BTECH
(SEM-5) QUANTITY ESTIMATION AND CONSTRUCTION MANAGEMENT 2021-22

TIME:3 HOUR   *Total Marks: 100*

Instruction: Attempt the questions as per the given instructions. Assume missing data suitably.

SECTION - A	
Attempt _All Parts_ in Brief	**2*10 = 20**

Q1	Questions	Marks
(a)	Define Estimation.	2
(b)	Differentiate between revised and supplementary estimation.	2
(c)	How you can calculate the earliest expected time and latest allowable occurrence time in PERT?	2
(d)	Differentiate between event and activity.	2
(e)	Define optimistic time and pessimistic time used in PERT.	2
(f)	Enlist the factors affecting the selection of equipments.	2
(g)	Write down the advantages of hoisting equipments.	2
(h)	What do you mean by cash flow diagram ?	2
(i)	Define interest rate. How interest rate can be classified.	2

SECTION - B

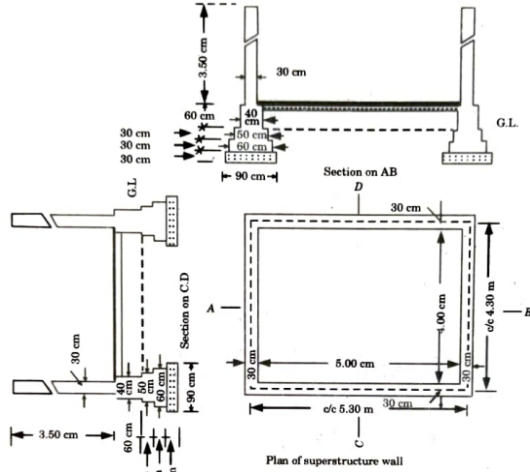| Attempt *Any Three* of the following		3*10 = 30
Q2	**Questions**	**Marks**
(a)	Classify the various types of estimation that are used in estimation of building.	10
(b)	List the information which should customarily appear in an advertisement for tenders.	10
(c)	Draw a bar chart and compute the total duration of the project from the data given below : <table><tr><td>Task 1</td><td>5 days</td></tr><tr><td>Task 2</td><td>3 days</td></tr><tr><td>Task 3</td><td>7 days</td></tr><tr><td>Task 4</td><td>2 days</td></tr><tr><td>Task 5</td><td>4 days</td></tr></table> Task 1 and 4 will be started together. Task 2 will start, after completion of task 3 and task 3 will take place after task 1. Task 5 will be taken only after completion of task 3.	10
(d)	Categorize about various types of earth work equipments with special purpose usage for each equipment.	10
(e)	What is cost planning ? Discuss the different types of cost used in cost planning with their relative graph.	10

SECTION - C

Attempt *Any One* of the following		5*10 = 50
Q3	**Questions**	**Marks**

(a)	In Figure below, the plan represents the plan of superstructure wall of a single room building of 5 m x 4 m, and sections represent the cross-sections of the walls with foundation. Estimate the quantities of: i. Earthwork in excavation in foundation. ii. Concrete in foundation. iii. Brickwork in foundation and plinth. iv. Brick work in superstructure. Plan of superstructure wall	10
(b)	Categorize the main items of work calculated in estimation of buildings.	10

Q4	**Questions**	**Marks**
(a)	Explain briefly the procedure of pre-qualification of contractors. State its advantages and drawbacks. List the main points to be considered while pre-qualifying the contractors.	10
(b)	Classify the labour safety and welfare laws ? Explain them.	10

Q5	**Questions**	**Marks**
(a)	A small project is composed of nine following table:	10

Activity	t_0	t_p	t_m
1-2	5	10	8
1-3	18	22	20
1-4	26	40	33
2-5	16	20	18
2-6	15	25	20
3-6	6	12	9

4-7	7	12	10
5-7	7	9	S
6-7	3	5	4

i. Find the expected task time and their variance.
ii. Earliest and latest expected time of each node.
iii. Critical path.

		Marks
(b)	i. Explain the concept of float and slack. Distinguish between the free, independent and interfering floats. ii. Explain the three time estimates that are used in PERT. How are the expected duration of a project and its standard deviation calculated ?	10

Q6	**Questions**	**Marks**
(a)	What are the various types of heavy hauling equipment vehicles ? Also write in brief, their relative advantages and disadvantages.	10
(b)	Explain the following types of equipments: i. Hoisting Equipments. ii. Conveying Equipment. iii. Transporting Equipments. iv. Hauling Equipments. v. Excavating Equipments.	10

Q7	**Questions**	**Marks**
(a)	Calculate the optimum duration and the cost associated with it, if the project overhead cost are @ Rs 250 per day. Also draw the least cost network. Table gives the data about durations costs if various activities of the network.	10

Activity	Normal Duration (Days)	Normal Cost (Rs).	Crash Duration (Days)	Crash Cost (Rs).
1-2	9	8000	6	9500
2-3	5	5000	3	5500

| (b) | Discuss the following methods used in engineering economic analysis for evaluating and comparing alternatives:
i. The present worth method.
ii. Future worth method.
iii. The annual equivalent method.
iv. Rate of return method. | 10 |