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.

(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