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Fourth Semester B.Arch. Degree Examination, July/August 2021
Specification, Quantity and Costing of Buildings

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions.*

1	a.	Explain the need of Estimation.	**(07 Marks)**
	b.	Explain the factors affecting estimation of a building.	**(13 Marks)**
2	a.	Write detailed specification for Earth work in excavation in foundation.	**(10 Marks)**
	b.	Write detailed specification for cement concrete 1 : 2 : 4.	**(10 Marks)**

3   Estimate the quantities of the following items of a two roomed building from Fig. Q (3).

- (i)   Earthwork in excavation in foundation.
- (ii)   Cement concrete in foundation.
- (iii)   Size stone masonry in CM 1 : 6 for foundation and plinth.
- (iv)   2.5 cm D.P.C
- (v)   First class brick work in CM 1 : 4 for super structure.
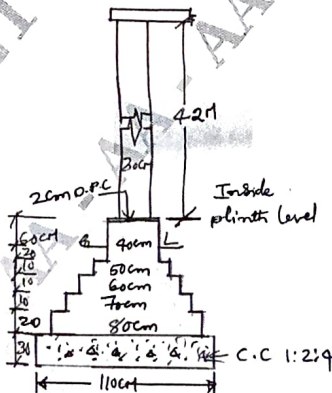
Use long wall-short wall method.

(20 Marks)
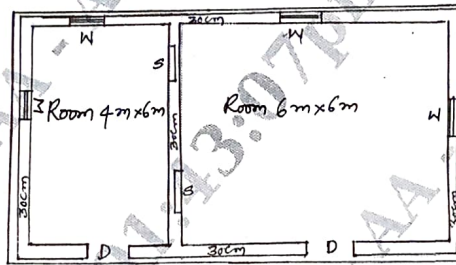
Fig.Q3

Note : (i) Lintels over doors, windows and shelves are 15 cm thick.
(ii) Doors D – 1.2 × 2.1 m
Windows W – 1.00 × 1.5 m
Shelves - 1.00 × 1.5 m.

4 a. Why and how do you build flexibility, resilence and redundancy in BOQ? **(10 Marks)**
   b. What are mandatory tests and safety measures in specification? **(10 Marks)**

5 a. Why do rates vary? Write a note on PWD schedule of rates and market rates. **(06 Marks)**
   b. Explain concept of inflation and its effect on costing. Write about escalation clause, extra items and variations. **(14 Marks)**

6   Do detailed analysis of rates for the following:
   a. R.C.C works in beams, slabs etc 1 : 2 : 4. **(10 Marks)**
   b. First class brickwork in foundation and plinth in CM 1 : 6. **(10 Marks)**

7   Prepare a detailed estimate of a R.C.C. roof slab of 3 m clear span 12 cm thickness and 6 m clear long. Slab bearing on masonry is 150 mm alround. Reinforcement consists of 12 mm diameter main bars 12 cm C/C alternate bent up and distribution 6 mm diameter at 18 cm C/C. R.C.C work in centring and shuttering but excluding reinforcement is Rs.8000/m^3 . Providing and tying reinforcement is Rs.90 per kg. Do sketching and prepare schedule of bars. (12 mm rod – 0.89 kg/m, 6 mm rod – 0.22 kg/m) **(20 Marks)**

8   Prepare a detailed estimate of a R.C.C beam of 8 m clear span (and 30 cm end bearing on masonry) and 75 cm × 40 cm in section. Beam top reinforcement is 2 Nos – 12 mm diameter bars. Beam bottom reinforcement is in 2 layers. First layer is 4 nos. 22 mm diameter bars, 2 nos. bent up at ends. II layer is 4 nos. 20 mm diameter bars, 2 nos. bent up at ends. Beam end stirrups consists of 10 mm diameter @ 12 cm C/C (5 nos.) and 10 mm diameter at 20 cm C/C (4 nos.) Provide 6 mm diameter stirrups in central remaining length. Do sketching and schedule of bars. Schedule of rates is same as Q.No.7 (12 mm diameter rod – 0.89 kg/m, 20 mm diameter rod – 2.47 kg/m, 22 mm diameter rod – 2.98 kg/m, 6 mm diameter rod – 0.22 kg/m) **(20 Marks)**

9 a. Write any four relevant specifications (Detailed) for water supply and sanitary works. **(12 Marks)**
   b. Write role of Architect in monitoring specifications for quality control. Write a note on Measurement Book (MB) and RA bills. **(08 Marks)**

10   Prepare a detailed estimate of a RCC column with footing from the given drawing Fig. Q10. Rates are as follows :
   a. Earthwork excavation in foundation Rs.500/m^3.
   b. Cement concrete 1 : 4 : 8 in base Rs.4000/m^3.
   c. R.C.C work 1 : 2 : 4 in footing including centring and shuttering, but excluding steel - Rs.8000/m^3
   d. R.C.C work 1 : 2 : 4 in column above G.L including centring and shuttering but excluding steel – Rs.8400/m^3
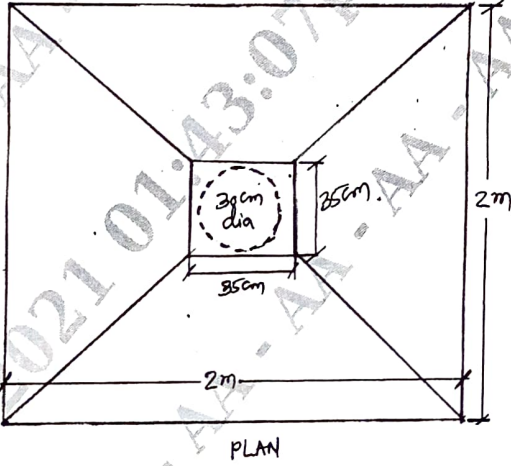   e. Providing bending and tying steel reinforcement – Rs.90/kg. **(20 Marks)**
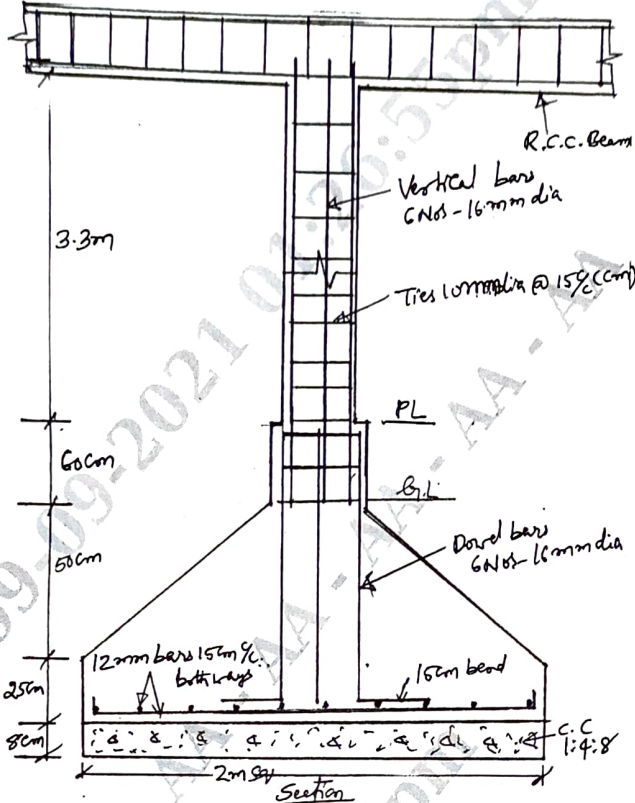
R.C.C. Beam

Vertical bars
6 Nos - 16 mm dia

3.3m

Ties 10 mm dia @ 15 %c (cm)

PL

60 cm

BL

50 cm

Dowel bars
6 Nos - 16 mm dia

12 mm bars 15 cm %c.
both ways

15 cm bead

25 cm

8 cm

C.C
1:4:8

2m Sq.

Section

PLAN

35 cm

30 cm
dia

25 cm.

2m

2m

PLAN

Fig. Q10

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