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5 SEM TDC BOT M 3

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(November)

BOTANY

(Major)

Course : 503

(Genetics, Plant Breeding and Biostatistics)

Full Marks : 48

Pass Marks : 19/14

Time : 2 hours

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

1. (a) Express the following in 1 word : $1 \times 2 = 2$
- (i) The gene that masks the effect of an another gene.
 - (ii) A physical or chemical agent which induces mutation.
- (b) Fill in the blanks : $1 \times 3 = 3$
- (i) The chromosome theory of linkage was proposed by _____ .

(ii) Crossing of two parents belonging to different species is called _____ cross.

(iii) The value in a series which occurs most frequently, i.e., has the maximum frequency is termed as _____.

(c) Write short notes on the following :

3×4=12

(i) Multiple gene

(ii) Cytological basis of crossing over

(iii) Mutation breeding

(iv) Cumulative frequency

2. What is cytoplasmic inheritance? Distinguish between cytoplasmic gene and chromosomal gene. Give a detailed account of cytoplasmic inheritance with special reference to plastid inheritance and Kappa particle inheritance.

1+3+7=11

Or

Write explanatory notes on the following :

5½+5½=11

(a) Sex-limited traits

(b) Microbial transduction

(3)

3. What do you mean by heterosis? Give genetic explanations of heterosis. Mention the role of heterosis in plant breeding. 2+6+4=12

Or

Write short notes on the following : 6+6=12

- (a) Acclimatisation
- (b) Application of tissue culture in the improvement of crops

4. Distinguish between standard error and standard deviation. Find out the mean, mode, median and standard deviation of the following data : 3+5=8

<i>Size of item</i>	10	11	12	13	14	15	16
<i>Frequency</i>	2	7	11	15	10	4	1

Or

What are the basic differences between statistics and biostatistics? Discuss the application and uses of statistics in biological science. 2+6=8
