CBCS SCHEME

21CV584

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Question Paper Version : A

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Quality Control and Quality Assurance

Time: 1 hr.] [Max. Marks: 50

INSTRUCTIONS TO THE CANDIDATES

1. Answer all the **fifty** questions, each question carries one mark.
2. Use only **Black ball point pen** for writing / darkening the circles.
3. **For each question, after selecting your answer, darken the appropriate circle corresponding to the same question number on the OMR sheet.**
4. Darkening two circles for the same question makes the answer invalid.
5. **Damaging/overwriting, using whiteners** on the **OMR** sheets are strictly prohibited.

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1. Definition of quality is _____
   a) It is confirmation of specification
   b) It is about meeting the needs of the customer
   c) It is reduction in variability
   d) All of these

2. Which among the following is not a contribution made by Crosby?
   a) Four absolutes of quality
   b) Fourteen steps for quality improvement
   c) Quality vaccine
   d) Quality Trilogy

3. According to Crosby's first absolute of Quality, quality is _____ to requirements, not goodness.
   a) Conformance
   b) Negligence
   c) Carelessness
   d) Betrayal

4. The concept of "do it right first time" is given by _____
   a) Philip B Crosby
   b) W. Edwards Deming
   c) Joseph Juran
   d) Kaoru Ishikawa

5. Which of the following is not a contribution made by Deming?
   a) Deming's 14 points
   b) System of profound knowledge
   c) Deming cycle
   d) Taguchi Loss function

6. Which of the following is NOT a dimension of quality according to Juran?
   a) Performance
   b) Reliability
   c) Conformance
   d) Quality

7. What is the first phase of the PDCA cycle?
   a) Check
   b) Do
   c) Plan
   d) Act

8. What is the cost associated with preventing defects and errors in a product or process called?
   a) Appraisal cost
   b) Internal failure cost
   c) External failure cost
   d) Prevention cost

9. What is the cost associated with reworking or scrapping defective products before they reach the customer?
   a) Prevention cost
   b) Appraisal cost
   c) Internal failure cost
   d) External failure cost

10. What role does poor material selection play in contributing to poor quality in construction?
   a) Enhancing structural integrity
   b) Reducing project costs
   c) Increasing the risk of defects and failures
   d) Improving project aesthetics

11. Who is often considered the pioneer of Total Quality Management?
   a) Philip Crosby
   b) W. Edwards Deming
   c) Joseph Juran
   d) Kaoru Ishikawa

12. In TQM, what is the role of top management?
   a) Ignoring quality initiatives
   b) Solely focusing on short term goals
   c) Establishing a vision, mission and values for quality
   d) Minimizing employee involvement

13. What is Quality Function Deployment (QFD) in construction primarily used for?
   a) Managing project budgets
   b) Enhancing communication among project teams
   c) Translating customer requirements into design and construction features
   d) Controlling construction schedules

14. Which type of benchmarking involves comparing performance with direct competitors or similar organizations?
   a) Internal benchmarking
   b) External benchmarking
   c) Competitive benchmarking
   d) Process benchmarking

15. What is a potential challenge or limitation of benchmarking in quality management?
   a) It leads to complacency and a lack of innovation
   b) It is time consuming and expensive
   c) It encourages setting unrealistic goals
   d) It minimizes the importance of customer feedback

16. What does the acronym ISO stand for in the context of quality standards?
   a) International service organization
   b) Integrated standards organization
   c) International organization for standardization
   d) Industry standards office

17. In ISO 9000 terminology, what is the definition of "quality management system"?
    a) A set of quality control tools
    b) The organizational structure, processes and resources for implementing quality management
    c) A statistical measure of process variation
    d) The total number of defects in a product

18. What is the core standard in the ISO 14000 series that specifies the requirements for an Environmental Management System (EMS)?
    a) ISO 14001 b) ISO 14010
    c) ISO 14020 d) ISO 14004

19. In ISO 14001, what is the significance of the "Plan-Do-Check-Act" cycle?
    a) A framework for environmental audits
    b) A model for continuous improvement in environmental performance
    c) Guidelines for product labeling
    d) Procedures for emergency response

20. What is the purpose of ISO 14040 in the ISO 14000 series?
    a) Guidelines for environmental labeling
    b) Principles and framework for life cycle assessment
    c) Requirements for an environmental management system
    d) Guidelines for environmental auditing

21. Statistical Quality Control (SQC) is a technique of
    a) Process control b) Product control
    c) Both a and b d) None of these

22. Product control is achieved through
    a) Control charts b) Acceptance sampling plans
    c) Both a and b d) None of these

23. The variation due to assignable causes
    a) Can be removed b) Cannot be removed
    c) Can be removed sometimes d) Can be removed most of the times

24. What is the primary purpose of sampling in Statistical Quality Control (SQC)?
    a) To reduce the cost of data collection
    b) To ensure 100% inspection of every item
    c) To make inferences about a population based on a subset of data
    d) To eliminate variation in the production process

25. Which sampling method involves dividing the population into cluster and randomly selecting entire clusters for analysis?
    a) Simple random sampling b) Stratified sampling
    c) Systematic sampling d) Cluster sampling

26. Which of the following sampling methods involve selecting every K^{th} individual from a list after a random start?
    a) Simple random sampling b) Systematic sampling
    c) Cluster sampling d) Stratified sampling

27. What is the primary purpose of sampling concrete according to IS 456:2000?
    a) To save costs in construction
    b) To ensure uniformity and quality of concrete
    c) To speed up the construction process
    d) To comply with international standards

28. According to IS 456:2000, what is the recommended frequency of sampling for concrete during construction
    a) Every hour
    b) Once a day
    c) At least once every 50 cubic meters or once per day of concrete production, whichever is less frequent
    d) Only when there is a suspended issue with the concrete

29. Which test method is commonly used for determining the compressive strength of concrete, as per IS 456:2000?
    a) Tensile strength test
    b) Flexural strength test
    c) Splitting tensile strength test
    d) Compression test

30. What is the minimum number of specimens recommended for testing the compressive strength of concrete at each sampling point, according to IS 456:2000?
    a) 1 b) 2 c) 3 d) 4

31. Which of the following is a common error leading to honeycombing in concrete?
    a) Over vibration b) Insufficient curing
    c) Excessive curing d) High water-cement ratio

32. Which condition can lead to segregation in concrete during placement?
    a) Adequate vibration b) Proper mix design
    c) Excessive water content d) Low ambient temperature

33. What is the primary consequence of using a mix with a low water-cement ratio in concrete construction?
    a) Increased durability b) Improved workability
    c) Higher compressive strength d) Greater resistance to cracking

34. What is the typical frequency for testing the compressive strength of concrete cylinders in a construction project?
    a) Once a week b) Once a month
    c) Every 3 days d) None of these

35. Which construction material testing method is commonly used to assess workability of fresh concrete on site?
    a) Slump test b) Sieve analysis
    c) Core test d) Liquid limit test

36. In IS 456, what is the recommended maximum permissible water-cement ratio for concrete mixes exposed to severe environmental conditions?
    a) 0.4 b) 0.5 c) 0.55 d) 0.60

37. As per IS 456, what is the acceptable range for the initial setting time of ordinary Portland cement in minutes?
a) 30 to 60 minutes
b) 45 to 90 minutes
c) 60 to 120 minutes
d) 90 to 180 minutes

38. According to IS 800, what is the minimum specified tensile strength of Fe 415 steel?
a) 250 MPa
b) 415 MPa
c) 500 MPa
d) 600 MPa

39. As per IS 800, what is the characteristic strength of steel used in design calculations?
a) Yield strength
b) Ultimate tensile strength
c) 0.2% proof stress
d) Nominal strength

40. What does the efflorescence test on bricks determine?
a) Compressive strength
b) Water absorption
c) Presence of soluble salts
d) Thermal conductivity

41. During which stage of construction are site surveys, soil testing and feasibility studies typically conducted?
a) Design stage
b) Planning stage
c) Execution stage
d) Completion stage

42. What is the primary focus of the planning stage in construction?
a) Detailed design
b) Resource allocation
c) Actual construction work
d) Quality control

43. During which stage does the actual physical construction of the project take place?
a) Design stage
b) Planning stage
c) Execution stage
d) Maintenance stage

44. What is the primary purpose of the commissioning stage in construction?
a) Handover of the project to the client
b) Initial testing and system startup
c) Detailed design and analysis
d) Project planning and scheduling

45. During which stage is the punch list typically created to identify and rectify any remaining issues before project completion?
a) Design stage
b) Execution stage
c) Commissioning stage
d) Handover stage

46. During the design stage, which professional is primarily responsible for creating detailed construction drawings and specifications?
a) Architect
b) Structural Engineer
c) Project manager
d) Surveyor

47. Which non-destructive testing method is commonly used for assessing the compressive strength of concrete on-site?
a) Rebound hammer
b) UPV test
c) Core test
d) Slump test

48. According to IS 13311 (Part-2), what is the recommended range of rebound index for very high strength concrete?
a) 15 – 25
b) 25 – 35
c) 35 – 45
d) 45 – 55

49. According to IS 456, what is the recommended rebound hammer number for accepting concrete quality in structural elements?
    a) 15
    b) 20
    c) 25
    d) 30

50. According to IS 13311 (Part-1), what is the recommended UPV value for accepting structural concrete quality?
    a) ≥ 1500 m/s
    b) ≥ 2000 m/s
    c) ≥ 2500 m/s
    d) ≥ 3000 m/s

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