Seventh Semester B. E. (Civil) Examination

ESTIMATING AND COSTING

Time : Four Hours] [Max. Marks : 80

N. B. :
(1) All questions carry marks as indicated.
(2) Due credit will be given to neatness and adequate dimensions.
(3) Assume suitable data wherever necessary.
(4) Diagrams should be given wherever necessary.
(5) Illustrate your answers wherever necessary with the help of neat sketches.
(6) Use of non-programmable calculator is permitted.

1. (a) State the methods of preparing approximate estimates for residential buildings. Explain any two. 6

   (b) Calculate the quantity of earthwork of an irrigation channel with the following data :—

   (i) Bed width = 4 m

   (ii) Side slope is : 1 in 1 in cutting and 1 in 1.5 in banking.

   (iii) Bank Width – 2 m (either side).

   (iv) Full supply depth = 0.80 m

   (v) Free board is 0.40 m

   (vi) Bed slope is 1 in 5000

Contd.

Chainage (m)	Existing G.L. (m)	proposed. Bed level (mts.)
0	241.6	242.00
500	241.6	
1000	241.4	
1500	241.3	
2000	241.0	7

OR

2. (a) Prepare a preliminary estimate of a multistoried office building having carpet area of 2200 sq.m. 35% of the carpet over will be taken up by corridors, verandahs, lavatories, stair cases etc. and 10% of the plinth area will be occupied by walls. Assume plinth area rate is 3000/- per sq.m and 30% of total cost for water supply, sanitary fitting and electric installation. Contingencies and other services are 10% of the total cost.   6

   (b) Estimate the quantity of earthwork for a section of road 120 m long and 12 m wide at crest with side slope of 1.50:1. The central heights from 0 chainage to 120 m at an interval of 20 m are 0.70 m, 1.40 m, 1.75 m, 2.00 m, 1.60 m, 1.50 m and 1.20 m use Mid sectional Area method   7

3. (a) Estimate the quantities for the following items of work for the given Building Plan and section as shown in fig. 1

      (i) Earthwork in Excavation in column footing trenches

(ii) 23 cm thick brick masonry in cm 1:6 superstructure.

(iii) Inside cement plaster in C.M. 1:5 to walls.

8

(b) Prepare an estimate for R.C.C. slab with the following data :—

(i) Room size (inside)–4.0 m(length) x 3.0 m (width).

(ii) Slab thickness–150 m.

(iii) Slab is resting over the supports of columns 230 mm X 230 mm and projecting 150 mm throughout all the sides,

(iv) Slab Reinforcement.

(a) Along width :

(i) 12 mm ϕ M. S. bars @ 150 mm c/c (straight).

(ii) 12 mm ϕ M.S. bars @ 150 mm c/c (cranked)

(b) Along length :—6 mm ϕ M.S bars @ 180 mm c/c.

(v) The main bars are cranked alternately at a distance of 600 mm from the supports,

(vi) Top and Bottom cover–15 mm.

(vii) Side covers–20 mm.

Calculate the quantities of :—

Steel Reinforcement with schedule of Bars.

6

OR

4. (a) Estimate the quantities for the following items of work for the given Building Plan and section as shown in fig. 1

    (i) RCC work in slab.

    (ii) RCC in columns and footings.   8

(b) Workout the quantity of cement concrete (1:2:4) and reinforcement in a RCC Beam with following data :—

Clear span = 3.60 m

Bearing = 0.30 m on either side

Section of the beam = 25 cm x 35 cm (overall)

Reinforcement = 4 bars (main) 20 mm dia out of which two bars are bent up at 45^0

Anchor bars = 2 nos, 12 mm dia.

Vertical stirrups 6 mm dia @–150 mm c/c.

Also write the bar bending schedule. Assume suitable data if necessary.   6

5. (a) Define tender. Explain Earnest money and security deposit.   6

(b) What do you mean by contract ? Explain briefly different types of contract with advantages and disadvantages of any two.   7

OR

6. (a) State and explain the essential requirements of a Valid Contract. **6**

   (b) Explain in detail the ARBITRATION. **7**

7. (a) Write a detailed specification of the following items (any **two**) :—

   (i) Second class brick masonry in CM 1:6m superstructure.

   (ii) Laying PCC 1:4:8 mix in foundation,

   (iii) Excavation in foundation. **7**

   (b) State and explain various methods of cost accounting. **6**

OR

8. (a) What are objects of specification ? Explain the different types of specifications. **7**

   (b) Explain MATERIALS AT SITE ACCOUNT in detail. **6**

9. (a) Explain the various factors affecting the rate analysis of any tems. **6**

   (b) Give rate analysis of the following (any two). Assuming the rates of materials and labour from Nagpur city and Labour guidelines from NBO :—

   (i) 12 mm thick cement plaster in CM 1:4.

   (ii) R.C.C. (1:2:4) with 2% steel excluding

shutering and centering in slab.

(iii) First class Brick masonry in CM 1:6 in super structure.

(Brick size 19 cm X 9 cm X 9 cm)   8

OR

10. (a) Explain purposes and principles of Current Schedule of Rates in detail.   6

(b) Give rate analysis of the following (any two) Assuming the rates of materials and labours from Nagpur city and Labour guidlines from NBO :—

(i) 7.5 cm thick cement concrete flooring (1:3:6)

(ii) P.C.C. 1:4:8 in foundation trenches.

(iii) 15 mm thick cement plaster in cm 1:4 with 2% water proofing compound.   8

11. (a) State all the methods of valuation of a building. Explain any two.   6

(b) A building having two flats constructed with a cost of Rs. 85 lakh on a plot of land costing Rs. 45 lakhs. The owner expects 8% net return on cost of construction and 5% net return on cost of land.

Calculate the standard rent for each of flat of the building assuming :

(i) Expected life of building is 70 years.

(ii) Outgoings are 30% of net income.

(iii) Rate of interest for sinking fund is 9.75%.

(iv) Annual repair charges @ 1.5% of the cost of construction.   7

OR

12. (a) Explain the purpose of Valuation.   6

(b) Concrete vibrator was purchased at Rs. 1,50,000/- Assuming salvage value at the end of 5th year be Rs. 30000/-, calculate Annual depreciation, total depreciation and book value for each year using constant percentage method.   7

Figure 1
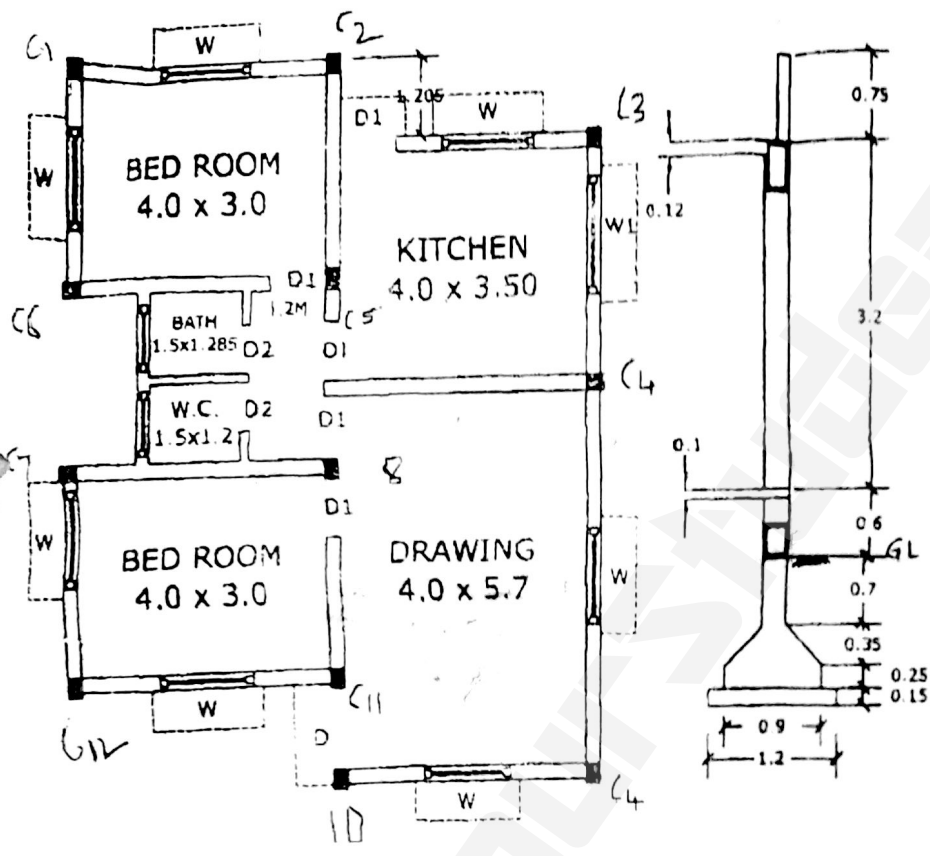
SPECIFICATION

D - 1.2 X 2.1	W - 1.5 X 1.2
D1 - 0.9 X 2.1	W1 - 1.8 X 0.6
D2 - 0.75 X 2.1	V - 1.0 X 0.75

1) WALL TH. 0.23 m. th BRICK IN CM 1:6 &
   FOR PARTITION WALL 0.115 m. th

2) PLASTER-INSIDE ROUGH CEMENT PLASTER-CM(1:5)
   EXTERNAL-DOUBLE COAT SAND FACED PLASTER(1:5

3) 15 cm. R.C.G. LINTEL BAND THROUGHOUT

4) CHAJJA 600 mm. WIDE WITH 100 mm. th &
   150 mm. OFFSET on either side

5) Size of column is 230 x 300 mm
   Footing size is 900 x 1200 mm
   PCC off set is 150 mm

6) Size of Plinth beam is 230 x 300mm

7) Size of Roof beam is 230 x 400mm

8) Flooring Slab is of 100 mm thick
   with 6mm dia nominal reinforcement
   at 150 mm c/c both ways (as simple mesh)

9) Plinth beams are not provided under partition walls
   Roof beams are not provided above partition walls