(Q) Discuss advantages and limitations of Acceptance Sampling Procedure. 4

(R) Define :—

(i) AOQL

(ii) ASN 4

6. (A) Discuss consumer's problem. How will you solve consumer's problem using utility approach. 6

(B) Explain indifference curve approach for the maximization of utility of a consumer. 6

OR

7. (P) Explain that two indifference curve never intersect each other. Give critirion of utility approach. 6

(Q) Explain maximization of utility and its equilibrium condition. 6

8. (A) How will you select a simple random sample by lottery method ? 4

(B) State merits and demerits of SRS. 4

(C) Explain SRS with and without replacement technique. 4

Fifth Semester B. Sc. (Part – III) Examination

5S – STATISTICS

P. Pages : 6

Time : Three Hours] [Max. Marks : 80

Note : All questions are compulsory.

1. (A) Fill in the blanks.

(i) The no. of items in a sample is called as ——.

(ii) UCL and LCL are drawn as ——.

(iii) —— causes can not be controlled by human.

(iv) Control charts contains —— lines. 2

(B) Choose the correct alternatives (MCQ)

(i) Systematic sampling means.

(a) Selection of 'n' sampling units randomly.

(b) Selection of 'n' sampling units at equal distances.

(c) Selection of 'n' sampling units at unequal distance.

(d)) None of these

(ii) Total number of possible samples of size n drawn from a population of size N in SRSWR is

(a) $N \times n$

(b) N^n

(c) n^N

(d) $N+n$

(iii) Probability of rejecting a lot of quality $\bar{P}$ is

(a) Consumer's risk

(b) Producer's risk

(c) AQL

(d) ASN

(iv) Probability of a specified unit being included in the sample of size n is

(a) $1/n$

(b) n/N

(c) $1/N$

(d) $1-1/N$ 2

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

(i) State types of simple random sampling.

(ii) Write down the name of control charts for attributes.

(iii) Define indifference curve.

(iv) Define Quality. 4

2. (A) How will you construct C chart in SQC ? 4

(B) State general outline of control charts. 4

(C) Explain variation due to assignable causes. 4

OR

3. (P) Explain process control and product control. 4

(Q) What do you mean by 3-σ limits ? 4

(R) Explain control limit for R–chart in SQC. 4

4. (A) Discuss the Concept of simple sampling plan. 4

(B) Explain the term ASN. 4

(C) Discuss in detail problems of lot acceptance. 4

OR

5. (P) Discuss Double sampling plan. 4

OR

9. (P) Explain non probability sampling. 4

(Q) Prove that probability that the specified unit of the population is included in the sample is n/N. 4

(R) Prove that in SRSWR the variance of sample mean is given by.

$V(\bar{y}n)_{WOR} = \frac{N-n}{N.n} S^2$ where notations have their usual meaning. 4

10. (A) Discuss the concept of Neyman's allocation in stratified sampling. Obtain sample size ni and variance of unbiased estimate of population mean under Neyman's allocation. 6

(B) Show that stratified random sampling is always superior than single random sampling. 6

OR

(P) Discuss stratified sampling. Obtain variance of unbiased estimate of population mean under it. 6

(Q) Define :—

(i) Proportional allocation.

(ii) Neyman's allocation.

Compare between proportional and Neyman's allocation. 6

12. (A) Prove that in cluster sampling sample mean is an unbiased estimate of population mean. 4

(B) State merits and demerits of systemic sampling. 4

(C) Explain, how will you select a sample of size n from systematic sampling. 4

OR

13. (P) Obtain variance of unbiased estimate of population mean under systematic sampling. 4

(Q) State relative efficiency of cluster sampling over SRSWOR. 4

(R) Explain cluster sampling. Give its advantage and disadvantage. 4