

King Fahd University of Petroleum & Minerals
Department of Construction Engineering & Management
CEM 515: Project Quality Management
Final Exam

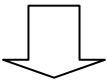
Student Name:- _____ Student No.:- _____

ISO 9001-2000

- 1) ISO 9001-2000 is
- Applicable to some types of Organizations with possible permissible omissions of certain requirements
 - Applicable to all types of Organizations no possible permissible omissions of certain requirements
 - Applicable to only quality Organizations with possible permissible omissions of certain requirements
 - Applicable to all types of Organizations with possible permissible omissions of certain requirements

- 2) Match the appropriate titles from table 1 into related statement in table 2

a	Factual approach to decision making	e	Mutually beneficial supplier relationships
b	Involvement of People	f	System approach to Management
c	Process approach	g	Customer focus
d	Continual improvements	h	Leadership



	Should create & maintain environment to achieve organization's objectives
	People of all levels are essence of an organization
	Desired results are achieved more efficiently when activities and resources are managed as process
	Effective decisions are based on the analysis of data and information
	Identifying, understanding and managing interrelated process as a system contributes to the organization's effectiveness & efficiency

- 3) Expectations of the new Standard

- encourage the application of systems that are separate from the organization's business process
- enable the development of a Quality system that is fully integrated into the quality operations of organization's business
- enable Continual improvements of the system for enhanced supplier satisfaction
- enable compliance to statutory & regulatory requirements

4) Which of the following is not an advantage of ISO 9001-2000

- a) More business oriented. Less procedure oriented
- b) Company wide involvement
- c) Mutual benefit to all interested parties
- d) focus on product
- e) Continual improvements
- f) less emphasis on documentation

5) There are four elements for the quality Management System (QMS) in ISO 9001-2000. One of them is Management responsibility, list the other three

- a. _____
- b. _____
- c. _____

6) Which of the following is not in the list of challenges of ISO 9001-2000

- a) Management Support
- b) Continual improvements
- c) Encouragement
- d) Communication
- e) Other employee Support

SPC

Which statement is more appropriate?

7)

- a) *Quality* is inversely proportional to six sigma
- b) *Quality* is inversely proportional to cost
- c) *Quality* is inversely proportional to schedule
- d) *Quality* is inversely proportional to variability

8)

- a) Statistical process control is a collection of tools that when used together can result in process variability and variance reduction
- b) Statistical process control is a collection of tools that when used together can result in process stability and variance reduction
- c) Statistical process control is a collection of tools that when used together can result in variance stability and process reduction
- d) Statistical process control is a collection of tools that when used together can result in process and variance stability

9) Which tool from the following tools is not one of the seven major tools

- 1) Histogram
- 2) Pareto Chart
- 4) Cause and Effect Diagram
- 5) Defect Concentration Diagram
- 6) Affinity diagram
- 7) Scatter Diagram

10) A process that is operating with only *chance causes of variation* present is said to be

- a) Out of control
-

- b) Variance control
- c) in statistical control
- d) chance causes of variation

11) A typical control chart has control limits set at values such that if the process is in control,

- a) nearly two sigma will lie within the upper control limit (UCL) and the lower control limit (LCL).
- b) nearly Half of the points will lie within the upper control limit (UCL) and the lower control limit (LCL).
- c) nearly all points will lie within the upper control limit (UCL) and the lower control limit (LCL).
- d) nearly six sigma will lie within the upper control limit (UCL) and the lower control limit (LCL).

12) The control chart only detects

- a) Chance causes
- b) Random causes
- c) Machine causes
- d) Assignable causes

13) When the process capability is less than 1, that mean

- a) The process is out of control
- b) The process is meeting exactly the specification requirements
- c) The process is not meeting the specification requirements
- d) The process is exceeding the specification requirements

14) The mean of six sigma is shifted by

- a) One half sigma
- b) One sigma
- c) One and a half sigma
- d) Three sigma

15) Explain the figure shown in the right . Also write the names of the coordinates (X and Y)

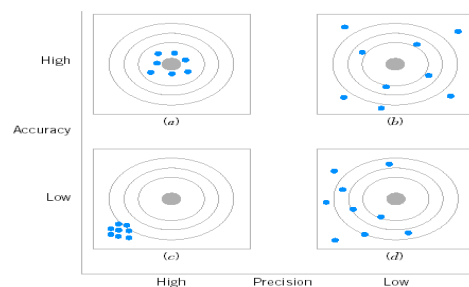


Figure 8-18 The concepts of accuracy and precision. (a) The gauge is accurate and precise. (b) The gauge is accurate but not precise. (c) The gauge is not accurate but it is precise. (d) The gauge is neither accurate nor precise.

16) The following measurements for a sample with dimension X are representative of a process know to be in statistical control:

42, 52, 54, 45, 53, 56, 70, 57, 49, 62;

17) Which of the following best approximates the upper and lower control limits of the process capability (Use generally accepted sigma-limits for the United States):

- a. 81 and 29
- b. 59 and 51
- c. 64 and 46
- d. 70 and 42

18) A process is checked by inspection of random samples of four shafts after a polishing operation, and \bar{X} and R charts are maintained. A person making a spot check picks out two shafts, measures them accurately, and plots the value of each on the \bar{X} chart. Both points fall just outside the control limits. He advises the department foreman to stop the process. This decision indicates that:

- a. The process level is out of control
- b. Both the level and dispersion are out of control
- c. The process level is out of control but not the dispersion
- d. The person is not using the chart correctly

19) The assumed probability distribution for the control chart for number of defects is the:

- a. Binomial distribution
- b. Poisson distribution
- c. Normal distribution
- d. Student's 't' distribution

20) A statistic is:

- a. The solution to a problem;
- b. A population value;
- c. A positive number between 0 and 1 inclusive;
- d. A sample value.

21) if the variance of a distribution of readings is 16, the standard deviation of the distribution is:

- a. 4
- b. 256
- c. 8
- d. Unknown unless more data are given

22). The grades of a student on six examinations were 84, 91, 72, 68, 87, and 78. Find the median of the grades:

- a. 84
 - b. 78
 - c. 80
 - d. 81
 - e. None of the above
-

23). Which one of the following would most closely describe machine process capability?

- a. The process variation
- b. The total variation over a shift
- c. The total variation of all cavities of a mold, cavities of a die cast machine or spindles automatic assembly machine
- d. The variation in a very short run of consecutively produced parts

Six Sigma

24) Select the correct statement

- a. A disciplined process using business requirements, data, and facts to improve business performance by consistently meeting customer expectations
- b. process using customer requirements, data, and facts to improve business performance by consistently meeting customer expectations
- c. A disciplined process using customer requirements, data, and facts to improve business performance by consistently meeting customer expectations
- d. process using customer requirements, data, and facts to improve financial performance by consistently meeting customer expectations

25) Select the incorrect statement

Six sigma is:

- a) Disciplined methodology
- b) Process centered
- c) Leadership involve throughout
- d) Focused on business development
- e) Changes how management operate

26) Select the incorrect statement

Less variation provides

- a) Greater productivity in the process
- b) Meeting the strategic objective of the company
- c) Products and services that perform better and last longer
- d) Happier customers

27) Complete the abbreviations for DMAIC

- D for _____
- M for _____
- A for _____
- I for _____
- C for Control

28) The six sigma plan should clearly define

- a) What is to be done?
 - b) Who will do it?
 - c) Who will receive it?
 - d) When t will be done?
-

- e) How much will it cost?
- f) How you will know when you are done?

29) Select the correct statement

- a) Six sigma projects are generally 3-6 months
- b) Six sigma projects are generally 3-9 months
- c) Six sigma projects are generally 4-6 months
- d) Six sigma projects are generally 3-12 months
- e) Six sigma projects are generally 6-18 months

30) The order of the Team development model

- i. Storming
- ii. Norming
- iii. Forming
- iv. Performing

- a) .i, ii, iii, iv
- b) .iii; ii ; i; iv
- c) .iii; i; ii; iv
- d) .i; iii; iv; ii

31) Select the incorrect statement

Value-added step

- a) It physically changes the product/the information as regard to content.
- b) It saves money and time.
- c) Customers are willing to pay for it
- d) It's done right the first time

32) Select the incorrect statement

VOC data helps an organization

- a) Decide what products and service to offer
- b) Identify normal features and specification for those products and services
- c) Decide where to focus improvement
- d) Get a baseline measure of customer satisfaction to measure improvement against
- e) Identify key drivers of customer satisfaction

33) Which statement is correct?

- a) The amount of variation in a process tells the level of customer satisfaction
- b) The amount of variation in a process tells us what that process is manageable
- c) The amount of variation in a process tells us what that process is actually capable of achieving
- d) The amount of variation in a process tells us what that process has assignable cases

34) Which is the correct statement?

- a) Sigma (or σ) is a statistical concept that represents how much agreement there is in a process relative to customer specification
 - b) Sigma (or σ) is a statistical concept that represents how much variation there is in a process relative to production
 - c) Sigma (or σ) is a statistical concept that represents how much variation there is in a document relative to customer specification
-

38) Force-field analysis steps includes:-

- a. define the current status and goal
- b. Identify and prioritize the restraining forces.
- c. Brainstorm the process
- d. Identify the driving forces for each restraining force
- e. Identify critical issues
- f. Identify owners and the level of management best suited to correct the problem
- g. Use CDPM improvement methodology

B) all of the above except (c)

A) all of the above except (g)

D) all of the above except (C and g)

C) all of the above except (c and e)

39) Your company has been using Microsoft 2000 software as scheduling software for company's projects. However, after a seminar about Primavera (P3) scheduling software that the CEO attended, The CEO decided to use the software for company projects. In the process of convincing people to convert to the new software, the CEO ask you to analyze the forces (Driving forces, and restraining forces).

Present your finding using force-field analysis

40) To be successful implementing TQM, an organization must concentrate on the following key elements:

- | | |
|--------------------------|-------------------|
| 1) Ethics | 6) Integrity |
| 2) Customer satisfaction | 7) honesty |
| 3) Trust | 8) Training |
| 4) Teamwork | 9) Leadership |
| 5) Recognition | 10) Communication |

- a) all of the above b) 1,2,6,7,5,3,8,10
 c) 1,2,3,4,5,6,7,8 d) 1,3,4,5,6,8,9,10

41) What is another name of cause and affect diagram?

- | | |
|-----------------------|------------------|
| 1. An Ishikawa chart | 4) Deming Chart |
| 2. Bone diagram | 5) Affect chart |
| 3. A Fishbone diagram | 6) arrow diagram |

- a) all of the above b) 1, 3, and 6
 c) 1 and 3 d) all of the above except 2 and 5

42) The goals of Brainstorming are

1. Generate an extensive number of ideas
2. Involve everyone in the process
3. Generate quality idea
4. Customer satisfaction
5. Promote a common understanding

- a) All of the above b) All of the above except 3
 c) All of the above accept 3 and 4 d) All of the above except 1

43) Control chart has the following three basic components:

1. A centerline, usually the mathematical average of all the samples plotted.
2. Upper and lower statistical control limits that define the constraints of common cause variations.
3. Central line
4. Performance data plotted over time.
5. specification lines

- a) All of the above b) All of the above except 5
 c) All of the above except 4 d) All of the above except 3 and 5

45) Number of functions that should be listed on a processes map is

- a) 2-6 b) 3-6
c) 4-8 d) 6-10

46) Select the incorrect statement

The "Three Actual" Rule? Is:

- a) It a guideline to make sure that decisions are based on customer requirements
b) **It a guideline to make sure that decisions are based on facts**
c) It a guideline to make sure that decisions are based on quality tools
d) It a guideline to make sure that decisions are based on company strategy

47) In weighted voting tool, how many votes are recommended to be given to each member if there are 10 members and 10 options?

- a) As a rule of thumb, the no. of votes each member gets should be 3 times the no. of options, therefore; No. of votes= $10 \times 3 = 30$ Votes
b) As a rule of thumb, the no. of votes each member gets should be 2 times the no. of options, therefore; No. of votes= $10 \times 2 = 20$ Votes
c) As a rule of thumb, the no. of votes each member gets should be 1 times the no. of options, therefore; No. of votes= $10 \times 1 = 10$ Votes
d) **As a rule of thumb, the no. of votes each member gets should be 1.5 times the no. of options, therefore; No. of votes= $10 \times 1.5 = 15$ Votes**

48) Why cannot we apply process improvement to those processes which are out of control?

- a) Because they need to be brought to statistically control region between USL and LSL, then apply process improvement since they are now repeatable and predictable.
b) **Because they need to be brought to statistically control region between UCL and LCL, then apply process improvement since they are now repeatable and predictable.**
c) Because they need to be brought to variance control region between UCL and LCL, then apply process improvement since they are now repeatable and predictable.
d) Because they need to be brought to capability control region between UCL and LCL, then apply process improvement since they are now repeatable and predictable.

PMI

49) Select the correct statement

- a) Project quality management includes the process required to ensure that the project satisfies the needs of supplier
b) Project quality management includes the process required to ensure that the project satisfies the needs for customer
c) **Project quality management includes the process required to ensure that the project satisfies the needs for which it is undertaken**
d) Project quality management includes the process required to ensure that the inputs satisfies the needs for which it is undertaken
-

50) Select the correct statement

Quality Assurance

- a) is identifying which quality standards are relevant to the project and determining how to satisfy them
- b) is evaluating the overall project performance on a regular basis to provide a confidence that the project will satisfy the relevant quality standards.
- c) is the monitoring of specific project results to determine if they comply with the relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance.
- d) is the assurance of specific project results to determine if they comply with the relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance

51) Select the correct statement

Quality planning

- a) is evaluating the overall project performance on a regular basis to provide a confidence that the project will satisfy the relevant quality standards.
- b) is the monitoring of specific project results to determine if they comply with the relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance.
- c) is identifying which quality standards are relevant to the project and determining how to satisfy them
- d) is the planning of specific project results to determine if they comply with the relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance

52) Select the correct statement

- e) Project quality management must address both the specification of the project and the product of the project.
- f) Project quality management must address both the management of the project and the customer of the project.
- g) Project quality management must address both the strategy of the project and the product of the project.
- h) Project quality management must address both the management of the project and the product of the project.

53) Select the incorrect statement

Quality management should complement modern project management as they both recognize the importance of

- a) Customer satisfaction
 - b) Inspection over Prevention
 - c) Management responsibility
 - d) Processes within phases
-

54) Benchmarking involves comparing actual or planned project practices to those of other projects to generate ideas to:

- a) Provide a standard for measurement of performance
- b) Provide a standard for quality measurement
- c) Generate ideas for improvement
- d) Generate ideas for customer satisfaction
- e) Reduce the cost of inspection

- a) all of the above
- b) b,c, and d
- c) a and c
- d) a and d

55) Select the correct statement

- a) The quality management plan should describe how a project management team will implement customer requirements
- b) The quality management plan should describe how a project management team will project requirements
- c) The quality management plan should describe how a project management team will implement quality control
- d) The quality management plan should describe how a project management team will implement its quality policy

Chapter 12

56) To achieve total customer satisfaction, the organization must know

- i. itself,
- ii. its product,
- iii. its competition
- iv. its environment
- v. the customer
- vi. its vision

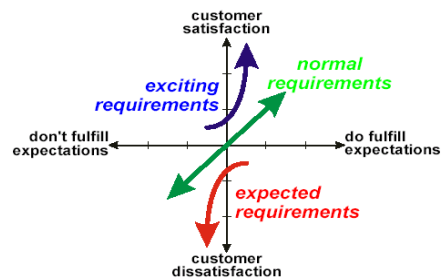
- a) i, iii, ii, v
- b) all of the above
- c) .vi, v, iii, i
- d) all of the above except vi

57) Select the incorrect statement

In order to know your competitor you have to:

- a) Know the competition to establish targets for its products and services and internal improvement efforts.
 - b) Know your competitive edges.
 - c) Know the relationship to ensures continuous customer satisfaction
 - d) The organization should benchmark itself against its top competitor and the best in the field.
-

58-Explain the graph shown in the right



59) Select the correct statement

- Metrics are a measure made over time, which communicates normal information about the quality of a process, activity, or resource.
- Metrics are a measure made over place, which communicates vital information about the quality of a process, activity, or resource.
- Metrics are a prediction made over time, which communicates vital information about the quality of a process, activity, or resource.
- Metrics are a measure made over time, which communicates vital information about the quality of a process, activity, or resource.

60) Metrics considerations include:

- 1) Meaningful to the customer.
- 2) Establish appropriate actions.
- 3) Difficult to collect
- 4) Tell how well the process is performing.
- 5) Repeatable over a period of time.
- 6) Indicate a trend.
- 7) Clear operational definitions.

a) All of the above

b) All of the above except 6

c) All of the above except 3

d) All of the above except 4

Project quality management

61) Project Quality Management is the combination of :

1. Quality assurance
2. Quality control
3. Project management
4. Quality planning
5. Quality management

- a) All of the above except 4 and 5 c) All of the above except 3
 b) Only 1, 2 and 4 d) Only 3 and 5

62) Major Project Quality Pillars:

- 1- Customer satisfaction
- 2- Process Improvement
- 3- Supply chain management
- 4- Fact-Based Management
- 5- Statistical quality control
- 6- Empowered Performance

- a) All of the above except 6 c) All of the above except 3 and 5
 b) All of the above except 3 and 6 d) All of the above except 3

63) Customer quality expectations in service quality include:

1. *Time*
2. *completeness*
3. *Courtesy*
4. *Conformance*
5. *consistency*
6. *Accessibility and Convenience*
7. *Responsiveness*
8. *Durability*

- a) All of the above except 4 and 8 c) All of the above except 3 and 4
 b) All of the above except 4 and 2 d) All of the above except 3 and 8

64) Appraisal cost is:

1. Planned cost to avoid errors at any stage.
2. Cost to verify, check and evaluate the product or service
3. Internal failure: corrective actions and rework cost.
4. External failure: warranty claims and customer complaint cost.

- a) All of the above except 3 and 4 c) All of the above except 1 and 4
 b) All of the above except 1, 3 and 4 d) Only 1

65) Select the correct statement

- a) One of the most important skills in fact-based management is the knowledge of *customer satisfaction*.
 - b) One of the most important skills in fact-based management is the knowledge of *statistical variation in evaluating processes*.
 - c) One of the most important skills in fact-based management is the knowledge of *management by objective*.
 - d) One of the most important skills in fact-based management is the knowledge of *total quality management*
-

- 66) Select the correct statement
- a) Internal or external project quality audits focus on identifying whether undocumented processes are being followed and are effective, and reporting unacceptable variances to project managers for correction.
 - b) Internal or external project quality audits focus on identifying whether documented processes are being managed and are effective and reporting unacceptable variances to project managers for correction.
 - c) Internal or external project quality audits focus on identifying whether documented processes are being followed and are effective, and reporting acceptable variances to project managers for correction.
 - d) Internal or external project quality audits focus on identifying whether documented processes are being followed and are effective, and reporting unacceptable variances to project managers for correction.
- 67) Quality audits go beyond routine procedures to address strategic questions such as:
1. To what extent are current quality policies and goals aligned with organizational mission priorities?
 2. To what extent does the current level of quality provide product/service satisfaction to customers?
 3. To what extent is the organization making progress in implementing TQM
 4. To what extent is the organization making progress in reducing and / or eliminating the costs of poor quality?
- a) All of the above except All of the above except
 - b) All of the above except All of the above except
-