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**GS-367**

VI Semester B.Sc. Examination, May/June 2019  
(F+R) (CBCS - 2016-17 & onwards) (NS - 2013-14 & onwards)

**GENETICS - VII**

**GNT - 601 : Developmental and Evolutionary Genetics**

Time : 3 Hours

Max. Marks : 70

**Instruction :** Draw diagrams wherever necessary.

**PART - A**

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

**5x3=15**

1. What are fate maps ?
2. List any three genes involved in establishment of Dorso-ventral polarity in *Drosophila*.
3. Distinguish between Fetal and Adult haemoglobin.
4. What is Random drift ?
5. Define Gene pool and Gene Frequency.
6. Briefly explain QTL.
7. Write a note on Regression.

**PART - B**

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

**5x5=25**

1. Describe Homeotic gene expression in *Arabidopsis* flower development.
2. Give an account on Tissue specific methylation.
3. State Hardy-Weinberg's principle and mention the Genetic factors that affects its equilibrium.
4. Differentiate between Gametic and Zygotic selection.
5. Explain Transgressive Inheritance with an example.
6. Write a note on correlation and its types.
7. Two inbred lines of beans are intercrossed. In  $F_1$ , the variance in bean weight is measured as 1.5. The  $F_1$  is selfed, in the  $F_2$  the variance in bean weight is 6.1. Estimate the broad sense heritability of bean weight in the  $F_2$  population of this experiment.

1.5  
6.1  
Vg  
P.T.O.



## PART - C

III. Answer any two of the following.

2x10=20

1. Describe the Nuclear Transplantation Experiment in Amphibians.
2. Give a detailed account on Darwinism.
3. What are Quantitative traits ? Explain it with reference to Ear length in corn.
4. An Experiment was conducted with three generations of a cross mainly 2 parents,  $F_1$  and  $F_2$ . The following data was obtained for plant height. Find out Phenotypic, Genotypic and Environmental variance.

Sl. No.	$P_1$	$P_2$	$F_1$	$F_2$
1	15.5	32.1	16.2	22.2
2	14.3	33.4	16.5	23.9
3	13.4	35.7	17.5	20.5
4	13.8	34.3	17.7	24.9
5	13.2	33.6	16.4	27.5
6	14.5	32.8	16.5	26.2
7	14.6	32.5	15.9	25.7
8	15.2	31.6	16.1	32.6
9	15.5	34.3	17.8	33.8
10	15.1	34.7	17.3	35.7

## PART - D

IV. Answer any one of the following.

1x10=10

1. Describe Anterior-Posterior axis formation in *Drosophila*.
2. With reference to Evolution explain :
  - (a) Allopatric speciation
  - (b) Post-mating Isolation Mechanism

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