PG/IIIS/ZOO/304.1&304.2/22
(CBCS)(Day)

## M.Sc. 3rd Semester Examination, 2022

## ZOOLOGY

( *Genetics/Haematology* )

PAPER – ZOO-304.1&304.2(CBCS)(Day)

*Full Marks* : 40

*Time* : 2 hours

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in their own words as far as practicable*

## PAPER–ZOO-304.1

( *Genetics* )

**1.** Answer any *two* questions from the following : $2 \times 2$

(*a*) Find out the gene frequency of $L^M$ and $L^N$ of the following population

$L^M L^M$ 406, $L^M L^N$ 744, $L^N L^N$ 332

(*b*) State Mendel's law.

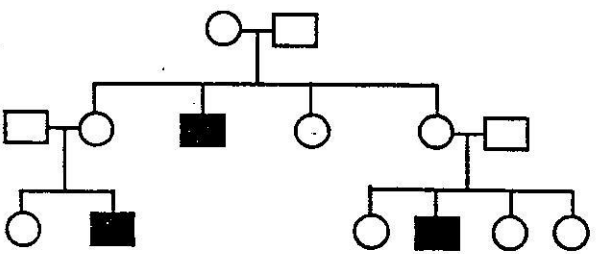
(*c*) Distinguish between complete linkage and incomplete linkage.

(*d*) State two dominant mutations in Human.

2. Answer any *two* questions from the following : $4 \times 2$

(*a*) A population consist of TT.60, Tt.20, tt.20. Predict whether the population is under Hardy weinberg equilibrium.

(*b*)



Analyse the pedigree. Mention whether the trait is autosomal or sex(X/Y) linked and show the pattern of inheritance.

(*c*) Two curly winged flies when meted produce 61 curly and 35 straight wing progeny. Use a

chisqnane test to determine whether these number fit 3:1 ratio.

(*d*) Can two colorblind parents produce a normal son ? Can two normal parents produce a color blind son ?

3. Answer any *one* question from the following : $8 \times 1$

(*a*) Mendel test crossed pea plants grown from yellow round $F_1$ seeds ($g^+ \overset{+}{w}$) to plants grown from green wrinkled (g w) seeds and obtained the following results :

27 yellow wrinkled and 26 green wrinkled. 31 yellow round and 27 yellow wrinkled. Are these results consistant with the hypothesis that seed color and seed taxture are controlled by independenty assarted genes each segregation two alleles ?

(*b*) Two plants with white flowers each from true-breeding strains, were erossed. All the $F_1$ plants wre intercrossed, they produced an $F_2$ consisting of 177 plants with red flowers and 142 white flowers.

(*i*) Propose an explanation for the inherit ance of flower color in this plant species.

(*ii*) Propose a biochemical pathway for flower pigmentation and indicate which genes control which steps in this pathway.

## PAPER—ZOO-304.2

### ( *Haematology* )

4. Answer any *two* of the following : 2×2

(*a*) Where does erythropoiesis occur in embryonic and adult mammals ?

(*b*) Why do you consider bone marrow to be a dual haemopoietic organ ?

(*c*) What do you mean by acquired bleeding disorder ?

(*d*) Classify throwbocytosis.

5. Answer any *two* of the following : 4×2

(*a*) Precisely describe the role of erythropoietin in stimulation of erythropoiesis in mammals.

(*b*) Briefly describe the structure and function of eosinophils of mammalian blood.

(*c*) Write a note on the cause, symptoms and control of megaloblastic anaemia.

(*d*) Discuss the steps involved in primary haemostasis.

6. Answer any *one* of the following : $8 \times 1$

(*a*) Elborate the oxygen-dependent bactericidal activity of neutrophils with reference to the production of hypochlorite ions. Add a note on haemopoietic organ of earthworm. $6 + 2$

(*b*) How does leukemia differ from leucocytosis ? Enlist the symptoms found in different stages of chronic myeloid leukemia. Name any two chemotherapeutic drugs against this disease. $2 + 5 + 1$