

Name of the Examination : M. E. CHEMICAL ENGINEERING FIRST YEAR SECOND SEMESTER - 2017

Subject : TOTAL QUALITY MANAGEMENT

Time: Three hours

Full Marks: 100

Instruction : Answer any five questions for attempting the full marks

1. a) Why FMEA is required to carry out and what are the types of FMEA? b) Define Failure Mode, effect and RPN with one example. c) How RPN can be reduced in the organization, explain in detail ? d) Prepare a standard format for carrying out the analysis following FMEA. e) Identify three failure general types of failure modes for a reactor while running in your laboratory and Prepare the FMEA. Assume the data if required.

$$3 + 4 + 3 + 5 + 5 = 20$$

2. a) Justify the statement, "BEM is a framework for managing improvement initiatives in a manufacturing organisation focusing on the Baldrige Criteria for Performance Excellence Framework in the Malcom Baldrige Award Model for excellence in quality. b) Critically make a comparative analysis of the criteria, objectives and processes considered in excellence models - EFQ model and Malcom Baldrige Award Model.

$$10 + 10 = 20$$

3. a) Establish the relationship of the components in the costs of quality. b) Map different functional costs in detail with example that are considered while finding the cost of conformance and cost of non conformance in the organization.

$$05 + 15 = 20$$

4. a) Define the relationship of the components in the costs of quality. b) Map different functional costs in detail with example that are considered while finding the cost of conformance and cost of non conformance in the organization.

$$05 + 15 = 20$$

5 a) "Quality Function Deployment is a structured approach to defining customer needs or requirements and translating them into specific plans to produce products to meet those needs". Justify the statement. b) How the voice of the customer is captured in house of quality. c) Mention the flow of the QFD methodology with the help of a diagram?

$$10 + 5 + 5 = 20$$

6. a) Prepare a Business Risk Assessment Framework required in quality management system as per ISO 9001:2015 standard in a *Petroleum Refinery*. b) Demonstrate the C&E diagram with a problem statement "*Higher energy consumption in the Reactor*" and c) find out the root causes and possible action plan ?

$$10 + 5 + 5 = 20$$

7. Write short notes on any four:

$$5 \times 4 = 20$$

a) TQM, b) Control Charts in SQC, c) Break Even Analysis, d) Taguchi Method, e) Six Sigma, f) 5S, f) Disaster Management Plan