Ex/Prod/T/324F/2018

B.E. PRODUCTION ENGINEERING 3RD YEAR 2ND SEMESTER EXAMINATION 2018

TOTAL QUALITY MANAGEMENT

Full Marks: 100 Time: Three Hours

The figures in the margin indicates full marks

1. Answer the following questions (any TWO): 10x 2=20

a) What do you understand by Total Quality Management (TQM)? Mention the basic ingredients of TQM. State the benefits of TQM.

b) Mention ten international contributors and their contribution towards TQM.

c) Make comparisons between TQM and Traditional approach.

2. Answer the following questions (any FOUR): 5x4=20

a) What is Robust Design according to Dr. G. Taguchi? What are the steps in Robust Design?

b) What is Ideal Quality according to Dr. G. Taguchi? What are the various quality principles?

c) How do you select the standard orthogonal array?

d) How do you perform ANOVA test to determine the percentage contributions of factors on quality characteristics?

e) The experimental results for Material Removal Rate (MRR) during machining is given as follows:

Expt. No.	Process Parameters			S/N ratio,dB
	A	B	C	
1.	A1	B1	C1	-14.58
2.	A1	B2	C2	-11.19
3.	A1	B3	C3	-6.87
4.	A2	B1	C2	-9.09
5.	A2	B2	C3	-8.20
6.	A2	B3	C1	2.90
7.	A3	B1	C3	-2.75
8.	A3	B2	C1	4.02
9.	A3	B3	C2	7.55

Determine the optimal process parametric combination and the predicted optimum value of quality level (MRR).

[PTO]

3. Answer the following questions (Any TWO): 10x2=20
   a) What do you mean by Six Sigma Quality Level? What are the basic steps involved in the road map to Six Sigma quality?
   b) Discuss on DMAIC methodology to achieve Six-Sigma Quality level?
   c) An analysis takes 10 samples each of size 10 for inspection from the output of an assembly line. The items in each sample are examined for the number of defectives in them. The data obtained are given as follows:

Sample No.	1	2	3	4	5	6	7	8	9	10
Nos. of defectives	0	1	1	2	3	1	2	0	1	4

   i) Construct the number of defectives chart.
   ii) Determine the control limits and warning limits.
   iii) State whether the process is under statistical quality control or not.

4. Answer the following questions (Any TWO): 10x2=20
   a) What do you understand by Quality Function Deployment? Discuss various steps of it?
   b) Sketch a typical House of Quality template showing its benefits. Sketch a typical waterfall relationship of QFD matrices.
   c) Discuss the benefits and various elements of JIT System for Quality Improvement?

5. Answer the following questions (Any TWO) 10x2=20
   a) What are the various types of Benchmarking assessment? Discuss on various steps of benchmarking.
   b) Discuss on KAIZEN for quality improvement.
   c) Write short note on ISO Quality Systems.
