U.G. 3rd Semester Examination - 2020

BOTANY

Course Code : BBOTCCHC 303

Course Title: Genetics

Full Marks : 30 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.

1. Answer any **ten** questions: 1×10=10

   a) What is reciprocal cross?

   b) Define co-dominance.

   c) What do you mean by phenocopy?

   d) What is "Bombay Phenotype"?

   e) What is hemizygous condition?

   f) What do you mean by endopolyploidy?

   g) What is neutral mutation?

   h) What do you mean by pericentric inversion?

   i) What are T<>T lesions?

   j) What is transposase?

   k) What is pleiotropy?

   l) What is maternal effect?

   m) What is Open Reading Frame (ORF)?

   n) What are pseudogenes?

   o) Define allele frequency.

2. Answer any **five** questions: 2×5=10

   a) Write down a human disease connected with incomplete dominance. Name the enzyme responsible for the disease.

   b) What do you mean by A and B antigens?

   c) In a three point test cross involving three genes X, Y and Z arranged in the same order. The distance between X to Y is 22.3 map unit and that between Y to Z is 43.4 map unit. Observed DCO is 7.8%. Find out the values of 'I' and 'C'.

   d) What do you mean by Dosage Compensation?

   e) What is sex-influenced trait? Give an example of sex-influenced autosomal trait in human.

   f) What do you mean by Robertsonian Translocation?

g) Schematically represent 5BU induced TC-AG conversion.

h) Write down the principles of Hardy-Weinberg equilibrium.

3. Answer any **two** questions: $5\times2=10$

a) What is gene interaction? Briefly explain the mechanism of dominant epistasis with suitable example. 1+4

b) An individual heterozygous for three genes AaBbCc are testcrossed to aabbcc to have 1000 progenies which are classified as follows:

ABc — 300
abC - 315
aBC - 40
Abc - 45
ABC — 145
abc — 140
aBc - 9
AbC — 6

Draw a linkage map of the linked genes, showing the order of genes and distance between them. $2\frac{1}{2}+2\frac{1}{2}$

c) Briefly explain the mechanism of gene structure determination using T4 rII system.

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