



Institute of Management
JK Lakshmipat University
Jaipur

END TERM EXAMINATION 2017

Programme: BBA Sem- V
MM: 50 Marks

Sub: Quality Management
Time: 3 Hours
Subject code: BBA504

Instructions: Attempt any three questions from Section A. Section B is compulsory. Graph paper will be provided.

Section A

Q1. (a) What is Acceptance Sampling? What are the reasons for acceptance sampling?

(b) What is Operating Characteristics (OC) Curve? How can we make an acceptance sampling plan stricter? (5+5)

Q2. (a) How is statistical process control different from acceptance sampling? What are type I and type II errors?

(b) Explain the difference between the specification Limits, Control limits, and natural tolerance limits? (5+5)

Q3. Evaluate the probability of acceptance (P_a) of a lot of size $N=10,000$. Given that the proportion of defectives in the lot of size N is p where p varies from 0 to 0.05 i.e. consider the value of p is 0, 0.01, 0.02, 0.03, ..., upto 0.05. Consider the sample size (n) is 100 and acceptance number (a) is 5. (10)

Q4. (a) What is process capability ratio? How do we measure the process capability ratio?

(b) Fifteen samples of size 100 units each are taken from a consignment of integrated circuits (ICs) manufactured by Apollo Electronics based at Bangalore. The following table shows the result of inspection of the fifteen samples.

Sample No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of defective ICs1	9	11	4	1	0	9	12	10	4	17	15	8	5	3	2

Prepare the p control chart from the above data set.

(4+6)

Q5. (a) One of your friend, Vishnu is the manager of an organization. The organization deals with building control systems, automotive seating equipment, energy, and integrated facility management services. As a manager Vishnu wants to implement Six Sigma in the organization. So, he wants to follow some steps. Now, explains what these steps are.

(b) What is Defects per Million Opportunities (DPMO)?

(7.5+2.5)

Section B

Q6. (a) Precision Auto Shafts is a manufacturer of steel shafts and supplies its products to various automotive companies. It has received a contract from a major auto company for shafts of diameter $15mm \pm 0.30 mm$. In order to control the quality of the shafts, Precision takes ten samples of size 3 at regular interval of one hour and the data of diameter measurements obtained is as given in the following table:

Diameter of Shaft (millimeter)				
Time	Sample No.	Unit 1	Unit 2	Unit 3
8.00am	1	15.0034	15.0167	14.9975
9.00am	2	14.9925	15.0287	15.0002
10.00am	3	14.9822	14.9759	15.0427
11.00am	4	15.2238	15.1756	15.1182
12.00am	5	14.8896	14.9992	15.2761
1.00pm	6	14.982	14.9775	14.9743
2.00pm	7	15.1002	15.1165	14.9749
3.00pm	8	15.0034	14.9812	14.9672
4.00pm	9	14.9853	14.9993	15.1728
5.00pm	10	15.2549	14.9536	14.9831

Prepare the sample mean chart and sample range chart for the given data.

(10)

(b) What is Benchmarking? What is the significant of benchmarking in quality improvement? Explain the Seven Step Benchmarking Model? (2+3+5)