

Subject: ESTIMATING AND PRICING

Time: Three hours

Full Marks: 100

*Different parts of the same question should be answered together.***PART-I (60 Marks)**Answer all questions in this block:

[1] (a) A R.C.C. roof slab of overall size 6500mmX4500 mm and thickness 125 mm is provided with 12 mm diameter main bars bent up alternately and placed at 150mm c/c. The distribution bar of 8mm diameter is provided at 200mm c/c. The all-round cover is 15mm. Workout the quantity of plain steel. Prepare the bar bending schedule.

OR

A simply supported beam resting on two wall supports of 400mm thick with clear distance between supports 5000mm. The reinforcement provided in the beam is as follows. Calculate quantity of steel in beam.

Top bar	Bottom bar	Bent up bar	Stirrup
2Nos-10 Ø	3Nos-12 Ø	2Nos-16 Ø	8 Ø @200 c/c

[8]

CO1
[25]

[2] (a) The formation level at starting chainage of a road is 530.00m. The road surface has rising gradient of 1 in 100. The side slopes are 2:1 for embankment and 1.5:1 for cutting. Work out the quantity of earthwork for road using following data.

Chainage	0	30	60	90	120	150	180	210	240
R.L. of Ground	535.0	534.0	534.6	532.0	534.0	535.5	534.0	532.0	531.50

Use mean sectional area method

OR

Determine the quantities of earthwork for the portion of a road between chainages and 60 from the following data, length being measured with a standard 20 m chain:-

chainage	50	51	52	53	54	55	56	57	58	59	60
G.L	131.1	131.2	130.9	131.2	130.8	130.7	130.6	130.4	129.1	129.5	129.7

The formation level at chainage 50 is 130.0 and the road is in a rising gradient of 1 in 250. The width of formation is 10m and side slope is 2:1 in embankment and 1.5:1 in cutting, the lateral slope of the ground may be assumed as level. Calculate also the cost of this earthwork in bank and cutting. Assume suitable rates and also draw the mass diagram.

[8]

[Turn over

	<p>[3] (a) Estimate the quantities of the following items of a Building (FIG.1)</p> <p>(a) Earthwork in excavation in foundation</p> <p>(b) Lime concrete in Foundation</p> <p>(c) 1st class brick work in cement 1:6 in foundation and plinth</p> <p>(d) 2.5cm cc dam proof courses and</p> <p>(e) 1st class brick work in superstructure.</p> <p style="text-align: center;">OR</p> <p>Work out the quantity of following items for septic tank having internal size 1.4mX3.2m and height 1.4m.</p> <ol style="list-style-type: none"> 1. Earthwork in excavation 2. P.C.C (1:3:6) 15 cm thick 3. B.B masonry in cement mortar (1:6) (300mm thick) 4. M15 slab on septic tank 12 cm thick. 5. The top of slab of septic tank is 15 cm above G.L <p style="text-align: right;">[9]</p>
CO2 [5]	<p style="text-align: center;"><u>Answer all questions in this block:</u></p> <p>[4] (a) Describe the factors affecting rate analysis? Mention the types of overhead? [2]</p> <p>(b) Prepare a unit rate of (ANY ONE) (1) P.C.C (1:3:6) for 10 Cum.(2) R.C.C. (1:1.5:3) for 10.0 cu m. in slabs, beams and columns. (3) 12 mm thick cement plastering in cement mortar (1:4) for 100 sqm. [5]</p>
CO3 [5]	<p style="text-align: center;"><u>Answer all questions in this block:</u></p> <p>[5] Describe the detailed specification of various items of works for the following (ANY TWO)</p> <ol style="list-style-type: none"> (i) RCC (ii) Color washing (iii) Brick I Class (iv) Plastering cement Mortar or lime mortar <p style="text-align: right;">[2.5+2.5]</p>
CO4 [25]	<p style="text-align: center;"><u>Answer all questions in this block:</u></p> <p>[6] (a) Difference between Depreciation and obsolescence OR Salvage value and scrap Value. [5]</p> <p>OR Explain the purpose of valuation or method of valuation. [5]</p> <p>(b) Define sinking fund and explain any method to determine sinking fund OR briefly describe types of depreciation and explain any method to determine depreciation. [12]</p> <p>© An old building has been purchased by a person at a cost of Rs.50,000/- excluding the cost of the land. Evaluate the amount of annual sinking fund at 4.5% interest assuming the future life of the building as 30 years and scarp value of the building as 12% of the cost of purchase. [8]</p>

The students of the course should be able to

CO1: To estimate quantity of materials of different civil engineering structures. (K3)

CO2: To analyse the rate analysis, bill preparations, overhead and profit.(K4)

CO3: To prepare the specification. (K3)

CO4: To understand the valuation of rental, land and buildings. (K2)

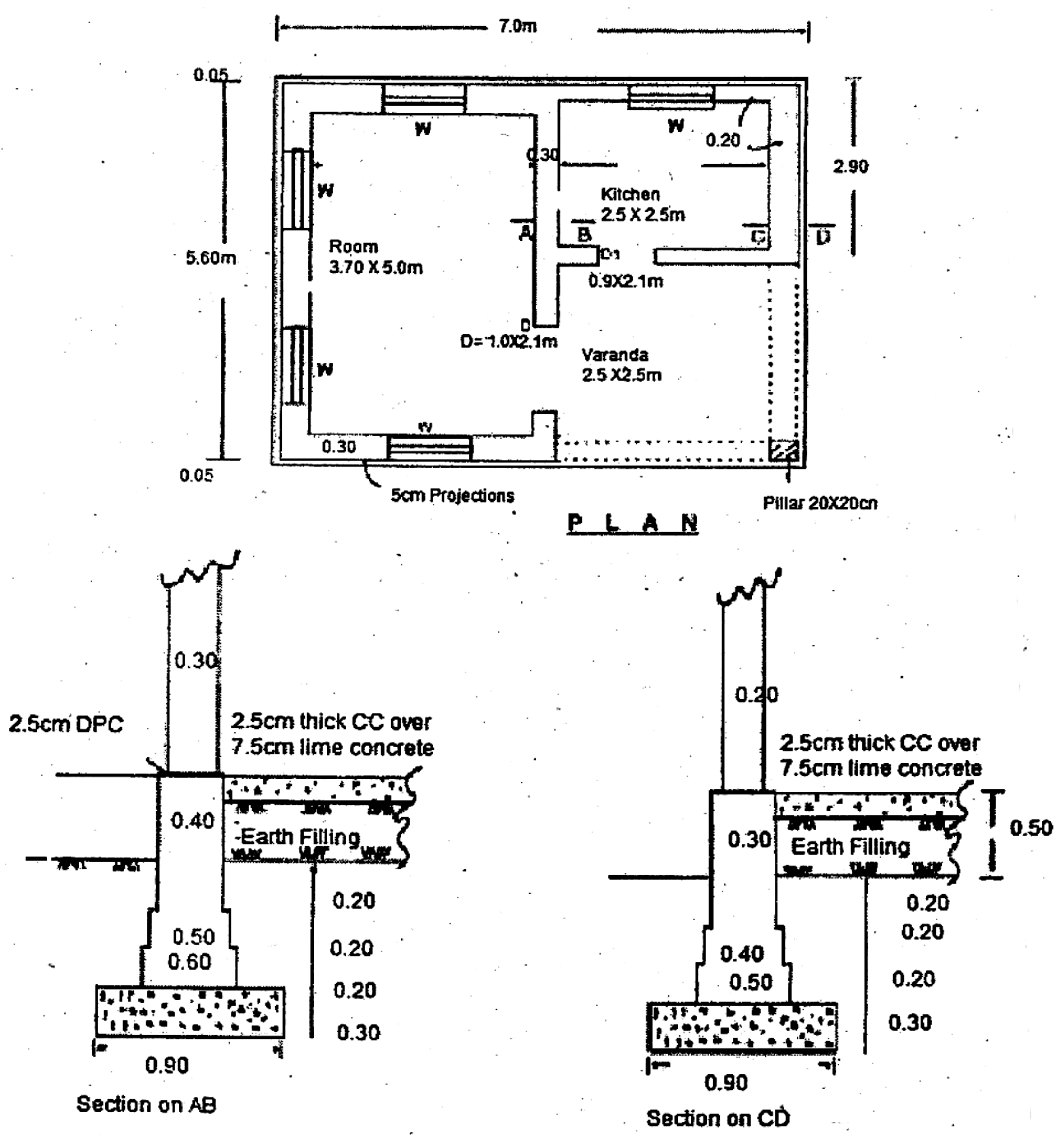


FIG.1

[Turn over

B.E. CONSTRUCTION ENGINEERING THIRD YEAR SECOND
SEMESTER EXAM 2024

SUBJECT: ESTIMATING & PRICING

PART - II

Full Marks : 40

	No. of Questions		Marks																																				
CO2 & CO3	Q1.	Estimate the total cost of one cubic metre of Polymer Modified Micro-Concrete. Consider the rates of Mason (head), Helper, Supervisor and Engineer as ₹350, 275, 750 and 4500 respectively. Assume the cost of ready mixed concrete per bag as ₹600.	10																																				
CO2 & CO3	Q2. a)	<p>Determine the carriage cost including loading & unloading of 1 MT of steel material from Kolkata to Chinsurah from the given data below. The distance of Chinsurah from Kolkata is 55 km.</p> <table><tr><td>Source</td><td>Kolkata</td><td>Lead</td><td>55</td><td></td></tr><tr><td colspan="3">Distance</td><td></td><td></td></tr><tr><td>From</td><td>To</td><td></td><td>Carriage Rate</td><td>Remarks</td></tr><tr><td>0</td><td>5</td><td></td><td>82</td><td rowspan="5">Vide item no.5, of PWD WB SOR 2018, Volume-III, Road & Bridge works</td></tr><tr><td>5</td><td>10</td><td></td><td>7.3</td></tr><tr><td>10</td><td>20</td><td></td><td>6.7</td></tr><tr><td>20</td><td>50</td><td></td><td>6.3</td></tr><tr><td>50</td><td>100</td><td></td><td>5.6</td></tr></table>	Source	Kolkata	Lead	55		Distance					From	To		Carriage Rate	Remarks	0	5		82	Vide item no.5, of PWD WB SOR 2018, Volume-III, Road & Bridge works	5	10		7.3	10	20		6.7	20	50		6.3	50	100		5.6	10 + 10
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Q2.b)	Estimate the cost of supplying and fixing each of 6 mm dia stainless steel bar of SS-316 grade for stitching of cracks at a site in Chinsurah, if the basic cost of the bar from the market in Kolkata is ₹ 250/kg. For stitching purpose, a groove of 25 mm x 25mm x 600 mm has to be cut in the wall. Consider carriage cost including loading & unloading of steel from Q.2(b).																																						
CO3	Q.3.a)	What do you mean by notice inviting tender? Explain the meaning of the terms - earnest money and BOQ.	5 + 5																																				
	Q.3b)	What is schedule of rates? Name some of these of various Govt. agencies. Are these rates fixed? If not, how frequently are these revised?																																					