

2020

SERICULTURE

Paper: Course-11 (Gr. A & B)

(Breeding and Genetics of Silkworm)

Full Marks : 60 Time : 2½ 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.

GROUP-A

(Marks: 30)

(Breeding of Silkworm)

1. Answer any **five** questions: 1×5=5
 - a) What is the difference between univoltine and bivoltine races of silkworm?
 - b) How male and female silkworm can be differentiate ?
 - c) What is inbreeding?
 - d) State the difference between male and female silkworm cocoons.

- e) What is heterozygosity?
 - f) Give an example of directional selection.
 - g) What is pure line selection?
2. Answer any **three** of the following : 5×3=15
 - a) Explain artificial a meiotic gynogenesis in the silkworm.
 - b) Mention the effects of inbreeding.
 - c) How artificial selection has changed the domesticated silkworm in terms of economic traits?
 - d) How the principle sources of variation in native populations of any endemic silkmoth species occurs?
 - e) What is the difference between balanced, mutational and pseudo heterosis?
 3. Answer any **one** of the following: 10×1=10
 - a) How the different environmental components affect the genotypic expression in the form of phenotypic output of cocoon crop?
 - b) Explain the theories proposed to explain the manifestation of heterosis. Indicate the effect of heterosis on silkworm breeding.

GROUP-B

(Marks: 30)

(Genetics of Silkworm)

4. Answer any **five** of the following: $1 \times 5 = 5$

- a) What is silkworm sex factor?
- b) Which one is more preferable for maximizing silk production- Bivoltine \times Bivoltine or Multivoltine \times Bivoltine?
- c) What is mutation?
- d) Give one example of maternal inheritance in silkworm.
- e) Write down the chromosome number of wild and domesticated silkworm.
- f) What is allele frequency?
- g) State the application of biometrical genetics in Mulberry silkworm breeding.

5. Answer any **three** of the following: $5 \times 3 = 15$

- a) What is the difference between sex chromosome of male and female silkworm? How it is identified?
- b) Explain the factors influencing voltinism in silkworm.

c) Give two heritable characters in the silkworms. How are they transmitted?

d) What is maternal inheritance of voltinism in silkworm?

e) How cocoons of moth and butterfly can be identified? Why silkworm cocoons different in colours?

6. Answer any **one** of the following : $10 \times 1 = 10$

a) How an integrated genetic linkage map assists in preliminary mapping and dissection of quantitative trait loci (QTL) in a silkworm strain?

b) What are microsatellite markers? Mention the significance of microsatellite markers in the estimation of genetic diversity in silk moth?

Date of Examination:

19.7.2021, Time: 12:00 Noon – 02:30 PM