



US – 394

VI Semester B.Sc. Examination, May 2017  
(CBCS – 2016-17 and Onwards/NS – 2013-14 and Onwards)  
(F+R) (Semester Scheme)  
**GENETICS – VII**  
**Developmental and Evolutionary Genetics**

Time : 3 Hours

Max. Marks : 70

- Instructions :** 1) Draw diagrams *wherever* necessary.  
2) Answers should be written **completely** either in **English** or **Kannada**.

PART – A

I. Answer **any five** of the following :

(5×3=15)

- 1) What is tissue specific methylation ?
- 2) Write short notes on Fate maps.
- 3) Comment on 'gene pool' and gene frequency
- 4) What is fitness ?
- 5) Write a note on regression.
- 6) Briefly explain "Quantitative trait loci".
- 7) Ten inbred lines of maize grown in field gave variance of 1.282 whereas genetically variable lines of maize in field conditions gave variance of 21.539. Find out the genotypic variance.



PART – B

II. Answer **any five** of the following :

(5×5=25)

- 1) With suitable example, explain the role of nuclear transplantation in development.
- 2) Explain genetics of flower development in Arabidopsis.
- 3) Discuss on continuous quantitative characters with examples.
- 4) Explain Neo-Darwinism.

P.T.O.



- 5) In 1962, a researcher reported that in a certain geographical location in Ghana, children had the following genotypes and phenotypes.

Normal haemoglobin (AA) : 593

Sickle cell trait (AS) : 123

Sickle cell anaemia (SS) : 4

Calculate the gene frequency of the sickle cell allele (S).

- 6) Explain quantitative trait in ear length of corn.  
7) Expand ANOVA. Add a note on its applications in Biometry.



### PART - C

III. Answer **any two** of the following :

(2×10=20)

- 1) Give an account of differential expression of haemoglobin genes.
- 2) Discuss on :
  - a) Assumptions of polygenic inheritance
  - b) Mutation.
- 3) Describe in detail : Genotype and environmental interaction in polygenic traits.
- 4) What is heritability ? Explain its types.

### PART - D

IV. Answer **any one** of the following :

(1×10=10)

- 1) Explain role of genes in the development of antero-posterior polarity and segmentation in Drosophila.
- 2) What is speciation ? Explain the different methods of speciation.

### ಕನ್ನಡ ಆವೃತ್ತಿ

### ಭಾಗ - ಎ

I. ಯಾವುದಾದರೂ ಐದು ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ :

(5×3=15)

- 1) ಅಂಗಾಂಶ ನಿರ್ದಿಷ್ಟ ಮಿಥೋಲೇಷನ್ ಎಂದರೇನು ?
- 2) ಭವಿಷ್ಯ ನಕ್ಷೆಗಳನ್ನು ಕುರಿತು ಲಘು ಟಿಪ್ಪಣಿ ಬರೆಯಿರಿ.