## **GUJARAT TECHNOLOGICAL UNIVERSITY** BE - SEMESTER-VI • EXAMINATION – WINTER 2013

Subje Subje	ect C ect N	ode: 162501 ame: Statistical	Methods and (	Quality Contro	Date: 27-11-2013	
Time	: 02: ctions	<b>30 pm to 05:00</b>	pm		Total Marks: 70	
	1. A 2. N 3. H	Attempt all question Make suitable assum Figures to the right i	s. ptions wherever ne ndicate full marks.	ecessary.		
Q.1	(a)	<ul> <li>Determine the control limits for X and R charts if EX=357.5 ER=9.90. Number of subgroups=20. It is given that A2=0.18.D3=0.41,D4=1.59,and d2=3.735.Also find process capability.</li> <li>A random sample of 4 is to be selected from lot of 10 articles, 3 of which are defective. What is probability that the sample will contain exactly 1 defective.?</li> </ul>				
	(b)					
Q.2	(a) (b)	Explain procedure of taking chi square test.07Alot of 25 articles contains 3 defective. A sample of 5 is selected at random from the lot inspection. What are the respective probabilities of 0 and 1 defective occurring in the sample of 5?07				
	(b)	<b>OR</b> Explain C chart with suitable example.				
Q.3	(a)	a) .A machine shop produces crank pins. The width of 100 pins are recorded as under.				
		Width in mm	frequency	Width in mm	frequency	
		9.50-9.51	0	9.58-9.59	8	
		9 54-9 55	20	9.62-9.63	6	
		9.56-9.57	32	9.64-9.65	4	
		Find mean, mode, standard deviation, variance. Also find what % of pins has width 9.52 to 9.63 Discuss concept of variations also explain various types and reasons of variations.				
	(b)					
Q.3	(a)	<ul> <li>(a) Explain normal, exponential and binomial probability distribution.</li> <li>(b) Explain bye's theorm with a case problem.</li> </ul>				
	<b>(b</b> )					
Q.4	(a) (b)	Explain various methods of vendor rating 0 Sketch OC curve for the following scheme: A single item is taken at 0 random from the lot and inspected. if it is defective, the lot is rejected otherwise lot is accepted.				
Ē	OR					_
Q.4	(a) (b)	Explain p and np charts with neat sketch. Explain skewness and kurtosis with suitable example.				
Q.5	(a) (b)	Explain SPC. Explain students t-distribution with suitable example. OR				07 07
Q.5	(a) (b)	Explain double sampling plans with neat sketch. Explain 4 risks of OC curve with neat sketch.				07 07

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