

※ 本大題請於試卷內之「選擇題作答區」依序作答。

**Part I. Multiple Choice Questions. Please circle the right choice. (5 Questions - Each is 2 points) 10 points**

1. What is the most important factor in success of a real-estate development project?
  - a) Schedule
  - b) Material
  - c) Budget
  - d) Location
2. Among those below, who is **NOT** one of the Three Principal Parties of a construction project:
  - a) Operator
  - b) Designer
  - c) Builder
  - d) Owner
3. Which of the following is **NOT** an attribute of a Cost + Percent Fee Contract:
  - a) It guarantees better quality work when compared to Lump Sum contracts.
  - b) It carries a larger financial risk for the contractor when compared to Lump Sum contracts.
  - c) It permits early collaboration between owner and contractor.
  - d) The percent fee is independent of the project duration.
4. Which **TWO** of the following are properties of GMP Contracts:
  - a) The scope and quantity of work are well defined and fixed
  - b) The contract amount is fixed and can only be changed through a change order
  - c) The contract amount is flexible up to a preset fixed price
  - d) The scope and quantity of work are usually flexible
5. What are Liquidated Damages?
  - a) Liquidated damages are paid by the owners to the contractor if a project is finished earlier
  - b) Liquidated damages are paid by the contractor to the owner if a project has quality problems
  - c) Liquidated damages are paid by the contractor to the owner if a project is not completed on time
  - d) Contractors use them to cover costs and fees associated with loss and damages when a project is not finished on schedule.

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**Part II. True-False Questions. Please circle the right choice. (5 Questions - Each is 2 points) 10 points**

6. Construction contract documents are used as the governing instrument in a construction project.
  - a) True
  - b) False
7. An owner may choose to select a higher priced bid due to the technical expertise and resources offered by larger contractors.
  - a) True
  - b) False
8. The total float of an activity can be negative.
  - a) True
  - b) False
9. In Lump sum contracts, the contractor assumes the risk of both quantity and price of work.
  - a) True
  - b) False
10. The most widely used format of contract to purchase construction services (as a verb) is the negotiated contract.
  - a) True
  - b) False

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Part III. Free-Response Questions (12 Questions) 80 points ※ 本大題請於試卷內之「非選擇題作答區」標明題號依序作答。

11. Which contract types carry the least amount of risk for contractors? Why? (2 + 4 points)

12. Which contract types carry the most amount of risk for contractors? Why? (2 + 4 points)

13. What is value engineering? (6 points)

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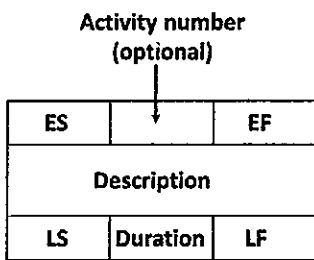
14. What are the most important three performance metrics and attributes in a project? In recent years what other performance metrics have also been considered as critical, please at least list two and explain the reason. (6 + 4 points)

15. Explain the difference between construction planning and construction scheduling. (4 points)

16. Define and differentiate the Total Free and the Free Float. (3 + 3 points)

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17. Please draw an Activity-on-Arrow diagram. (Hint: Include Start and Finish activities and follow the provided legend for labeling activities.). (6 points)



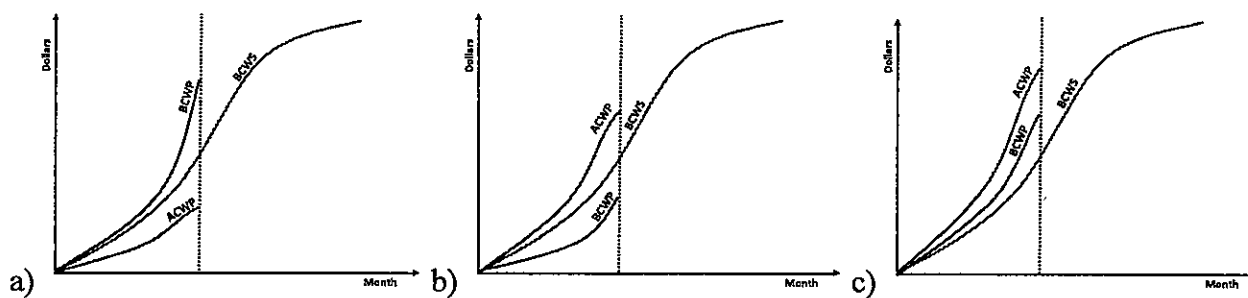
| Activity | Predecessor | Duration (days) |
|----------|-------------|-----------------|
| Start    | -           | -               |
| A        | Start       | 2               |
| B        | Start       | 3               |
| C        | Start       | 5               |
| D        | C           | 4               |
| E        | A, B        | 3               |
| F        | B           | 5               |
| G        | D           | 3               |
| H        | G           | 2               |
| I        | D           | 4               |
| J        | E, H, I     | 4               |
| End      | F, J        | -               |

18. For each activity, calculate the Early Start (ES), Late Start (LS), Early Finish (EF), Late Finish (LF). Assume the first activity has early start of "0". Fill out the following table (15 points)

| Activity | Duration | ES | EF | LS | LF | TF | FF | Critical (Y/N) |
|----------|----------|----|----|----|----|----|----|----------------|
| A        |          |    |    |    |    |    |    |                |
| B        |          |    |    |    |    |    |    |                |
| C        |          |    |    |    |    |    |    |                |
| D        |          |    |    |    |    |    |    |                |
| E        |          |    |    |    |    |    |    |                |
| F        |          |    |    |    |    |    |    |                |
| G        |          |    |    |    |    |    |    |                |
| H        |          |    |    |    |    |    |    |                |
| I        |          |    |    |    |    |    |    |                |
| J        |          |    |    |    |    |    |    |                |

19. What happens if activity "A" is delayed by two days? How about if activity "D" is delayed by one day? (6 points)

20. Analyze and explain the project status in terms of progress and budget expense given the following scenarios. Present your analysis for each scenario separately (9 points).



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21. What does PPP stand for? (2 points)

22. In what scenario would PPP be an appropriate delivery method? (4 points)

試題隨卷繳回