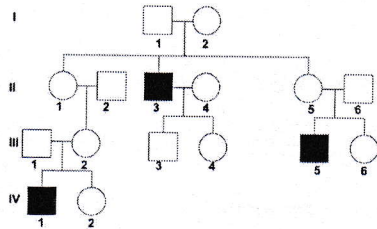
GENETICS

GROUP-A

1. Answer any **TWO** of the following questions: 2×2=4
- What is the consensus sequence of yeast intron-exon boundaries?
 - Differentiate co-dominance from incomplete dominance?
 - What do you mean by gynandromorphy?
 - Give an example of inheritance caused by multiple allele?

GROUP-B

2. Answer any **TWO** of the following questions: 2×4=8
- What do you think is the most likely mode of inheritance?



- Albinism is inherited as a recessive trait on autosome and is known in genetics as autosomal recessive inheritance. Suppose we have a hypothetical situation in which both the parents are carrier for the trait. Using binomial expansion, calculate the probability of having four children, three with the trait and one without the trait.
- In a cross between tall and dwarf garden pea plants 350 tall and 110 dwarf pea plants were obtained in F₂. Test the goodness of fit of these data, using the chi-square test considering probability at 5% level. (df = 1, p(1)0.05 = 3.84)
- Outline the praedome of two step lariat model of splicing with appropriate diagram.

GROUP-C3. Answer any **ONE** of the following questions:

1×8=8

a) From a Drosophila test cross, the number of each phenotype obtained was as follows :

Class	Phenotypes	Genotypes	Counts
1.	Scute, echinus, crossveinless	Sc, ec, cv	1158
2.	Wildtype (non scute, non echinus, crossvein)	Sc ⁺ , ec ⁺ , cv ⁺	1455
3.	scute	Sc, ec ⁺ , cv ⁺	163
4.	Echinus, crossveinless	Sc ⁺ , ec, cv ⁺	130
5.	Scute, echinus	Sc, ec, cv ⁺	192
6.	Crossveinless	Sc ⁺ , ec ⁺ , cv	148
7.	Scute, crossveinless	Sc, ec ⁺ , cv	1
8.	echinus	Sc ⁺ , ec, cv ⁺	1
Total			3248

Find the correct gene order, calculate the map distances, coefficient of coincidence and interference. (3+4+2+1)

b) How does Cytochrome C trigger and activate caspase 9 for apoptosis?

UNIT: C-ZOO 304.2

BASIC AND APPLIED IMMUNOLOGY**GROUP-A**4. Answer any **TWO** of the following questions:

2×2=4

- What are Immunogen and Haptén? Give Example.
- What do you mean by vaccination
- What are primary and secondary lymphoid organs? Give Example write the properties of hematopoietic stem cell.
- Differentiate between active and passive immunity.

GROUP-B5. Answer any **TWO** of the following questions:

2×4=8

- What is macrophage? Describe the process of phagocytosis with proper diagram. 1+3
- Explain innate and acquired immunity with example. What are epitope and paratope? 3+1
- Illustrate the process of sandwich ELISA with suitable diagram.
- Describe how humoral and cell mediated branches of immune system is interrelated?

6. Answer any **ONE** of the following questions:

1×8=8

a) Describe the structure of antibody with labelled diagram. Mention its biological application.

b) Write the Principle of Immunohisto chemistry. Describe the direct and indirect Immunohisto chemistry method with proper diagram. Mention its application. 2+5+1



P.T.O

(2)

(3)