Total No. of printed pages = 6

BA 132402

Roll No. of candidate | | | | | | | | | | |

2017

MBA 4th Semester End-Term Examination

QUALITY CONTROL AND MANAGEMENT

Full Marks–100 Pass Marks–35 Time–Three hours

The figures in the margin indicate full marks for the questions.

GROUP – A

1. Answer any *six* from the following questions : 6×5=30

   (i) Why has cost of quality become an important issue of late ? How relevant is this issue to Indian domestic companies ?

   (ii) What is the Quality Trilogy proposed by Juran ? Discuss very briefly.

   (iii) What is Kaizen ? How is it different from Innovation ?

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(iv) Explain briefly the dimensions of Product quality and Service quality.

(v) Describe briefly the terms : Quality system, Quality assurance, Quality audit and Quality surveillance.

(vi) Distinguish between assignable and common causes of variation. Why is this distinction important in quality control ?

(vii) What is the general meaning of process capability ? Explain the purpose of calculating Cp and Cpk values for a process.

(viii) What is an OC curve ? Discuss briefly the concepts of Producer's risk and Consumer's risk.

GROUP – B

2. Answer any *four* from the following questions : 10×4=40

(i) Briefly describe the TQMEX model. Discuss the benefits of TQM implementation.

(ii) Define, describe and explain the use of Fishbone diagram taking a suitable example.

(iii) A manufacturer of ball bearings has the following specifications for the diameter of finished ball bearings. The nominal value = 245 mm, USL = 245.85 mm, LSL = 244.15 mm. The process planning department proposed two processes for manufacturing the ball bearings. After extensive pilot runs, the processes were statistically stabilised. The performances of the two processes are as follows :

	Centre	LCL	UCL
Process A	244.90	244.15	245.65
Process B	244.98	244.16	245.80

The production department wants to know which of these two processes is suitable for commercialization. Compute relative measures including process capability indices. Also, offer appropriate recommendation to the production department.

(iv) (a) What is acceptance sampling ? What are the reasons for using acceptance sampling ? 5

(b) What are the conditions required for using Chain Sampling Plan ? Explain. 5

(v) (a) 'The key to an effective TQM program is its focus on the customer'. Explain.

(b) Briefly discuss the importance of Deming's PDCA cycle in Quality Management.

(vi) Surface defects have been found on 25 rectangular steel plates and the data is shown below. Draw the C chart for non-conformities using this data. Data showing the surface defects :

1	2	3	4	5	6	7	8	9	10
1	0	4	3	1	2	5	0	2	1

11	12	13	14	15	16	17	18	19	20
1	0	8	0	2	1	3	5	4	6

21	22	23	24	25
3	1	0	2	4

GROUP – C

3. Answer any *two* questions from the following : 15×2=30

(a) Comment on the practical advantages that accrue to the producer and consumer when a process is in control. 5

(b) A company called Trinity produces plastic key chains. The plastic material is first moulded and then trimmed to the required shape. The cure times during the moulding process affect the edge quality of the key chains. The aim is to achieve statistical control of the cure times using X bar and R charts. Cure time data of 25 samples, each of size 4, have been taken when the process is assumed to be in control. Draw the control charts and comment on the results.

Given : $D_3 = 0$, $D_4 = 2.28$, $A_2 = 0.73$.

Sample	1	2	3	4	5	6	7
Mean	28.25	29.12	30.90	32.90	31.56	30.12	31.80
Range	2.60	5.18	4.20	8.54	5.45	6.77	9.85

Sample	8	9	10	11	12	13	14
Mean	28.02	30.53	30.39	28.93	29.23	31.30	30.52
Range	6.10	3.99	5.67	4.55	2.85	11.10	3.39

Sample	15	16	17	18	19	20	21
Mean	29.51	29.86	31.52	32.16	31.58	31.10	31.81
Range	6.80	11.17	6.43	7.98	3.33	7.01	7.32

Sample	22	23	24	25
Mean	30.96	30.27	30.00	30.72
Range	2.80	4.59	8.03	2.60

4. (a) List and discuss two applications each of the following : 2×5=10

(i) Pareto chart

(ii) Affinity diagram

(iii) Process Decision Program chart

(iv) Systematic or Tree diagram

(v) Matrix diagram.

(b) Discuss briefly the benefits of ISO certification.

5. Write short notes on any *three* of the following 3×5=15

(a) DMAIC process

(b) QMS principles

(c) Specification and Control limits

(d) Deming's 14 point methodology

(e) Acceptance sampling.