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B.Tech DEGREE EXAMINATION, DECEMBER 2023

Fifth Semester

18CEO309J - COMPUTER METHODS AND APPLICATIONS IN CONSTRUCTION ENGINEERING AND MANAGEMENT

(For the candidates admitted during the academic year (2020-2021 & 2021-20222))

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks)

Answer **all** Questions

		Marks	BL	CO
1.	What is the definition of construction project planning? (A) The process of creating a detailed roadmap for a construction project (B) The process of obtaining funding for a construction project (C) The process of hiring contractors for a construction project (D) The process of obtaining necessary permits for a construction project	1	1	1
2.	How is the critical path defined in project scheduling? (A) The longest path of activities in a project that determines the project's duration (B) The shortest path of activities in a project that determines the project's duration (C) The path that is most critical for project success (D) The path that involves the most activities	1	1	1
3.	What is the purpose of tracking in construction project management? (A) To monitor progress and identify any deviations from the plan (B) To schedule meetings with stakeholders (C) To create task lists for workers (D) To track project expenses	1	1	1
4.	What is float in project scheduling? (A) The amount of time an activity can be delayed without delaying the entire project (B) The amount of time an activity is expected to take (C) The total duration of the project (D) The time it takes to complete an activity	1	1	1
5.	Which of the following is NOT a potential risk in project planning? (A) Delays in obtaining permits (B) Unexpected weather conditions (C) Cost overruns (D) Excessive use of resources	1	1	2
6.	In what phase of a construction project is scheduling usually done? (A) Design phase (B) Construction phase (C) Planning phase (D) Close-out phase	1	1	2
7.	What is the definition of critical path in project management? (A) The sequence of tasks that must be completed before the project can be finished (B) The most important tasks in a project (C) The shortest path of tasks in a project (D) The sequence of tasks that can be done concurrently	1	1	2

8.	Which of the following is NOT a common software used for construction project planning? (A) Microsoft Excel (B) Primavera P6 (C) MS Project (D) SAP Business One	1	1	2
9.	Which type of activity dependency requires one task to finish before another can start? (A) Finish to start (B) Start to finish (C) Finish to finish (D) Start to start	1	1	3
10.	What is the definition of float in project management? (A) The amount of time an activity has been delayed (B) The amount of time an activity is expected to take (C) The amount of time an activity can be delayed without delaying the project (D) The total duration of a project	1	1	3
11.	What is the main purpose of estimation in building construction? (A) To determine the cost of materials (B) To create a construction schedule (C) To estimate the duration of the project (D) To determine the overall project budget	1	1	3
12.	Which method of estimation involves dividing the building into long and short walls? (A) Centre line method (B) Rate analysis method (C) Earned value analysis (D) Long wall and short wall method	1	1	3
13.	In Revit, what does the "Workplane" feature allow you to do? (A) Create a 3D view (B) Rotate objects (C) Define a new reference plane (D) Edit element properties	1	1	4
14.	Which type of view in Revit shows a building's exterior walls, but not the interior elements? (A) Elevation view (B) Plan view (C) Section view (D) 3D view	1	1	4
15.	Which of the following is NOT a foundational principle of Building Information Modelling? (A) Collaboration (B) Communication (C) Competition (D) Integration	1	1	4
16.	What is the primary benefit of using BIM in the construction process? (A) Cost reduction (B) Improved quality control (C) Enhanced sustainability (D) Faster project delivery	1	1	4
17.	Which of the following is NOT a common lean Construction technique? (A) Prefabrication (B) Modular construction (C) Design-Build delivery (D) Change order management	1	1	5
18.	Which of the following is a key characteristic of a Lean construction project? (A) High levels of inventory (B) Frequent change orders (C) Efficient use of resources (D) Linear project delivery	1	1	5
19.	What is the primary goal of implementing lean construction techniques? (A) Maximizing profits (B) Meeting project deadlines (C) Minimizing waste (D) Increasing competition	1	1	5
20.	Which of the following is a fundamental principle of lean construction? (A) Collaboration (B) Competition (C) Change orders management (D) Centralized decision making	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	What is a critical path in project planning and give an example?	4	2	1
22.	State the purpose of using float in project scheduling.	4	1	2
23.	How can scheduling software like MS Project help in construction project planning?	4	1	2
24.	What is the purpose of building estimation?	4	1	3
25.	How does Building Information Modelling improve collaboration between project stakeholders?	4	2	4
26.	How does BIM help in the clash detection process during construction?	4	2	4
27.	What are the key principles of lean construction and how do they enhance the efficiency of a construction project?	4	1	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) Describe the role of project planning in construction projects and explain the key steps involved in the planning process.	12	2	1
	(OR)			
	(b) How can project planning and control techniques such as the use of Gantt charts and Earned Value Management help construction project managers in decision making?			
29.	(a) Explain the importance of scheduling in construction projects and discuss three commonly used scheduling techniques.	12	3	2
	(OR)			
	(b) 1. Explain the concept of activity dependency in construction project scheduling and provide an example. [6 mark]			
	2. Describe the role of project control in construction projects and explain its importance.[6 mark]			
30.	(a) What is centre line method of building estimation? Discuss its advantages and limitations.	12	3	3
	(OR)			
	(b) Discuss the purpose of estimation in construction projects and its importance in project management.			
31.	(a) How can BIM contribute to sustainable construction practices?	12	1	4
	(OR)			
	(b) Discuss the use of Revit Architecture in prefabricated construction.			
32.	(a) What are the key principles of lean construction and how do they enhance the efficiency of a construction project?	12	2	5
	(OR)			
	(b) How does the use of modular construction techniques align with lean principles and contribute to sustainability in the construction industry?			

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