Total No. of printed pages = 7

CT-601/E&C/6th Sem/2017/M

ESTIMATION AND COSTING

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. Estimate the cost of a masonry water tank from the given drawing specifications and rates. 14

   General specifications :

   Foundation – Lime concrete

   Masonry – 1st class brickwork in cement mortar 1 : 6, wall finishing – inside 12 mm cement plastered 1 : 2 with coarse sand. Top and outside 12 mm cement plastered 1 : 4 with local sand. Flooring – 5 cm cement concrete 1 : 1½ : 3 over 30 cm lime concrete with neat cement finishing.

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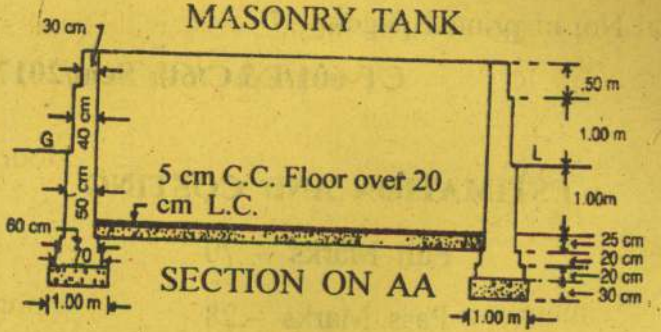
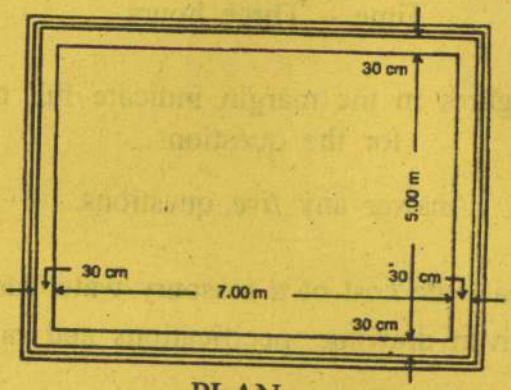




PLAN

Rates :

(i) Earthwork in excavation @ Rs. 350 per % cum.

(ii) Lime concrete in foundation and floor @ Rs. 220 per cum.

(iii) 1st class brickwork in 1 : 6 cement mortar @ Rs. 320 per cum.

(iv) 12 mm cement plaster 1 : 2 with coarse sand @ Rs. 8.50 per sqm.

(v) 12 mm cement plaster 1 : 4 with local sand @ Rs. 8.30 per sqm.

(vi) 5 cm cement concrete 1 : 1½ : 3 floor @ Rs. 55 per sqm.

2. Estimate the quantity of earthwork for a portion of road from the following data : 14

Chainage	0	1	2	3	4	5	6	7	8	9
R.L. of GL	7.5	7.7	7.5	7.25	6.85	6.95	6.7	6.45	6.3	5.95

The formation level at chainage 0 is 8.0 and having falling gradient of 1 in 100. The top width is 12m and side slopes 1½ horizontal to 1 vertical, assuming the transverse direction is in level calculate the earthwork. Take 1 chain = 20m.

Rate : Earthwork in banking @ Rs. 8 per cum and for cutting @ Rs. 7 per cum.

3. Write detail specification of any *two* : 7×2=14

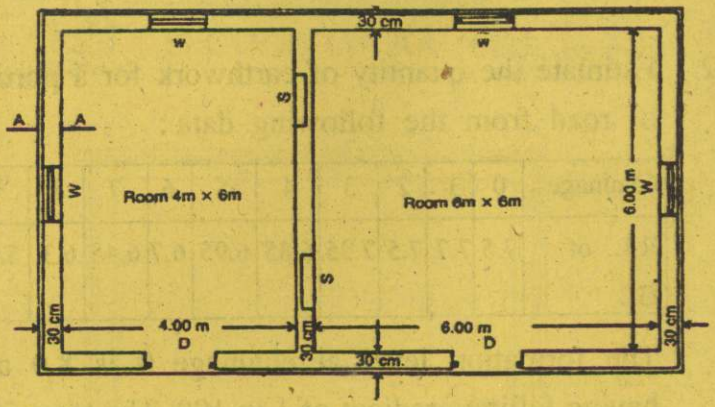
(i) General specification of 1st class building

(ii) Cement concrete 1 : 2 : 4

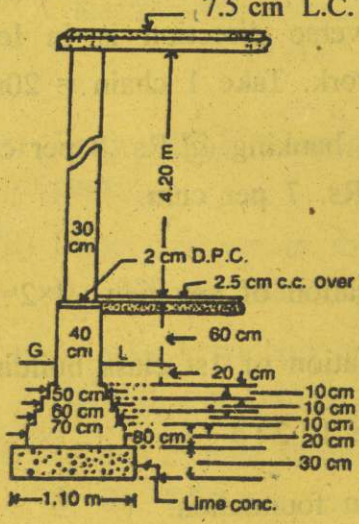
(iii) Lime concrete in foundation.

4. Estimate the quantities of the following item of a two roomed building by long wall short wall method from given plan and section and prepare the detailed estimate. 14

TWO ROOMED BUILDING



PLAN



All walls are of same section lintels over doors. Windows and shelves are 15 cm thick R.B.

Doors D-1.20m×2.10m
Windows W-1.00 × 1.50m
Shelves S-1.00m ×1.50m

(i) Earthwork in excavation in foundation

(ii) Lime concrete in foundation

(iii) 1st class brickwork in cement mortar 1 : 6 in foundation and plinth

(iv) 2.5 cm cement concrete damp proof course

(v) 1st class brickwork in lime mortar in superstructure.

Rates

(i) Earthwork in excavation in foundation @ Rs. 350 per % cum

(ii) Lime concrete in foundation @ Rs. 220 per cum

(iii) 1st class brickwork in cement mortar 1 : 6 in foundation and plinth @ Rs. 300 per cum

(iv) 2·5 cm CC damp proof course @ Rs. 20 per sqm

(v) 1st class brickwork in lime mortar in superstructure @ Rs. 320 per cum.

5. (a) Analyse the rate of R.C.C work in beam, slabs etc. 1 : 2 : 4 unit 1 cum, take = 10 cum.

(b) Analyse the rate of 2.5 cm cement concrete floor 1 : 1.5 : 3 unit 1 sq.m, take = 100 sq.m. 7×2=14

6. (a) Prepare a preliminary estimate of a four storeyed office building having a carpet area of 2000 sqm for obtaining the administrative approval of the Government given the following data. It may be assumed that 30% of the built up area will be taken up by the corridors, verandah, lavatories etc. and 20% of the built up area will be occupied by walls. 10

(i) Plinth area rate is Rs. 950 per sqm

(ii) Deep foundation at site @ 1% of building cost

(iii) Architectural treatment @ 0.5% of building cost

(iv) Water supply and sanitary installation each @ 3% of building cost

(v) Electrical installation @ 12.5% of building cost

(vi) Other services @ 5% of building cost

(vii) Contingencies @ 2½%

(viii) Supervision charges @ 8%

(b) The plinth area of an apartment is 500 sqm. Determine the total cost of building from following data : 4

(i) Rate of construction = Rs. 1230 per m^3.

(ii) Height of apartment = 16.25 m.

(iii) Water supply, sanitary and electrical installations each at 6% of building cost.

(iv) Architectural appearance @ 1% of building cost.

(v) Unforseen item @ 2% of building cost.

(vi) P.S and contingencies @ 4% of building cost.