2020

BOTANY — HONOURS

Paper : DSE-A-1

(Biostatistics)

Full Marks : 50

The figures in the 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 :

(a) What is frequency distribution? 2

(b) Write two limitations of statistics. 1+1

(c) What do you mean by discrete variables? 2

(d) Define primary data with example. 1+1

(e) Define null hypothesis with example. 2

(f) Define statistical error. How it is different from mistake? 1+1

(g) What do you mean by 'Population' and 'Sample'? 1+1

(h) Define cumulative frequency distribution and mention one of its use. 1+1

2. Answer ***any two*** of the following :

(a) What are the advantages of 'Arithmatic mean' and 'mode value'? 5

(b) How does the standard deviation help for analysing the data in case of normal distribution? What is bimodal distribution? 4+1

(c) Five persons A, B, C, D, E occupy seats in a row at random. What is the probability that A and B sit next to each other? 5

3. Answer ***any three*** of the following :

(a) Explain why the standard deviation is regarded as superior to other measures of dispersion. What is its chief defect? The grain length of a variety in rice is given below :

Grain length in mm	9-11	12-14	15-17	18-20
No. of grains	3	5	9	3

Calculate the mean and standard error of grain length of the variety. 3+2+2+3

(b) What do you mean by Hardy-Weinberg Equilibrium? Mention the factors affecting the equilibrium. In a study of a tribe from central Asia 26 Albino individuals are found in a total population of 6000. Albinism is recessive to normal skin colour. Calculate the expected allele frequencies and genotype frequencies if the population is in Hardy-Weinberg Equilibrium. How many of tribal individuals are estimated to be carriers of the recessive albino allele? 2+3+3+2

(c) Define coefficient of variation. What are the special uses of this measure? Find the coefficient of variation from the following and comment on that. 2+3+5

weight (gm)	110-119	120-129	130-139	140-149	150-159	160-169	170-179	180-189
Frequency	5	7	12	20	16	10	7	3

(d) Selfing of a hybrid plant, produced a population with 120 pink flowers and 88 white flowers. Explain the data with χ^2 analysis. Find out the segregation ratio and test the goodness of fit. Comment on the nature of segregation. [χ^2 table value is 3.84 for 1 degree of freedom at 0.05 probability level]. 3+4+3

(e) (i) Four cards are drawn consecutively four times from a pack of 52 cards. Find the chances of drawing an ace, a king, a queen and a jack. The cards are not replaced after each withdrawal.

(ii) What is the probability of getting a king or a club from a pack of 52 cards?

(iii) Define conditional probability. 4+4+2
