

**Part I. Single-Choice Questions. Please select the correct answer. (15%)** 請於試卷內之「選擇題作答區」依序作答。

1. What is the main purpose of the Critical Path Method (CPM) in project management?
  - A. To identify the shortest path in the project schedule
  - B. To determine the sequence of tasks that must be completed on time to avoid delays
  - C. To allocate resources efficiently
  - D. To estimate project costs
2. What does the term "float" in project scheduling refer to?
  - A. The total duration of a project
  - B. The amount of time an activity can be delayed without delaying the project
  - C. The cost associated with delaying a task
  - D. The resources required for completing a task
3. What is the main purpose of resource leveling in construction management?
  - A. To minimize project duration
  - B. To distribute resources evenly across tasks
  - C. To reduce project costs
  - D. To allocate materials for each task
4. Which of the following is a direct cost in a construction project?
  - A. Site overhead
  - B. Labor wages
  - C. Administrative expenses
  - D. Marketing costs
5. What is the primary purpose of a bid bond in construction projects?
  - A. To guarantee project completion
  - B. To protect against bid withdrawal
  - C. To cover labor costs
  - D. To ensure quality compliance

**Part II. Multiple-Select Questions. Please select all that apply (15%)** 請於試卷內之「選擇題作答區」依序作答。

6. What are the benefits of using BIM in construction management?
  - A. Improved design visualization
  - B. Enhanced collaboration
  - C. Increased manual calculations
  - D. Better cost estimation
  - E. Better stakeholder communication

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7. Which of the following are common causes of delays in construction projects?
- A. Adverse weather conditions
  - B. Incomplete design documents
  - C. Overcommunication between stakeholders
  - D. Poor project management
  - E. Late delivery of materials
8. Which stakeholders typically play key roles in a construction project?
- A. Owners
  - B. Bankers
  - C. Designers
  - D. Contractors
  - E. Suppliers
9. What are the typical responsibilities of a construction manager?
- A. Managing project budgets
  - B. Overseeing on-site construction activities
  - C. Designing architectural layouts
  - D. Ensuring project deadlines are met
  - E. Coordinating subcontractors
10. Which measures are critical for preventing falls on a construction site?
- A. Installing guardrails
  - B. Conducting daily team meetings
  - C. Providing personal fall arrest systems
  - D. Using reflective vests
  - E. Implementing proper training for working at heights

※ 注意：請於試卷內之「非選擇題作答區」標明題號依序作答。

**Part III. True-False Questions. (10%)**

11. (True/False) Providing personal protective equipment (PPE) is mandatory on all construction sites.
12. (True/False) Regular safety audits are unnecessary if workers are experienced.
13. (True/False) The lowest bid is always the best choice in construction procurement.
14. (True/False) In the design- build method, the construction contractor is selected after the design phase is complete.
15. (True/False) Transferring risk to subcontractors through contracts is an example of a risk management strategy.

**Part IV. Free Answer Questions.**

16. (8%) Describe a real-world example of a construction project that failed due to poor management. What lessons can be learned from this failure?
17. (8%) How can construction projects minimize their environmental impact? Provide specific examples of sustainable practices.

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18. (10%) Describe the steps involved in creating a PERT chart for a construction project and discuss the advantages and limitations of using PERT in construction project management.
19. (8%) Explain the concept of Lean Construction and how it differs from traditional construction management approaches.
20. (10%) Explain how procurement laws (採購法) help prevent corruption and favoritism in large-scale infrastructure projects.

**Part IV. Calculation Questions.**

**21. (16%)**

- (a) (13%) Using the activity data below, calculate ES, EF, LS, LF, total float and free float for each activity, and identify the critical path.

Activity	Duration (Days)	Predecessor(s)
A	3	-
B	4	A
C	6	A
D	5	B
E	7	B, C
F	8	D, E
G	4	C
H	6	F, G

- (b) (3%) If each day of delay on the critical path costs \$1,000, calculate the potential financial impact of a 3-day delay in activity B.

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