## U.G. 5th Semester Examination - 2020

# BOTANY

**[HONOURS]**

**Discipline Specific Elective (DSE)**

**Course Code : BOT-H-DSE-T-02**

**(Plant Breeding and Biometry)**

Full Marks : 40          Time : $2\frac{1}{2}$ 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 **five** of the following questions: 2×5=10

   a) What is acclimatization?

   b) What do you mean by plant introduction?

   c) Give the full form of NBPGR.

   d) Mention two demerits of MASS selection.

   e) Cite two advantages of pure line selection in self pollinated crops.

   f) Define emasculation.

   g) Why sampling is essential?

   h) Find the value of X from the following data where mean = 5.5

   1,2,3,4,X,6,7,8,9,10

*[Turn Over]*

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

   a) Distinguish between Mass and Pure line selection on the basis of procedure and product.    5

   b) Mention the role of allopolypoidy and aneuploidy in crop improvement.    5

   c) Mention two uses of Arithmetic Mean. Find the Mean value of the following frequency distribution.

   | Class | 10-30 | 30-50 | 50-70 | 70-90 | 90-110 | 110-130 |
   |---|---|---|---|---|---|---|
   | Frequency | 5 | 8 | 12 | 20 | 3 | 2 |

   2+3=5

   d) Calculate the value of standard deviation from the data given below:

   | Class | 48 | 50 | 52 | 54 | 56 | 58 |
   |---|---|---|---|---|---|---|
   | Frequency | 8 | 32 | 75 | 52 | 28 | 5 |

   5

3. Answer any **two** of the following questions:

   10×2=20

   a) Compare between dominance and over dominance hypothesis. How can you explain the manifestation of Heterosis? Mention two applications of Heterosis in plant breeding.    2+6+2=10

   b) Mention the positive and negative role of mutation breeding in case of asexually propagated crops.

   6+4=10

c) What are the applications of $\chi^2$ test? In a crop field all F1 plants were normal but on selfing 73 normal and 7 mutant plants were obtained in F2 segregating progeny. State the nature of inheritance of the mutant trait. ( Standard check: Chi square value =3.84 at 5% level for 1 DF)

4+6=10

d) What is gene pool? Mention the factors affecting gene frequency. If in a human population, a sample of 100 individuals for MN blood group character shows 50 MM, 20 MN, 30 NN individuals, then calculate the frequency of M and N allele.

1+5+4=10

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