AT–385

B.Sc. Part–III Semester–V Examination

5 S : STATISTICS

Time : Three Hours] [Maximum Marks : 80

Note :— All questions are compulsory.

1. (A) Fill in the blanks :

(i) The SQC technique is based on the theory of _____.

(ii) The expression n/N is known as ___.

(iii) In SRS each unit of the population has _____ chance of being included in the sample.

(iv) If all units of a population are surveyed then it is called _____ survey. 2

(B) Choose the correct alternatives (MCQ) :

(i) Control chart for number of defects per unit is _____.

(a) p-chart (b) d-chart

(c) z-chart (d) np-chart

(ii) The primary wants are called _____.

(a) Luxuries (b) Supplementary

(c) Optional (d) Necessities

(iii) Rejecting a lot of average fraction defective is called _ _.

(a) Producer's risk (b) Consumer's risk

(c) AOQ (d) LTPD

(iv) Only first sampling unit is selected at random in _____ sampling.

(a) Stratified (b) SRS

(c) Cluster (d) Systematic 2

(C) Answer in **one** sentence :

(i) Who develop control chart for SQC ?

(ii) What are the types of SRS ?

(iii) Which sampling methods are scientific ?

(iv) Which sampling is appropriate when sample is selected with definite purpose ? 4

2. (A) Give the general outline of control chart. 4

(B) Obtain 3σ control limits for np-chart. 4

(C) Explain control chart for attribute. 4

OR

3. (P) Discuss the terms 'process control' and 'product control'. 4

(Q) Explain SQC and state its applications. 4

(R) Define "assignable" and "chance" causes of variation. 4

4. (A) Explain single sampling plan. Define consumer's risk and producer's risk. 6

(B) Explain double sampling plan with OC function. 6

OR

5. (P) Explain the terms ASN, AOQL, AQL. 6

(Q) Explain advantages of acceptance sampling and describe acceptance quality level. 6

6. (A) Explain partial elasticities of demand. 4

(B) Discuss the theory of consumer behaviour. 4

(C) Define complementary commodities and competitive commodities. 4

OR

7. (P) Explain cross elasticities of demand. 4

(Q) Discuss utility function. 4

(R) Explain indifference curve. 4

8. (A) Explain how to select a simple random sample by lottery method. 4

(B) Show that sample mean is an unbiased estimate of population mean under SRSWOR. 4

(C) Discuss sampling and non-sampling errors. 4

OR

9. (P) State the merits and demerits of simple random sampling. 4

(Q) Obtain the variance of unbiased estimate of population mean under SRSWOR. 4

(R) Distinguish between SRSWOR and SRSWR. 4

10. (A) What do you mean by stratification ? Obtain variance of unbiased estimate of population mean under stratified random sampling. 6

(B) Compare proportional allocation of stratified random sampling with SRSWOR. 6

OR

11. (P) Show that stratified random sampling is always superior than SRSWOR. 6

(Q) Compare Neyman allocation with proportional allocation in stratified random sampling. 6

12. (A) Explain systematic sampling with schematic diagram. 4

(B) Obtain an unbiased estimate of population mean under systematic sampling. 4

(C) Explain the concept of duster sampling in detail. 4

OR

13. (P) Compare systematic sampling with SRSWOR. 4

(Q) State the advantages and disadvantages of cluster sampling. 4

(R) Show that sample mean is an unbiased estimator of population mean in case of cluster sampling. 4