

PC-13232/N

M-7/2111

STATISTICS–II
(Semester–III)

Time : Three Hours]

[Maximum Marks : 74

Note : Attempt *five* questions in all, selecting *two* questions each from Section-A and B. Section-C is compulsory.

SECTION-A

(2×11=22)

- I. "Statistics is a method of decision-making in the face of uncertainty on the basis of numerical data and calculated risks." Comment and explain with suitable illustrations.
- II. What is sampling? Explain the importance of sampling in solving business problems. Enumerate the various methods of sampling.
- III. Explain with suitable examples the term 'Variation'. Mention some common measures of variation and describe the *one* which you think is the most important.

- IV. A problem in Statistics is given to five students A, B, C, D and E. Their chances of solving it are $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{6}$ respectively. What is the probability that the problem will be solved?

SECTION-B

(2×11=22)

- V. An industrial engineer collected the following data an experience and performance rating of eight operators :
- | | | | | | | | | | |
|--------------------|---|----|----|----|----|----|----|----|----|
| Operators | : | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Experience (years) | : | 16 | 12 | 18 | 4 | 3 | 10 | 5 | 12 |
| Performance rating | : | 87 | 88 | 89 | 68 | 58 | 80 | 70 | 85 |
- (a) Does the data give evidence that experience improves performance?
- (b) Estimate the performance rating of an operator having 9 years of experience.
- VI. What is test of hypothesis? Describe the various steps involved in testing of hypothesis. What is the role of standard error in testing of hypothesis?
- VII. Discuss the F-test for testing the equality of two sample variances. State clearly the assumptions involved.
- VIII. A sample analysis of examination results of 200 M.Sc. Students was made. It was found that 46 students have failed, 68 secured a third division, 62 secured a second division and rest were placed in the first division. Are these

figures commensurate with the general examination result which is in the ratio of 2 : 3 : 3 : 2 for various categories respectively? (Given that $\chi_3^2(0.05) = 7.81$)

SECTION-C

(10×3=30)

(Compulsory Question)

- IX. (a) Give *two* important utilities of Ogive.
- (b) Differentiate between sampling and Non-sampling errors.
- (c) What is the difference between absolute and relative measures of dispersion?
- (d) Discuss axiomatic approach to probability.
- (e) Distinguish between correlation and regression with suitable example.
- (f) Explain the difference between null and alternative hypothesis.
- (g) Discuss two applications of T-statistics.
- (h) Define Type-I and Type-II errors.
- (i) What is goodness of fit?
- (j) Write small note on level of significance and critical region.