12/05/2018 (Evening)

This question paper contains **3** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **9676**

Unique Paper Code : **62377602** **HC**

Name of the Paper : **Applied Statistics-II**

Name of the Course : **B.A. (Programme) Statistics : DSE**

Semester : **VI**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any *five* questions.

Simple calculator is allowed.

1. Distinguish between process and product control. What are the *three* components of ISO 9000 : 2000 standard ? 15

2. What is SPC ? Define various tools of SPC. Discuss the role of statistical tools in quality improvement. 15

3. (*a*) Explain with examples when variable control charts are not suitable. What are control chart for attributes ? Name types of attribute control charts. Discuss the construction of control chart to control proportion of defective items in the process.

P.T.O.

(*b*) The following data shows the value of samples mean $\overline{X}_i$ and range R_i for 10 samples of size 5 each. Draw control charts to control process average and process range and state whether process is in control or not.

Sample No : *i*	$\overline{X}_i$	R_i
1	1.444	0.09
2	0.427	0.08
3	1.464	0.08
4	1.455	0.08
5	1.462	0.10
6	1.448	0.05
7	1.454	0.04
8	1.446	0.08
9	1.437	0.12
10	1.471	0.11

(Given for $n = 5$, $A_2 = 0.577$, $D_3 = 0$, $D_4 = 2.115$) 7,8

4. (*a*) Discuss the criteria for detecting lack of control in $\overline{X}$ and R charts.

(*b*) Find the 3σ control limits for u chart with $c = 4$ and $n = 4$. 8,7

5. (*a*) Discuss sampling inspection plan in reference to statistical quality control. Define process average fraction defective.

(*b*) Define and distinguish between acceptance quality limit and lot tolerance proportion defective. 7,8

6. In a single sampling plan of attributes with lot size N, sample size n and allowable defectives c, how will you obtain the probability of acceptance of the lot if the fraction defective is p ? 15

7. Ten pieces of cloth out of different rolls of equal length contained the following number of defects :

1	3	5	0	6	0	9	4	4	3

Draw a control chart for the number of defects and state whether the process is in a state of statistical control. 15