

M. Sc. In Construction Management
Rajarshi Janak University, Janakpurdham, Nepal

Program: M.Sc. in Construction Management

Time: 2 Hours

Full Marks: 100

Pass Marks: 40

Model Question

General Instructions to Candidates:

1. All questions are compulsory.
2. Each question carries **1 (one) mark**.
3. Candidates must use a black ballpoint pen to darken the appropriate circle on the OMR sheet.
4. Mobile phones, programmable calculators, and other electronic gadgets are strictly prohibited in the examination hall.

1. **Which part of a formal report contains the list of all sources cited in the text?**

- A) Index
- B) Glossary
- C) Bibliography
- D) Preface

2. **Choose the sentence with the correct punctuation:**

- A) The engineer said "The bridge is safe."
- B) The engineer said, "The bridge is safe."
- C) The engineer said, the bridge is safe.
- D) The engineer said: "the bridge is safe"

3. **Identify the synonym for "Mitigate":**

- A) Aggravate
- B) Alleviate
- C) Ignore
- D) Complete

4. **"By the time the consultant arrives, we _____ the site investigation."**

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- A) Will finish
 - B) Will have finished
 - C) Are finishing
 - D) Finished
5. **In a professional email, "CC" stands for:**
- A) Correct Copy
 - B) Carbon Copy
 - C) Contact Code
 - D) Central Copy
6. **What is the antonym of "Precise"?**
- A) Accurate
 - B) Vague
 - C) Minute
 - D) Concrete
7. **"He is the engineer _____ designed the Koshi bridge."**
- A) Which
 - B) Whom
 - C) Whose
 - D) Who
8. **Select the passive form of: "The contractor is preparing the bid."**
- A) The bid was prepared by the contractor.
 - B) The bid is being prepared by the contractor.
 - C) The bid has been prepared by the contractor.
 - D) The bid is prepared by the contractor.
9. **Which of the following is an example of "Internal Communication" in an organization?**
- A) Press Release
 - B) Memo to staff
 - C) Letter to a supplier
 - D) Advertisement

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10. **Choose the correct spelling:**

- A) Maintenance
- B) Maintainance
- C) Maintenence
- D) Maintanance

11. **Find the next number in the series: 3, 6, 11, 18, 27, ____**

- A) 36
- B) 38
- C) 40
- D) 42

12. **In a certain code, 'CEMENT' is written as 'ECNGPV'. How is 'BRICK' written?**

- A) DTKEM
- B) DUKE L
- C) CTKEM
- D) DTLFM

13. **Pointing to a photograph, a man says, "The person in the photo is the son of my father's only son." Who is the person in the photo?**

- A) Brother
- B) Son
- C) Nephew
- D) Father

14. **Find the value of x if $3^{x-1} = 27$:**

- A) 3
- B) 4
- C) 5
- D) 2

15. **The average height of 5 engineers is 170 cm. If a new engineer of height 182 cm joins, what is the new average?**

- A) 172 cm
- B) 174 cm

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C) 171 cm

D) 176 cm

16. **What is the derivative of $\cos(3x)$?**

A) $\sin(3x)$

B) $-3 \sin(3x)$

C) $3 \cos(x)$

D) $-\sin(3x)$

17. **If the area of a square is 225 sq. cm, what is its perimeter?**

A) 45 cm

B) 60 cm

C) 30 cm

D) 75 cm

18. **A sum of money doubles itself at compound interest in 15 years. In how many years will it become eight times?**

A) 30 years

B) 45 years

C) 50 years

D) 60 years

19. **Evaluate the integral:** $\int_0^1 4x^3 dx$

A) 1

B) 2

C) 4

D) 0.5

20. **In a class of 50 students, 30 like Math and 25 like English. If 10 like both, how many like neither?**

A) 5

B) 10

C) 15

D) 0

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21. The probability of rolling a sum of 7 with two dice is:

- A) 1/6
- B) 1/12
- C) 1/36
- D) 5/36

22. If $A:B = 2:3$ and $B:C = 4:5$, then $A:C$ is:

- A) 8:15
- B) 2:5
- C) 6:15
- D) 10:12

23. Which of the following is a prime number?

- A) 91
- B) 87
- C) 97
- D) 81

24. A train 200m long passes a pole in 10 seconds. What is its speed in km/hr?

- A) 20 km/hr
- B) 72 km/hr
- C) 60 km/hr
- D) 50 km/hr

25. If the variance of a data set is 16, what is the standard deviation?

- A) 256
- B) 8
- C) 4
- D) 32

26. Which body is responsible for the accreditation of technical institutions in Nepal under the CTEVT framework?

- A) Nepal Engineering Council
- B) National Skill Testing Board
- C) Accreditation and Evaluation Division

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D) Ministry of Education

27. The "Duty of Care" in engineering ethics implies:

A) Caring only for the client's budget

B) Avoiding any action that could reasonably be foreseen to cause harm

C) Ensuring the contractor gets paid on time

|D) Working only during daylight hours

28. In Nepal, a "Special Class" contractor is allowed to bid for projects of:

A) Any value

B) Up to 5 Crore only

C) Up to 20 Crore only

D) Only international projects

29. What is the standard "Defect Liability Period" (DLP) for small works in Nepal?

A) 6 months

B) 1 year

C) 5 years

D) 3 years

30. According to the Nepal Engineering Council Act, using the title "Engineer" without registration is:

A) Allowed if you have a degree

B) A punishable offense

C) Allowed for private projects

D) Subject to the client's approval

31. "Liquidated Damages" (LD) are typically capped at what percentage of the contract price in Nepal?

A) 5%

B) 10%

C) 13%

D) 20%

32. The "Right to Strike" in the Labour Act of Nepal is:

A) Absolute and unconditional

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- B) Prohibited in all engineering sectors
- C) Permitted following specific legal procedures and notices
- D) Only for government employees

33. "Provisional Sum" in a Bill of Quantities (BoQ) is used for:

- A) Contractor's profit
- B) Work that cannot be fully defined at the time of tendering
- C) Paying VAT
- D) Buying office furniture

34. The "Mobilization Advance" is generally provided against:

- A) A personal guarantee
- B) An unconditional Bank Guarantee
- C) A verbal promise
- D) The contractor's machinery

35. Under the Public Procurement Act, "Limited Tendering" can be used when:

- A) The project is very expensive
- B) There are only a few suppliers capable of doing the work
- C) The engineer is in a hurry
- D) The contractor is a friend of the client

36. An engineer should "Whistleblow" primarily when:

- A) They want a promotion
- B) Public safety is being compromised by illegal acts
- C) The contractor is slow
- D) The office is too noisy

37. In Nepal, the "Fiscal Year" typically starts in which month?

- A) Baisakh
- B) Shrawan
- C) Magh
- D) Ashoj

38. "Bid Security" is forfeited if the bidder:

- A) Attends the pre-bid meeting

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- B) Withdraws their bid during the validity period
- C) Asks for more time
- D) Fails the technical evaluation

39. The "Client" in a construction contract is technically referred to as the:

- A) Contractor
- B) Consultant
- C) Employer
- D) Arbitrator

40. "Force Majeure" events typically include:

- A) Labor strikes specific to the contractor's firm
- B) Natural disasters like earthquakes and floods
- C) A rise in the price of fuel
- D) Poor management by the site engineer

41. The "Taking Over Certificate" (TOC) signifies:

- A) The start of construction
- B) That the work is substantially complete and the employer takes possession
- C) The payment of the final bill
- D) The termination of the contract

42. According to the NEC Code of Ethics, an engineer should provide professional opinions:

- A) Based on personal feelings
- B) Only when paid extra
- C) Based on objective and truthful evaluation
- D) To please the local politicians

43. "Retention Money" is usually released:

- A) After the bid is won
- B) Half after TOC and half after the DLP ends
- C) Every month with the running bill
- D) Only if the project is finished early

44. The "Critical Path" in a project network helps to determine:

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- A) The total cost
- B) The shortest time required to complete the project
- C) The number of laborers needed
- D) The quantity of cement

45. Under the Labour Act, 2074, "Sick Leave" is provided for:

- A) 6 days a year
- B) 12 days a year
- C) 15 days a year
- D) 30 days a year

46. "Adjudication" is a dispute resolution method that is:

- A) Slower than court
- B) Faster than arbitration and usually binding until the end of the project
- C) Only for domestic disputes
- D) Done by the police

47. A "Lump Sum Contract" shifts most of the risk of quantity variation to:

- A) The Employer
- B) The Contractor
- C) The Consultant
- D) The Government

48. "Technical Specifications" describe:

- A) The names of the laborers
- B) The quality and standards of materials and workmanship
- C) The total cost of the project
- D) The date of the inauguration

49. In Nepal, "TDS" stands for:

- A) Total Design System
- B) Tax Deducted at Source
- C) Technical Data Sheet
- D) Time Duration Schedule

50. The "Public Procurement Act" applies to:

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- A) Private house construction
- B) Procurement using public funds (Government money)
- C) Buying groceries for personal use
- D) Foreign embassies only

51. "Professional Indemnity Insurance" is intended to cover:

- A) The contractor's tools
- B) Liability arising from professional negligence or errors in design
- C) Workers' health insurance
- D) Fire at the site office

52. The "Variation Limit" beyond which a new procurement process might be required is typically:

- A) 5%
- B) 15% to 25% (depending on specific regulations)
- C) 50%
- D) 100%

53. "Ethics" in engineering can be best described as:

- A) Following the law only to avoid jail
- B) A set of moral principles that govern professional conduct
- C) Doing whatever the boss says
- D) Making the most profit possible

54. Who chairs the "District Rate Fixation Committee" in Nepal?

- A) The District Judge
- B) The Chief District Officer (CDO)
- C) The Mayor
- D) The Head of the District Technical Office

55. A "Non-Responsive Bid" is one that:

- A) Is too cheap
- B) Fails to meet the critical requirements of the tender documents
- C) Is submitted by a foreign firm
- D) Is printed on colored paper

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56. The "Rate of Return" (RoR) is the interest rate at which:

- A) The total investment becomes zero.
- B) The present worth of benefits equals the present worth of costs.
- C) The salvage value is maximized.
- D) The project is handed over to the client

57. Which of the following is considered a "Fixed Cost" in a construction company?

- E) Cost of diesel for site machinery.
- F) Monthly office rent.
- G) Wages for daily-rated labor.
- H) Cost of cement bags.

58. In the formula $P = F / (1 + i)^n$, the term $1 / (1 + i)^n$ is known as:

- I) Capital Recovery Factor
- J) Single Payment Compound Amount Factor
- K) Single Payment Present Worth Factor
- L) Sinking Fund Factor

59. "Break-even Analysis" is used to find the level of activity where:

- 1. Profit is maximum.
- 2. Total Revenue equals Total Cost.
- 3. Variable costs are eliminated.
- 4. The project is 50% complete.

60. If the nominal interest rate is 12% per year compounded monthly, the number of compounding periods (n) in 2 years is:

- 1. 2
- 2. 12
- 3. 24
- 4. 48

61. Which economic indicator is most sensitive to the "Discount Rate"?

- 1. Payback Period
- 2. Net Present Value (NPV)
- 3. Sunk Cost
- 4. Book Value

62. "Book Value" of an asset is defined as:

- 1. Market value of the asset.
- 2. Initial cost minus accumulated depreciation.
- 3. The price mentioned in the invoice.
- 4. The cost of operating the asset for one year.

63. In a "Benefit-Cost Analysis," which of the following is treated as a "Disbenefit"?

- 1. Maintenance costs of a new road.
- 2. Construction costs of a bridge.
- 3. Loss of agricultural land due to a new dam
- 4. Reduced travel time for passengers.

64. The "Sinking Fund Factor" is used to calculate:

- 1. The current value of a future sum.

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2. The uniform series of payments required to accumulate a future sum.
3. The interest on a housing loan.
4. The scrap value of a vehicle.

65. When comparing two mutually exclusive projects with different lifespans, the best method to use is:

1. Net Present Value (NPV)
2. Internal Rate of Return (IRR)
3. Equivalent Annual Cost (EAC) or Annual Worth (AW)
4. Simple Payback Period

66. An "Annuity" refers to:

1. A one-time lump sum payment.
2. A series of equal payments made at equal intervals.
3. The profit made at the end of a project.
4. The tax paid to the government.

67. If a project has an NPV of -Rs. 50,000, it should be:

1. Accepted
2. Rejected
3. Investigated further
4. Delayed

68. "MARR" stands for:

1. Maximum Annual Rate of Return
2. Minimum Attractive Rate of Return
3. Monthly Average Rate of Return
4. Manual of Administrative Rules and Regulations

69. In "Straight Line Depreciation," the annual depreciation charge is:

1. Increasing every year.
2. Decreasing every year.
3. Constant every year.
4. Based on the units produced.

70. If the "Profitability Index" (PI) of a project is 1.2, it means:

1. The project is losing 20% money.
2. For every Re. 1 invested, the project returns Re. 1.20 in present value.
3. The project will take 12 years to complete.
4. The interest rate is 1.2%.

71. Which of the following is a "Floating Point" data type?

1. 105
2. "Hello World"
3. 35.67
4. True/False

72. In a flowchart, a rectangle represents:

1. Input/Output operation
2. Processing or assignment
3. Decision making

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4. Terminal (Start/Stop)

73. What is the output of a logical "AND" operation if one input is True and the other is False?

1. True
2. False
3. Null
4. 1

74. "Python" is an example of an:

1. Compiled Language
2. Interpreted Language
3. Assembly Language
4. Operating System

75. A "Bug" in a computer program refers to:

1. A hardware virus.
2. An error in the code.
3. A slow internet connection.
4. A type of storage device.

76. In programming, "Recursion" is a process in which:

1. A function calls another function.
2. A function calls itself.
3. The program crashes.
4. The computer restarts.

77. Which of the following is a "Cloud Storage" service often used for project document sharing?

1. RAM
2. Google Drive
3. CPU
4. BIOS

78. "Big Data" in construction management can be used for:

1. Typing letters.
2. Predictive maintenance and risk analysis.
3. Drawing manual sketches.
4. Printing site photos.

79. The binary equivalent of the decimal number "5" is:

1. 100
2. 101
3. 110
4. 111

80. "IoT" (Internet of Things) in construction can be used to:

1. Track the real-time location of machinery.
2. Write a project report.
3. Calculate the IRR.
4. Hire new staff.

81. In the "Project Initiation" phase, the primary document produced is the:

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1. Project Schedule
2. Project Charter
3. WBS
4. Final Bill

82. "Free Float" is the amount of time an activity can be delayed without affecting:

1. The project completion date.
2. The early start of its successor activity.
3. The critical path.
4. The total budget.

83. In a CPM network, the "Forward Pass" is used to determine:

1. Latest Finish times.
2. Earliest Start and Finish times.
3. Total Float.
4. Critical activities only.

84. The "Standard Deviation" of a project duration in PERT is calculated using:

1. $(b - a) / 6$
2. $(b + a) / 6$
3. $(b - a) / 2$
4. $(b - a)^2$

85. In Earned Value Analysis, "Planned Value" (PV) is also known as:

1. BCWP (Budgeted Cost of Work Performed)
2. BCWS (Budgeted Cost of Work Scheduled)
3. ACWP (Actual Cost of Work Performed)
4. BAC (Budget at Completion)

86. If CV = -Rs. 10,000 and SV = +Rs. 5,000, the project is:

1. Over budget and ahead of schedule.
2. Under budget and behind schedule.
3. Over budget and behind schedule.
4. On budget and on schedule.

87. "Quality Assurance" (QA) is primarily focused on:

1. Inspecting the final product.
2. Preventing defects through process improvement.
3. Testing the strength of concrete cubes.
4. Paying the contractor on time.

88. In Nepal, "E-GP" refers to:

1. Engineering Grade Point
2. Electronic Government Procurement
3. Electric General Power
4. Environment Global Policy

89. The "Defect Liability Period" (DLP) in Nepal usually lasts for:

1. 6 months
2. 1 year
3. 5 years
4. 10 years

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90.A "Bar Chart" (Gantt Chart) is often criticized for its inability to show:

1. Activity durations.
2. Progress over time.
3. Interdependencies between activities.
4. Project start date.

91. "Crashing" always results in:

1. Increase in direct costs.
2. Decrease in direct costs.
3. Increase in indirect costs.
4. No change in project duration.

92. "Resource Leveling" is used when:

1. Resources are unlimited.
2. Resources are limited and we want to avoid peaks and valleys in resource usage.
3. The project duration must be reduced at any cost.
4. The project budget is zero.

93. In a "Unit Price Contract":

1. The total price is fixed regardless of quantities.
2. Payment is based on the actual quantity of work performed at agreed-upon rates.
3. The contractor is paid for their time only.
4. The client takes all the risk.

94. "Force Majeure" in a contract is for:

1. Contractor's negligence.
2. Unforeseeable "Acts of God" like earthquakes or war.
3. Small changes in design.
4. Delayed payments by the client.

95.A "Lump Sum" contract is most suitable when:

1. The scope of work is clearly defined and unlikely to change.
2. The project is an emergency repair.
3. The quantity of excavation is unknown.
4. The design is only 10% complete.

96. The "Critical Path" can change during project execution if:

1. A non-critical activity is delayed beyond its total float.
2. The project manager resigns.
3. The weather is good.
4. The budget is increased.

97. "Total Quality Management" (TQM) is:

1. A software for drawing.
2. A management philosophy focused on continuous improvement and customer satisfaction.
3. A method for mixing concrete.
4. A type of tender document.

98. Which of the following is a "Post-tender" activity?

1. Preparing the Estimate.
2. Advertising the Invitation for Bids (IFB).

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3. Negotiation and Contract Award.

4. Site Visit.

99. "Performance Security" in Nepal is typically released:

1. Immediately after the contract is signed.

2. After the completion of the Defect Liability Period.

3. When the project is 50% complete.

4. Before the project starts.

100. The "Project Manager's" primary responsibility is to:

1. Do the manual labor.

2. Integrate all project components to achieve objectives.

3. Only focus on the budget.

4. Design the architectural drawings.

*****Thank You*****