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PG (CBCS)
M.Sc. Semester- III Examination, 2022
ZOOLOGY
PAPER: C-ZOO 304
(GENETICS AND HEMATOLOGY)

Full Marks: 40 **Time: 2 Hours**

Write the answer for each unit in separate sheet

UNIT: C-ZOO 304.1
GENETICS

GROUP-A

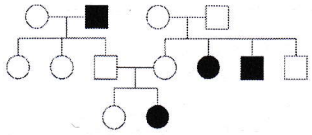
1. Answer any TWO from the following questions: **2×2=4**

a) What is Barr body? What is its significance?
b) Distinguish between complete linkage and incomplete linkage.
c) What do you mean by gynandromorphy?
d) What is the role of Y chromosome in *Drosophila* sp.?

GROUP-B

2. Answer any TWO from the following questions: **2×4=8**

a) What do you think is the most likely mode of inheritance?



b) A normal woman whose mother was colour blind has a son. Nothing is known of the colour-vision phenotype of the father. What is the probability that the son will be colour blind?

c) 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 five children, two with the trait and three without the trait.

d) Analyse the theoretical progeny data from a testcross of a smooth, yellow double heterozygote (Ss Yy) with a wrinkled, green homozygote (ss yy) and determine whether there is any significant difference between the expected result and the observed progeny data? The progeny data are as follows:

154 – Smooth, yellow
124 _ smooth, green
144 – wrinkled, yellow
146 – wrinkled, green

GROUP-C

3. Answer any ONE from the following questions: 1×8=8

a) What is genic balance theory? Explain it with example. Name the important genes which are responsible for the determination of sex in *Drosophila*. What is the role of *tra* gene? 2+4+2+2

b) From a Drosophila testcross, the number of each phenotype obtained was as follows:

w+	m	f+	218
w	m+	f	236
w+	m+	f	168
w	m	f+	178
w+	m	f	95
w	m+	f+	101
w+	m+	f+	3
w	m	f	1
Total			1000

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

UNIT: C-ZOO 304.2
HEMATOLOGY

GROUP-A

4. Answer any TWO from the following questions: 2×2=4

a) Differentiate between AML and CML.
b) State the function of erythropoietin.
c) Distinguish between haemorrhage and thrombosis.
d) What are pluripotent stem cells?

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GROUP-B

5. Answer any TWO from the following questions: 2×4=8

a) Schematically represent the process of granulopoeisis.
b) What is megakaryocyte? What are thrombasthenia and thrombocytosis? 2+2
c) Write a short note on haemostasis.
d) Briefly discuss DIC and its consequence.

GROUP-C

6. Answer any ONE from the following questions: 1×8=8

a) What is polycythaemia? Give an elaborate classification of anaemia based on its cause. 2+6

b) Differentiate between plasma and serum. Enumerate the intrinsic and extrinsic pathways of blood coagulation. 2+6

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