



Answer the following questions:

Question 1 (20 marks)

- a) Define Total Quality Management (TQM). Identify the basic elements of the Oakland's quality chains model. [10 Marks]
- b) You have studied the seven basic quality tools as well as the seven new quality tools, decide which of these tools is the most appropriate in the following situations: [10 marks]
 1. You want to collect and classify data.
 2. You want to organize verbal ideas generated during a brain storming session.
 3. You want to identify what might go wrong in a plan and be ready with countermeasures.
 4. You want to relate three groups of items; such that groups B and C are each related to group A. Groups B and C are not related to each other.
 5. You want to visually explore two variables in order to reveal whether or not a strong or weak, positive or negative, correlation exists between them.

Question 2 (20 marks)

- a) Discuss of the concept of mistake proofing and suggest three examples for the application of this concept in order to modify the design of a product or a system. [5 marks]
- b) What is FEMA analysis? Explain the various steps needed to conduct FEMA studies. [7 marks]
- c) "More than 80% of quality problem are due to workers' performance". Do you agree with this statement or not? Explain why? [2 Marks]
- d) Classify the following quality tools as qualitative or quantitative. [6 marks]
 1. Check sheet
 2. Pareto analysis
 3. Affinity Diagram
 4. Control charts
 5. Ishikawa diagram
 6. The process decision program chart

Question 3 (30 marks)

The following are Multiple Choice Questions. Read the questions carefully and select the most appropriate answer for each question (Choose only **ONE** answer).

1. All of the following represent external failure cost EXCEPT the cost of:
 - a) Scrapping defective raw material
 - b) Repairing items covered by warranty
 - c) Replacing defective items found by customers
 - d) Loss of goodwill and reputation
2. XYZ Company decided to increase the training received by new assembly workers. The expense of this training is an example of which of the following costs of quality:
 - a) Appraisal Costs
 - b) External Failure Costs
 - c) Internal Failure Costs
 - d) Prevention Costs

3. Which of the following represents one of the Deming's 14 points?
 - a) Use numerical quotas and work standards to increase productivity
 - b) Improve leadership, and practice modern supervision methods.
 - c) Business should be awarded to suppliers offering lower prices.
 - d) (a) and (c).
4. A run chart would be used to:
 - a) List potential causes of an effect
 - b) Identify the root causes of a problem
 - c) Organize the data
 - d) None of the above
5. All of the following statements "about RPN numbers" are correct EXCEPT:
 - a) RPN ranges from 0 to 1000
 - b) It can be calculated as the product of severity, detection, and occurrence.
 - c) An RPN in a particular analysis is not comparable to RPNs in another analysis.
 - d) both (a) and (c)
6. The quality dimension that is related to the failure rate of a product is:
 - a) Performance
 - b) Aesthetics
 - c) Reliability
 - d) None of the above
7. Which of the following statements are false?
 - a) The name "ISO" was derived from the acronym of International Standardization Organization.
 - b) Egypt is one of the members of the ISO organization.
 - c) ISO certification does not guarantee the quality of your products.
 - d) None of the above
8. Which of the following statements is true about the ISO 9000 series?
 - a) It is a framework for implementing a quality system.
 - b) It always tells you which precise actions or procedures you should take.
 - c) Its standards are somehow intentionally vague.
 - d) (a) and (c)
9. The Japanese term "kaizen" refers to
 - a) defect prevention
 - b) continuous improvement
 - c) robust design
 - d) quality circles
10. Poka-yoke methods may include:
 - a) Contact methods
 - b) Fixed-value (count) methods
 - c) Motion-step methods
 - d) All of the above

===== End of Questions =====
With our best wishes

This exam measures the following ILOs										
Question Number	Q1-a Q2-b,Q3	Q1-a, Q2-a, Q3	Q1-a Q2-c,d	Q3	Q1-b	Q1-b Q3	Q3	Q2-b	Q1-b	Q2-a
Skills	a1-1	a5-1	a5-2	a6-1	a19-1	b1-1	b5-1	b16-1	c1-1	c3-1