Q. Code: 522931

Reg. No. | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Sixth Semester

CE18603 – CONSTRUCTION PLANNING AND SCHEDULING

(Civil Engineering)

(Regulation 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

CO 1 Prepare the sequence of various activities in a construction project and estimate its duration.

CO 2 Compute the scheduling of various activities in a construction project and determine the optimum duration and cost involved in a construction project.

CO 3 Carry out the monitoring process of various activities and forecasting the cost control.

CO 4 Determine the control limits for various quality control methods and explain the safety measures during construction.

CO 5 Discuss the types, management, transfer and flow of project information.

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Why construction planning is important for construction project?	**1**	**1**
2.	Define activity precedence with an example.	**1**	**1**
3.	Distinguish between CPM and PERT.	**2**	**2**
4.	State the advantages of network techniques over the conventional techniques.	**2**	**1**
5.	What are the different components of accounting system?	**3**	**1**
6.	What is the purpose of schedule control in a construction project?	**3**	**1**
7.	State the importance of quality control in construction projects.	**4**	**1**
8.	What are the purposes of statistical quality control charts?	**4**	**1**
9.	List out the types of project information.	**5**	**1**

10. Why accuracy in information is necessary? **5** **1**

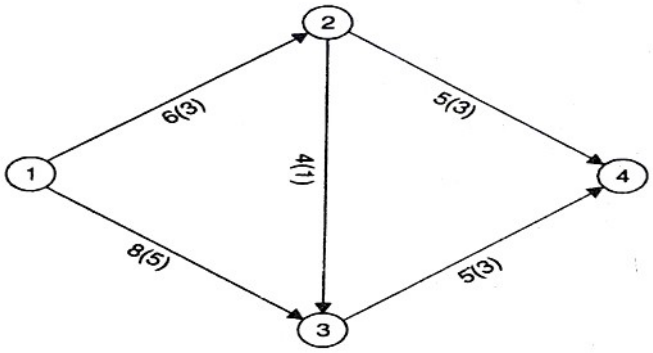
PART- B (5 x 14 = 70 Marks)

			Marks	CO	RBT LEVEL
11. (a)	**(i)**	How do you estimate the duration of an activity for a construction project? Also briefly explain the effect of learning on labour productivity.	**(8)**	**1**	**3**
	(ii)	"Choice of technology is the critical ingredient in the success of the construction project"- Substantiate your answer.	**(6)**	**1**	**3**
		(OR)			
	(b)	Enumerate in detail about Work Breakdown Structure (WBS). Develop a WBS for a high-rise building (G+20). Also identify the suitable coding system for executing this project.	**(14)**	**1**	**3**
12. (a)		The following table lists the activities, durations and their sequence of operations for a construction project. Prepare the network and compute in a table their early start, early finish, latest start and late finish times. Determine the critical path, total float and free float for all the activities.	**(14)**	**2**	**3**

Activity	Duration (days)	Activity	Duration (days)
1-2	8	4-7	0
1-3	10	5-6	4
1-4	5	5-7	3
2-7	6	5-8	6
3-4	3	6-8	5
4-5	7	7-8	5

(OR)

(b)	The following table given the data for duration and costs of each activity of project network. The indirect cost of project is Rs. 5000/week. Determine the optimum duration of project and the corresponding minimum cost. Draw the time scaled version of network.	**(14)**	**2**	**3**



Activity	Normal duration (weeks)	Normal cost (Rs.)	Crash duration (weeks)	Crash Cost (Rs.)
1-2	6	7000	3	14500
1-3	8	4000	5	8500
2-3	4	6000	1	9000
2-4	5	8000	3	15000
3-4	5	5000	3	11000

13. (a) **(i)** How do you compare actual progress versus expected progress using an S -curve? Illustrate with a suitable example. **(8)** **3** **3**

(ii) For the following project (date given in table), calculate SV, CV, SPI and CPI at the end of February month. Comment on the project performance. **(6)** **3** **3**

Month	January	February	March	April
Planned Value	11,10,000	8,00,000	25,00,000	8,00,000
Earned Value	13,00,000	6,50,000	-	-
Actual Cost	15,50,000	4,50,000	-	-

(OR)

(b) A multistorey building was planned to be built on Chennai. As a project engineer, how do you forecast the total cost for an activity? Also formulate the job status report for different cost accounts associated with the project. **(14)** **3** **3**

14. (a) **(i)** Explain the statistical quality control with sampling by attributes. **(8)** **4** **3**

(ii) Briefly explain the total quality management in construction projects. **(6)** **4** **3**

(OR)

(b) **(i)** A company produces fire resistant glass panels which are visually inspected upon receipt, graded and then send to processing. After processing, all finished glass panels are tested under pressure on a special device to ensure specific strength before sending it to fabrication. The strength of the glass panels of 5 random samples from **(8)** **4** **3**

each batch are recorded as shown for 10 such batches. Create $\bar{X}$ and R chart. Comment on the state of quality control. (Take $D_3 = 0$, $D_4 = 2.11$, $A_2 = 0.58$)

S.No	X_1	X_2	X_3	X_4	X_5	S.No	X_1	X_2	X_3	X_4	X_5
1	42	60	65	70	75	6	20	25	33	40	50
2	45	55	66	72	78	7	55	60	60	63	81
3	19	24	75	76	80	8	30	36	39	45	72
4	36	48	54	63	72	9	29	33	44	50	65
5	40	45	65	70	75	10	32	37	39	48	57

(ii) Discuss the important points of inspection during concreting work and structural steel work. **(6) 4 3**

15. (a) Enumerate the architecture of a database management system with neat diagram. **(14) 5 3**

(OR)

(b) (i) Explain hierarchical model of database. Also construct a hierarchical model of database for the following information. **(10) 5 3**

Particulars	Cranes (5 tonnes)	Cement	Foundation forms	Vitrified tiles	Bricks
Supplier A	₹ 7000 /day	₹ 440 /bag	₹42/sqft	₹420 /box	₹4500 /unit
Supplier B	₹ 8000 /day	₹ 480 /bag	₹58/sqft	₹580 /box	₹3000 /unit
Supplier C	₹ 6500 /day	₹ 520 /bag	₹48/sqft	₹415 /box	₹4800 /unit

Identify the least expensive supplier for Cement, Cranes, Vitrified tiles, Bricks using the database model.

(ii) State the advantages of Centralized DBMS over stand-alone systems. **(4) 5 3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Suppose you are assigned as a safety officer in a construction of Multi-storey building. Recommend a suitable approach to enhance the safety in	**(10)**	**4**	**4**

construction site. Also explain its importance and its benefits to employees.

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