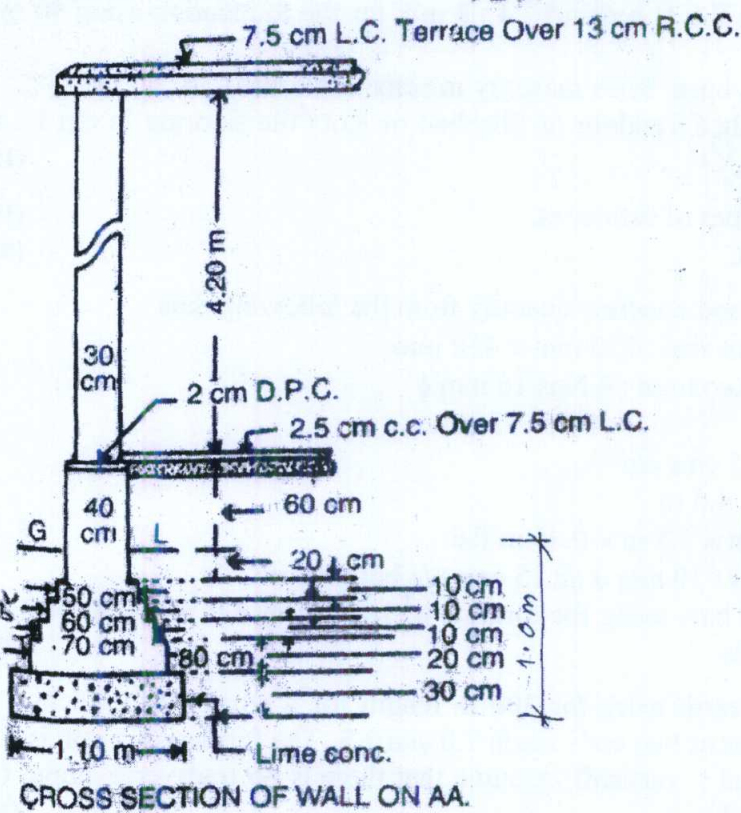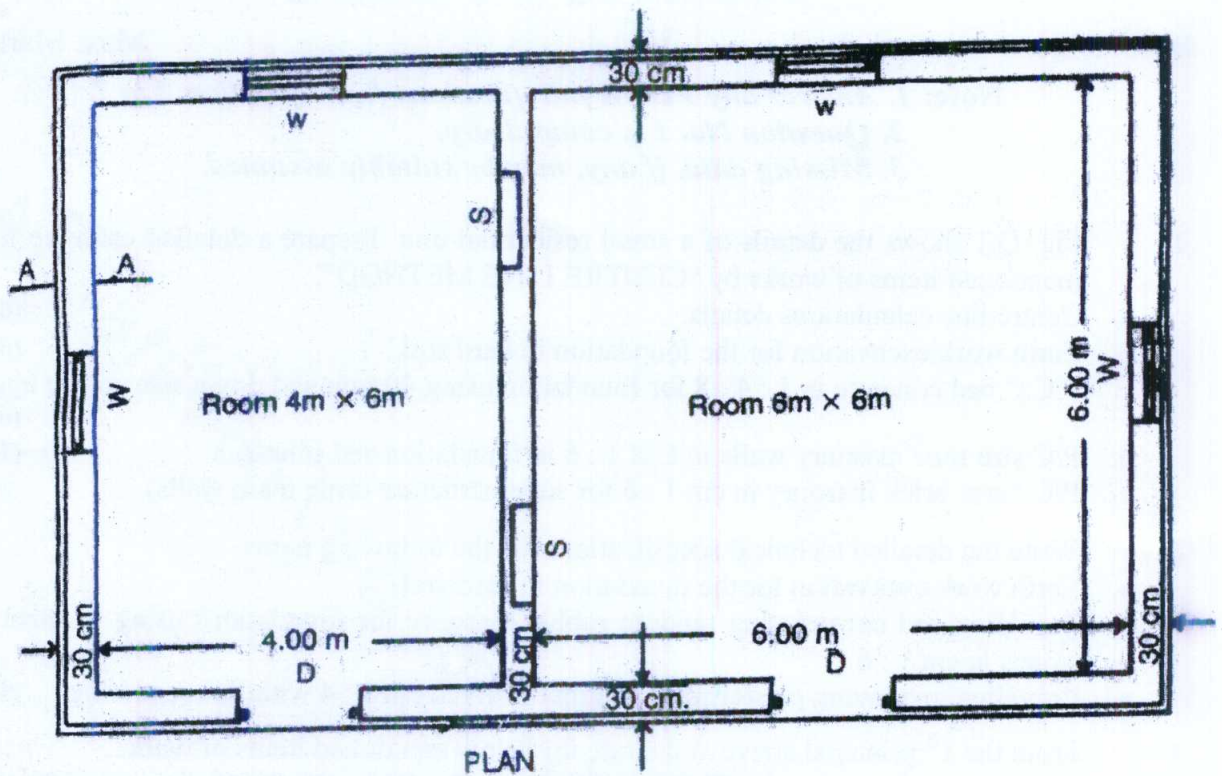## Sixth Semester B.Arch. Degree Examination, June/July 2016
Estimating and Costing

Time: 3 hrs.   Max. Marks:100

Note: *1. Answer any FOUR full questions from question 2 to 7.*
2. Question No. 1 is compulsory.
3. Missing data, if any, may be suitably assumed.

1   Fig. Q.1 shows the details of a small residential unit. Prepare a detailed estimate for below
      mentioned items of works by "CENTRE LINE METHOD".
   a. Centre line calculations details.   **(08 Marks)**
   b. Earth work excavation for the foundation in hard soil.   **(08 Marks)**
   c. P.C.C bed concrete in 1 : 4 : 8 for foundation using 40 mm and down size coarse aggregates.
                                                                                  (04 Marks)
   d. P/C size tone masonry walls in CM 1 : 6 in foundation and plinth.   **(10 Marks)**
   e. P/C burnt brick masonry in cm 1 : 6 for super structure (only main walls). **(10 Marks)**

2   Write the detailed technical specifications for the following items.
   a. Earth work excavation for the foundation in hard soil.
   b. Providing and constructing random rubble masonry for foundations using hammer dressed
       stones in cm 1 : 6
   c. Providing and laying plastering to internal walls in cm 1 : 4 with line rendering.   **(15 Marks)**

3   From the 1st principal arrive at the rate for below mentioned items of work.
   a. Providing and constructing P.C.C bed in 1 : 4 : 8 mix for the foundation using 40 mm down
       size aggregate.
   b. Providing and constructing burnt brick masonry in cement mortar 1 : 8
   c. Providing and laying polished Tandoor or Shahbad or Kota tile flooring in cm 1 : 4 over a
       bed of P.C.C in 1 : 4 : 8.   **(15 Marks)**

4 a. Explain briefly different types of estimates.   **(10 Marks)**
   b. Work charge establishment.   **(05 Marks)**

5   Find out the steel quantity and concrete quantity from the following data :
     i)   Cross section of column size : 230 mm × 450 mm
     ii) Main reinforcement of column : 4 Nos 16 mm ϕ
                                         4 Nos 12 mm ϕ
     iii) Stirrups : 8 mm ϕ @ 15 cms c/c
     iv) Height of the column : 4.5 m
     v)   Column footing : 1.5 m × 1.5 m × 0.45 m flat
     vi) Footing reinforcements : 10 mm ϕ @ 15 cms c/c both ways
     Calculate the weight of all bars using the formula $d^2/162$ where d is diameter of the bar and
     give the bar schedule details.   **(15 Marks)**

6   Calculate the quantity of earth work for 300 m length for a portion of road in a uniform
     ground. The height of banks at two ends begin 7.0 and 1.3. The formation width is 6.0 m and
     side slopes 2 : 1 (horizontal : vertical). Assume that there is no transverse slope. Calculate
     the quantity using method–I.   **(15 Marks)**

7   Fig.Q7 shows the details of septic tank. Prepare the estimate for the following items of work.
   a. P.C.C bed concrete in 1 : 3 : 6 mix for foundation using 40 mm down size aggregate
   b. Burnt brick masonry in cement mortar 1 : 4
   c. Plastering to internal walls in cm 1: 4.   **(15 Marks)**

PLAN

Room 4m × 6m

Room 6m × 6m

30 cm

6.00 m

30 cm

4.00 m
D

6.00 m
D

30 cm.

— 7.5 cm L.C. Terrace Over 13 cm R.C.C.

All Walls are of same section.
Lintels over Doors. Windows and
Shelves are 15 cm thick R.B.

4.20 m

30 cm

— 2 cm D.P.C.

— 2.5 cm c.c. Over 7.5 cm L.C.

40 cm

60 cm

G   L

20 cm

50 cm
60 cm
70 cm   80 cm

10 cm
10 cm
10 cm
20 cm
30 cm

1.0 m

1.10 m   — Lime conc.

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

CROSS SECTION OF WALL ON AA.

Fig. Q1

C. I. Cowl

50mm Dia. C. I. Ventilating pipe 2mm High

V. Bolt

7.5 cm R. C. C. Slab Precast

G. L.

Outlet

Inlet

30

5

15

100 mm
S. W. Pipe
300 cm Long

30

40

100 mmDia
S. W. Pipe

20

4 cm R. C. C.
Baffle

20

Iron Foot Steps

140

60

30

Slope 1 in 20

10

10

20

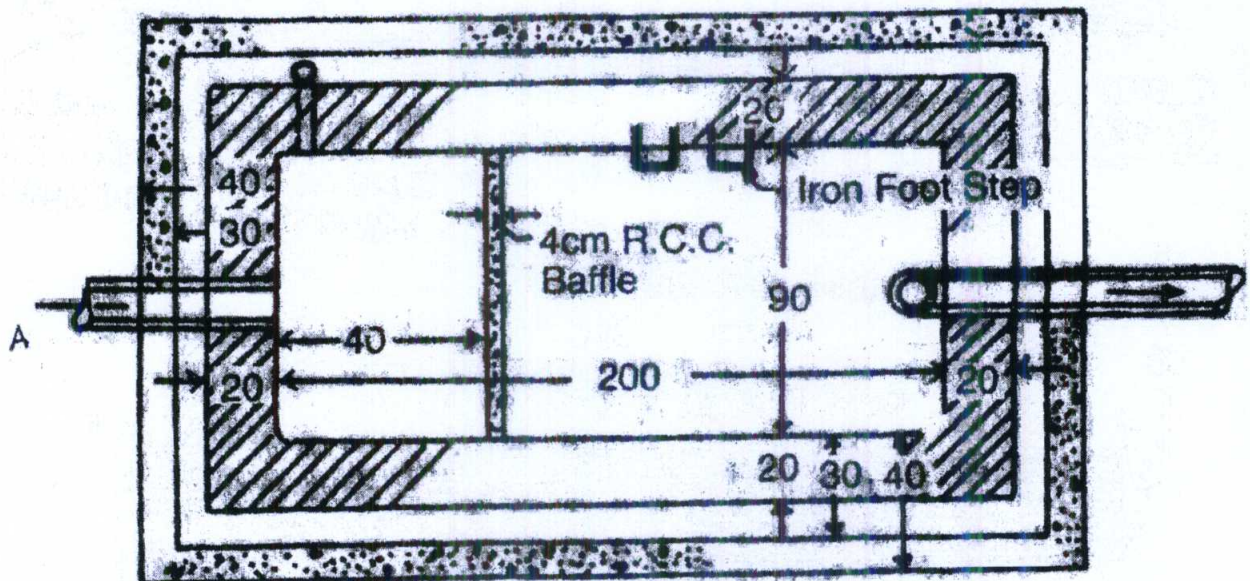1:3:6 C.C.

SECTION
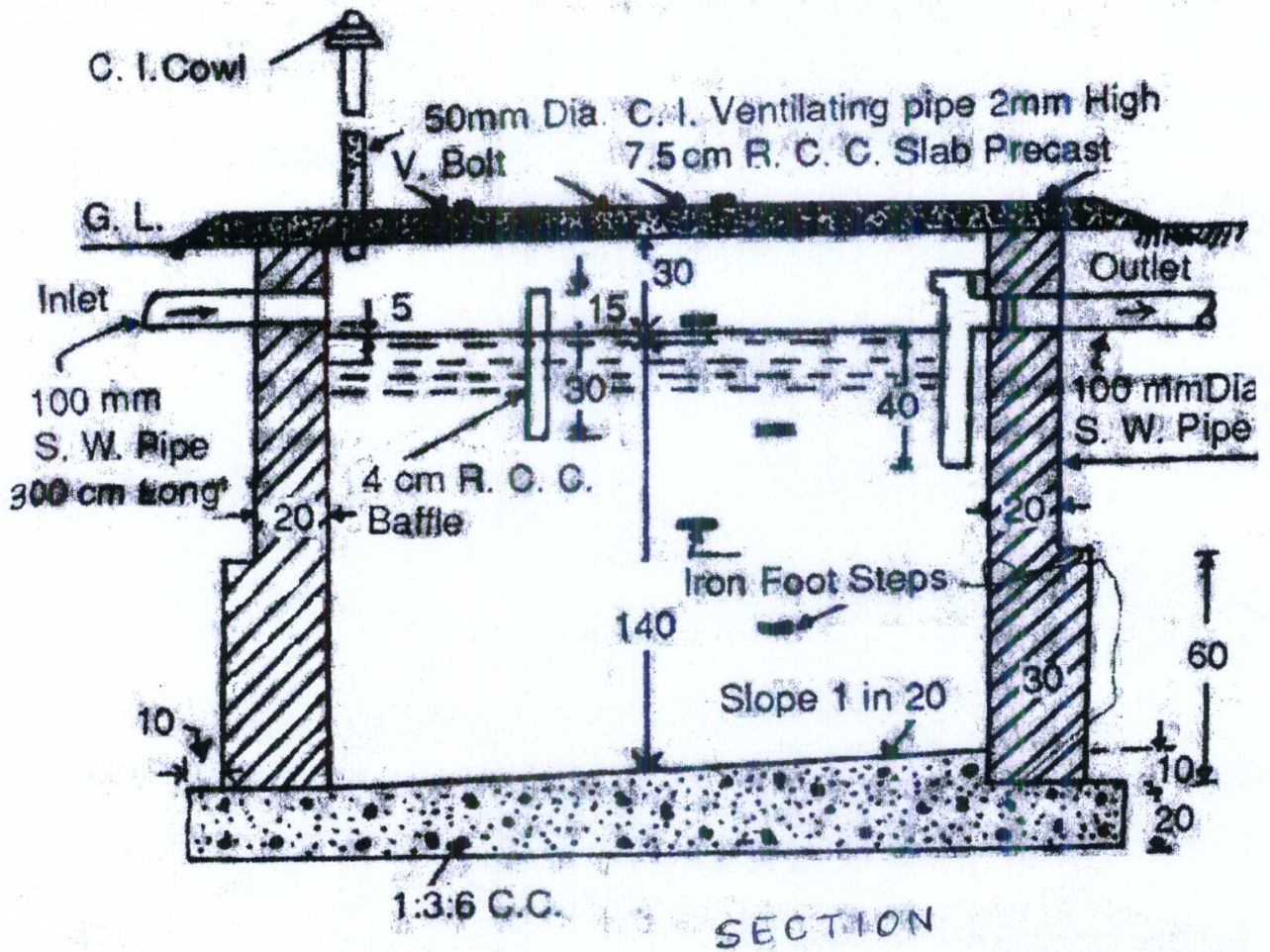
40

30

20

4cm R.C.C.
Baffle

Iron Foot Step

A

40

90

20

200

20

20 30 40

Fig. Q7
All dimensions in centimeter

* * * * *