SH/BOT/303C-7/19

B.Sc. 3rd Semester (Honours) Examination, 2019-20

BOTANY

Course ID : 31313 **Course Code : SHBOT-303C-7**

Course Title: Genetics

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the right hand side margin indicate full marks.

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

1. Answer *any five* of the following: 1×5=5

(a) What is non-allelic gene interaction?

(b) How does a double trisomy differ from tetrasomy?

(c) What is Frame-Shift mutation?

(d) State the law of purity of gametes.

(e) Distinguish between back cross and test cross.

(f) What is dosage compensation?

(g) What is reciprocal translocation?

(h) What is sympatric speciation?

2. Answer *any two* of the following: 5×2=10

(a) What is inversion? Distinguish between Paracentric and Pericentric inversion with suitable diagrams. 1+4=5

(b) Explain Multiple allelism in Human citing example of ABO blood group system. What do you mean by codominant allele? 4+1=5

(c) What are pseudoalleles? Briefly explain cis-trans complementation test for functional allelism. 1+4=5

(d) Distinguish between sex-linked traits, sex influenced traits and sex-limited traits.

3. Answer *any one* from the following questions: 10×1=10

(a) How do you distinguish traits controlled by nuclear genes and those by extra-chromosomal genes? Explain with suitable diagrams, the inheritance of infective 'Kappa' particles in *Paramoecium*. 4+6=10

(b) A cross was made between purple (pl), glossy seedling (gl), dwarf (t) variety and a wild type. F_1 plants were test crossed and the following proportions were obtained when a sample of 1000 plants were counted.

Wild type (+ + +)	–	475
plglt	–	469
pl + +	–	8
+ gl t	–	7
pl + t	–	18
+ gl +	–	23
+ + t	–	0
plgl +	–	0

Determine the order of 3 genes and prepare a chromosomal map. Find out the co-efficient of coincidence. 8+2=10

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