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## 5 SEM TDC BOT M 3

**2016**

( November )

**BOTANY**

( Major )

Course : 503

**( Genetics, Plant Breeding and Biostatistics )**

Full Marks : 48

Pass Marks : 19 (Backlog)/14 (2014 onwards)

Time : 2 hours

*The figures in the margin indicate full marks  
for the questions*

1. (a) Choose the correct answer of the following : 1+1=2
  - (i) An alternative form of a gene is known as genome/factor/allele.
  - (ii) Emasculation is essential in bisexual/unisexual/neutral flowers.
- (b) Express the following in one word : 1×3=3
  - (i) The fixed position of a chromosome occupied by a gene



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- (ii) The superiority of an  $F_1$  generation over both of its parents
- (iii) An enzyme which induces internal cuts in DNA molecule

2. Write short notes on the following :  $3 \times 3 = 9$

- (a) Turner's syndrome
- (b) Transgene
- (c) Probability test

3. (a) What do you mean by Mendelian test cross? Explain with an example that Mendel's law of independent assortment is not applicable to linked genes.  $2 + 6 = 8$

Or

Differentiate transition from transversion. Describe briefly the types of transition mutation found in living organisms.  $2 + 6 = 8$

(b) Write short notes on any two of the following :  $3 \times 2 = 6$

- (i) Multiple alleles
- (ii) XX female, XO male type of sex determination
- (iii) Gene cloning
- (iv) Inheritance of kappa particles

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4. What are the objectives of plant breeding? Discuss briefly different steps of plant hybridization procedure.  $3 + 8 = 11$

Or

Write explanatory notes on the following :  $5 \frac{1}{2} \times 2 = 11$

- (a) Apomixis and its types
- (b) Pure line selection and its importance

5. Tabulate the following 50 scores into a frequency distribution table using 5 (five) as the class interval. Finally compute the mean, median and mode from the frequency distribution :  $3 + 6 = 9$

80, 40, 65, 40, 80, 65, 43, 80, 65, 50  
75, 90, 55, 90, 75, 55, 90, 75, 60, 95  
80, 65, 95, 75, 90, 60, 45, 80, 65, 85  
70, 85, 45, 65, 80, 95, 65, 80, 95, 65  
65, 85, 75, 90, 80, 60, 65, 45, 40, 70

Or

Write short notes on the following :  $4 \frac{1}{2} \times 2 = 9$

- (a) Test of significance
- (b) Standard error

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