B. E. PRODUCTION ENGINEERING FOURTH YEAR FIRST SEMESTER EXAMINATION 2024

TOTAL QUALITY MANAGEMENT

Full Marks: 100 Time: Three Hours

Answer each part in separate answer script.

PART – I (60 Marks)

Answer any THREE questions

1. a) Define " Total Quality Management". State the benefits of it.
   b) Explain that TQM is a new cultural revolution.
   c) Make comparisons between TQM and Traditional approach.

(5+5+10)

2. a) What are the objectives of statistical quality control?
   b) Explain about Process Capability Index.
   c) Discuss on various quality control charts and their control limits and warning limits.
   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 fraction of defectives chart.
   ii) Determine the control limits and warning limits.
   iii) State whether the process is under statistical quality control or not.

(3+3+6+8)

3. a) What is the meaning of KAIZEN ? Why is KAIZEN so important for TQM?
   b) What are the steps and benefits obtained from Brainstorming Session?
   c) Discuss on the process of benchmarking.

(6+6+8)

4. a) What are the various wastes as per Just In Time Philosophy?
   b) What is the DPMO allowed in 3-Sigma and 6-Sigma processes?
   c) Distinguish between DMAIC and DMADV.
   d) What is Kanban Card and it's uses in JIT ?

(5+4+6+5)

5. a) What do you understand by TQM Culture?
   b) What is the use of PDCA cycle?
   c) What is the concept of Zero Defects?
   d) What are the ten steps towards quality improvement proposed by Dr. Juran?

(5 x 4)

B.E Production Engineering – Fourth Year First Semester Examination

Ex/PROD/PE/B/T/412F

TOTAL QUALITY MANAGEMENT

GROUP – B (Answer any Two questions)

1. Develop the house of quality and analysis the results using quality function deployment technique to enhance placement opportunity in XYZ University. (20)

2. The results for a larger-the-better experimental design that was run in random order with seven factors are as follows:

TC	A 1	B 2	C 3	D 4	E 5	F 6	G 7	R1	R2
1	1	1	1	1	1	1	1	19	25
2	1	1	1	2	2	2	2	20	24
3	1	2	2	1	1	2	2	24	22
4	1	2	2	2	2	1	1	22	25
5	2	1	2	1	2	1	2	26	20
6	2	1	2	2	1	2	1	25	26
7	2	2	1	1	2	2	1	25	20
8	2	2	1	2	1	1	2	25	21

Determine the response table, response graph, strong effects and prediction for the average and the S/N ratio. (20)

3. Write short notes on the followings: (4×5)

(a) Taguchi's orthogonal array, (b) System design, (c) FMEA, (d) House of quality, (e) Pooled ANOVA, (f) Linear graph.