



## **QUESTION BANK**

**ON**

**Estimation & Cost Evaluation-II (Th.5)**

**5<sup>th</sup> Semester**

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## CHAPTER :- 1 Detailed estimate of culverts and bridges

### 2 MARKS

- 1) What is a Culvert and when Hume pipe Culvert is preferred?
- 2) What is the total length of straight bar hooked at both ends having straight length L and dia D?
- 3) Calculate the additional length of bent up bar for 45° cranked bar?
- 4) Calculate the number of main bars required for a slab of 2.1 m × 4.8 m provided with 1.6 mm dia bars @ 30 cm C/C ?
- 5) Enlist different components of Hume pipe culvert.
- 6) Calculate the standard weight of 12mm dia. mild steel bar of 3m length.

### 5 MARKS

- 1) Estimate the following item involved for the fall from fig. 1
  - i. Earth work in excavation.
- 2) Calculate the quantity of 1st class brickwork in Figure - 2.
- 3) Calculate the quantity of pointing works involved from Figure - 2
- 4) Estimate the following items of a fall from fig 1
  - i. Cement Pointing in 1: 3 cement mortar.
  - ii. Brick pitching.

### 10 MARKS

- 1) Estimate the following items of work of a pipe culvert from Fig No. 2
  - i. I class brickwork in 1: 4 cement mortar.
  - ii. R.C.C. Work.
- 2) Calculate the quantity of reinforcement for a R.C.C slab of size 4m x 5m x 12 cm thick. 10 mm dia rods are placed in short span (@ 20 cm e/e with one side 45° crank with 3rd hooks. 10 mm dia rods are placed in long span @ 25cm e/c with one side 45° crank with end hooks. 4 nos 10 mm dia bars along short span and 4 nos along long span are provided as top bars. Provide clear cover 25 mm and side cover 40 mm.
- 3) Prepare a quantity estimate for the following items of works of a slab culvert given in Figure 1.
  - (a) Earthwork in excavation.
  - (b) Cement concrete works in foundation.
  - (c) 1 class brick work in cement mortar.

FIGURE 2

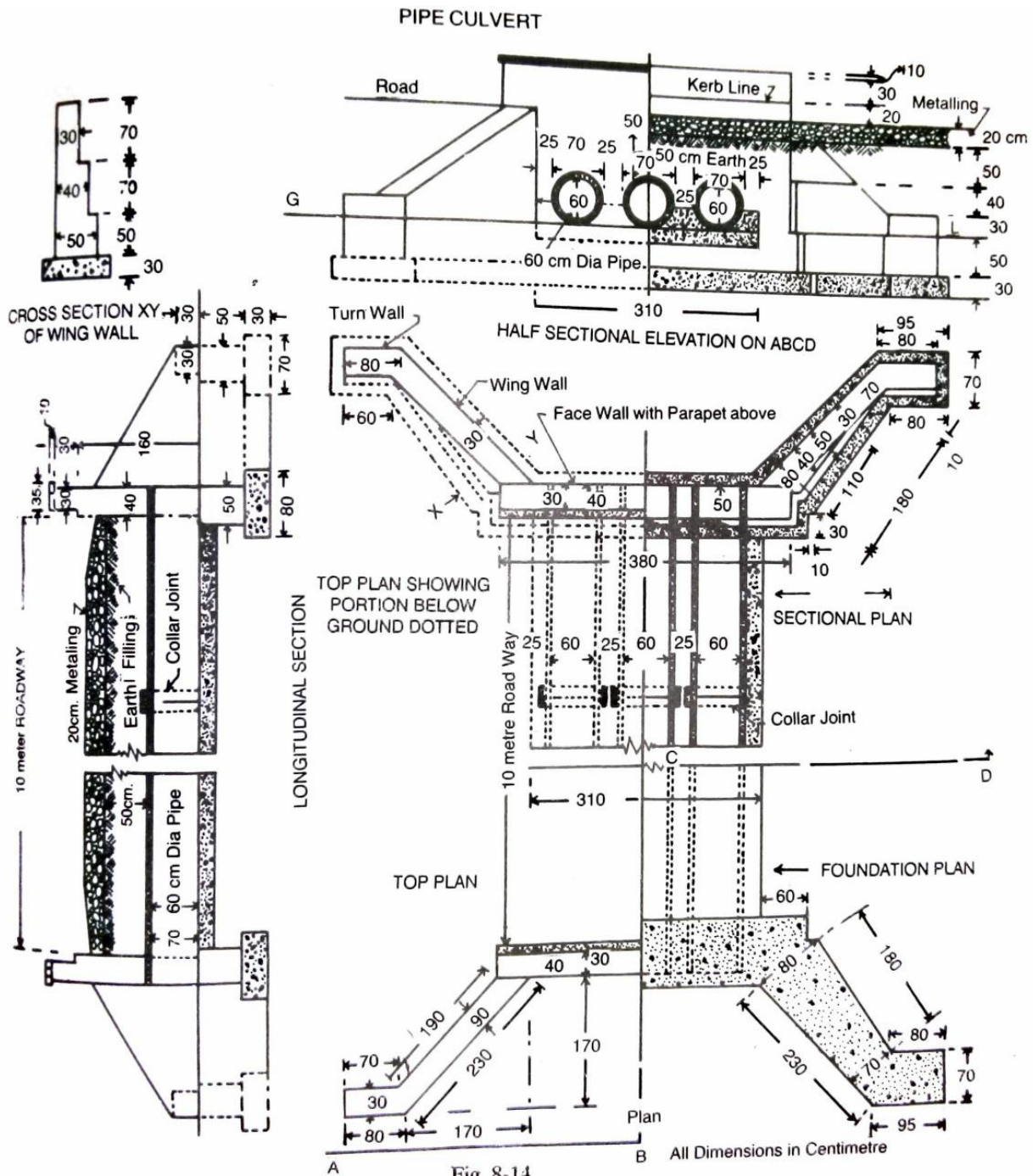
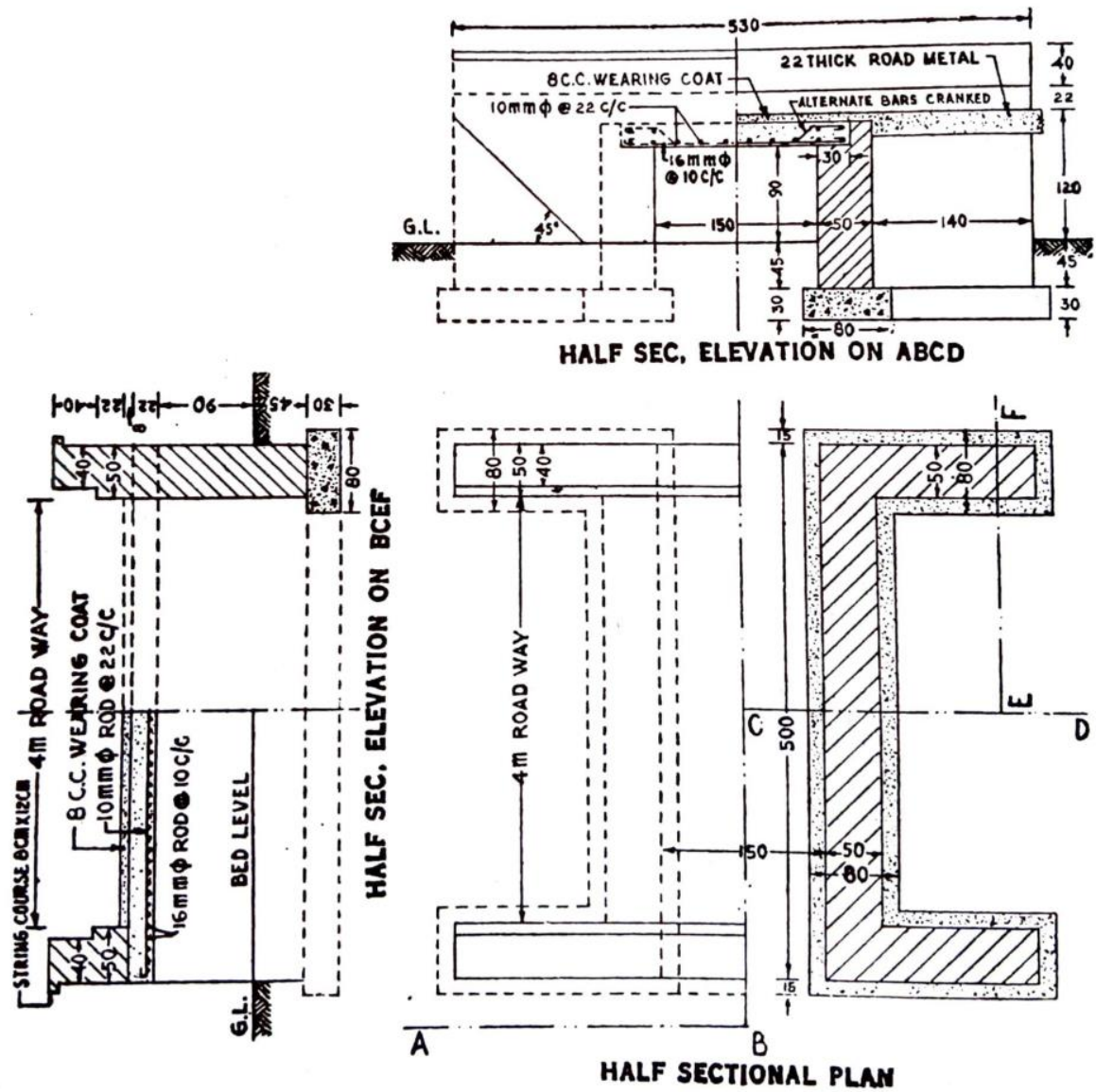


Fig. 8-14

FIGURE 1



All dimensions in centimetre scale 1:75

## **Chapter 2 Estimate of irrigation structures**

### **2 MARKS**

- 1) What is a drainage siphon?
- 2) What is a vertical fall?
- 3) When a drainage siphon is provided?
- 4) When a vertical fall is provided?

### **5 MARKS**

- 1) Calculate the quantity of pointing works involved from Figure - 2.
- 2) Calculate the quantity of 1st class brickwork in Figure - 1.
- 3) Estimate the following items of a fall from fig 2
  - i. Cement Pointing in 1: 3 cement mortar.
  - ii. Brick pitching
- 4) Estimate the following item involved for the fall from fig. 2.
  - i. Earth work in excavation.

### **10 MARKS**

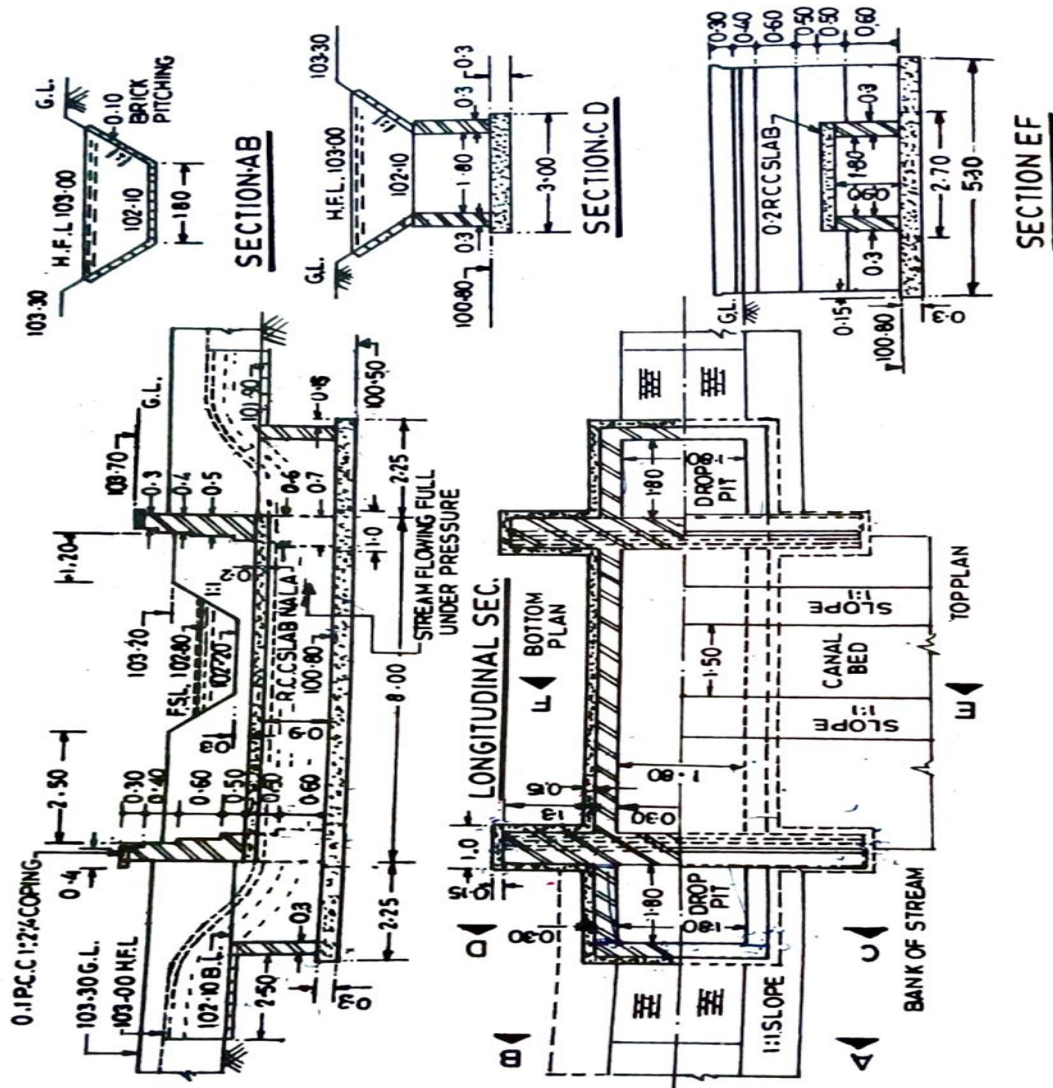
- 1) Calculate the quantity of "Earthwork in Excavation" for the construction of a canal fall from the drawing given in Figure - 1
- 2) Prepare a quantity estimate for the following items of works of a canal vertical fall given in Figure - 1
  - (a) Earthwork in excavation.
  - (b) Cement concrete works in foundation.
  - (c) 1 class brick work in cement mortar.
- 3) Prepare a detailed estimate of the following items of a siphon aqueduct from the given figure 6. The general specifications: Cement concrete in foundation shall be 1:3:6 with brick ballast. Brickwork shall be of cement mortar 1: 4.

Fig 2

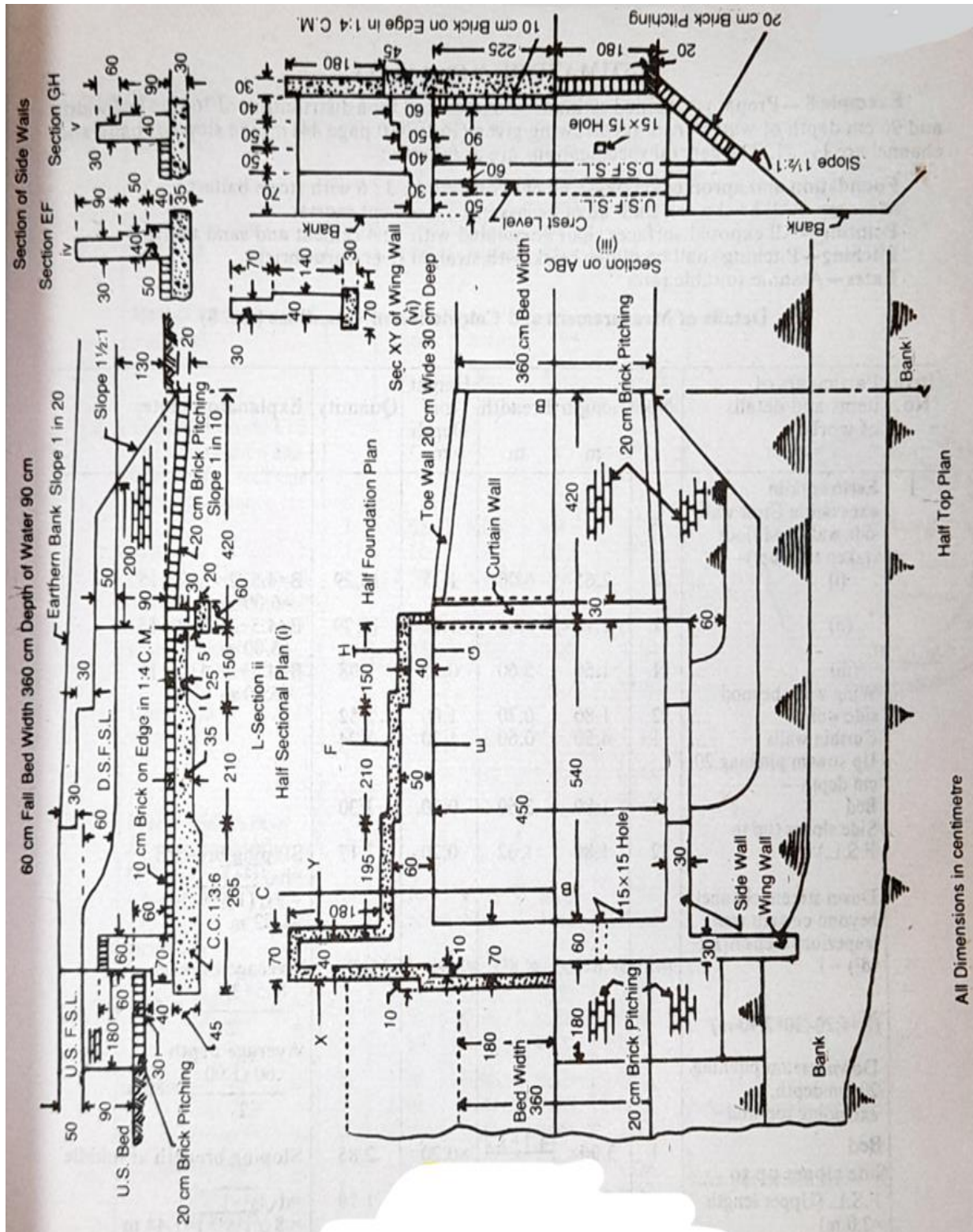


- i. Earthwork in excavation in foundation.
- ii. First class brickwork in cement mortar (1:4)

FIGURE 1



## FIGURE 2



## **CHAPTER: - 3 Detailed estimate of roads**

### **2 MARKS**

- 1) Calculate the quantity of stone grit 20 mm gauge @1.3 cum % sq. and binder @ 210 kg% sq. for a road of length 2 K.m and metaled width is 4m.
- 2) Find the area of temporary land required for 2 km length of a road having formation width 8m, average height of bank is 1.5m. Side slope is 2(horizontal). 1(vertical). Depth of borrow pit is 20 cm.
- 3) Find the quantity of stone pitching along the side slopes of a portion of road from the following data. The depth of bank at two ends being 3m and 4m. Side slope is 1½: 1. Thickness of stone pitching 15 cm. Length of road is 300 m.

### **5 MARKS**

- 1) Estimate the cost of earthwork for a portion of road from the following data. Road width at the formation surface is 8 meter. Side slope 2: 1 in banking and 1½: 1 in cutting. Length of the chain is 30 meter.

Chainage	20	21	22	23	24	25	26	27	28	29	30
Ground level	71.20	71.25	70.90	71.25	70.80	70.45	70.20	70.35	69.10	69.45	69.70
Formation level	70.00	Upward gradient 1 in 200									

- Take the rate of earthwork as Rs. 275.00 per in banking and Rs. 350.00 per cum in cutting.
- 2) Calculate the quantity of earthwork by prismoidal method for 200 mtr length for a portion of a road in an uniform ground, the heights of banks at the two ends being 1.00 m and 1.60 m. The formation width is 10 mtr and side slopes 2: 1 (Horizontal : Vertical). Assume that there is no transverse slope

### **10 MARKS**

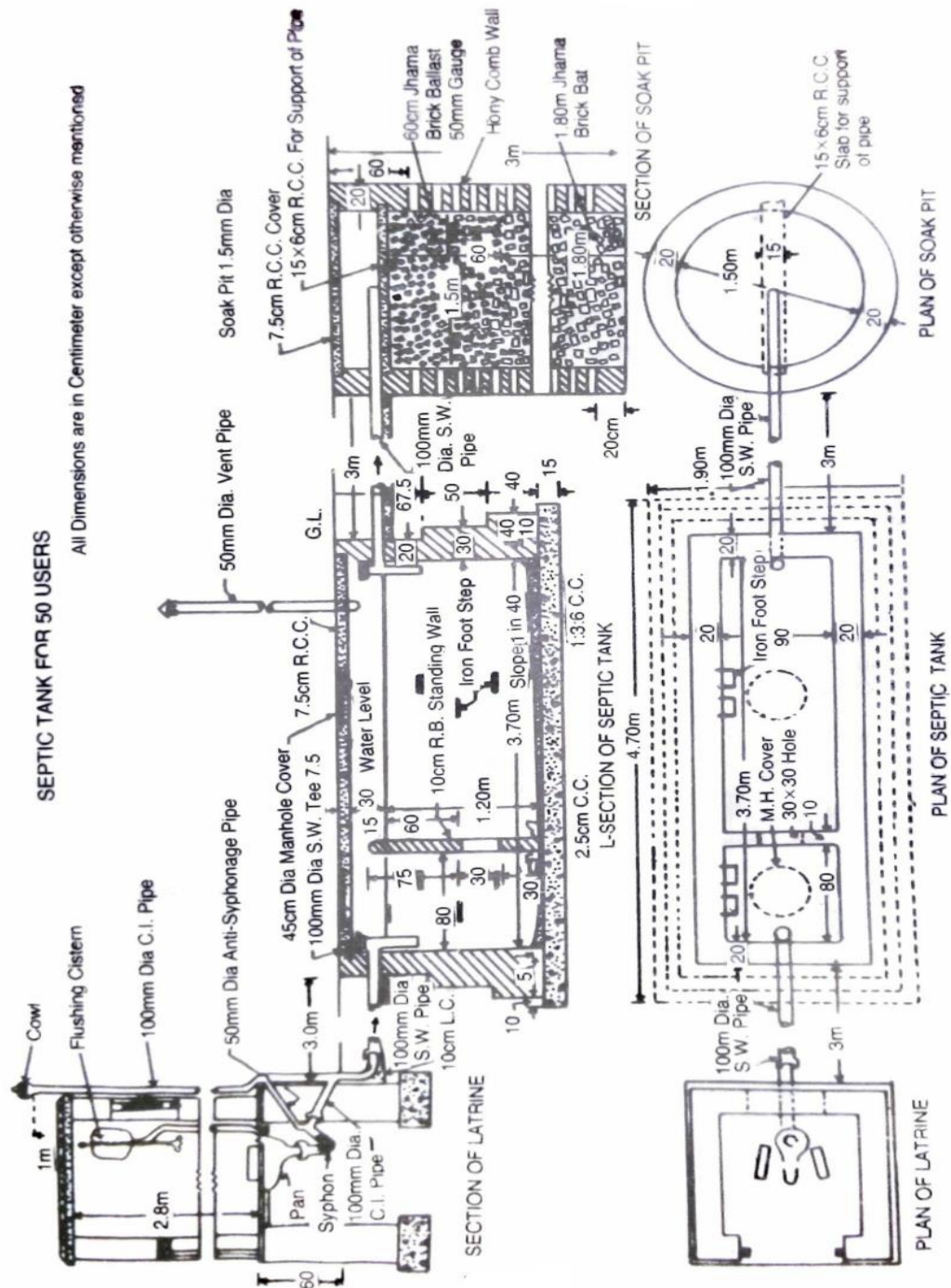


- 1) Estimate the following items involved for septic tank shown in Fig. No. 1
  - i. Earth work in excavation
  - ii. I class brick work in 1 : 4 cement mortar
  - iii. 12 mm thick inside plastering.
  - iv. R.B work in partition wall.
  
- 2) Estimate the items involved for the construction of a new state highway of WBM road from the following data. Length of road = 200 m Metalled width = 6m Thickness of grade 1 metal soling = 80 mm Wearing coat of grade - II metal = 12 cm loose and compacted to 8 cm. Surface to be finished with 2 coats of bitumen as given below. First finishing coat = 12 mm chips @  $0.18 \text{ m}^3$  and bitumen @  $1.32 \text{ kg}$  per  $\text{m}^2$  of road surface. Second finishing coat = 6mm chips @  $0.010 \text{ m}^3$  and bitumen @  $1.36 \text{ kg}$  per  $\text{m}^2$  of road surface. Consumption of fuel @  $0.45 \text{ kg}$  per kg of bitumen

3. Estimate the cost of earthwork for a portion of road of 1 Km length from the following data. The cost of earthwork is Rs. 600/- per cum for banking and Rs. 750/- per cum for cutting. Also draw the longitudinal section and typical section. Formation width of a road is 10 metre and side slope is 2 : 1 in banking and  $1\frac{1}{2}$  : 1 in cutting. Length of chain is 40m. [10]

Station	25	26	27	28	29	30	31	32	33	34	35
R L of ground	52.0	51.9	51.5	51.8	51.6	51.7	52.2	52.4	52.3	52.0	51.6
R L of formation	53.0	<.....downward gradient of 1 in 200.....>									

- 3) Estimate the items involved for construction of a WBM road from the following data:  
 Length of road =  $150 \text{ m}$  Formation width =  $10 \text{ m}$  Metalled width =  $8 \text{ m}$ .  
 Thickness of grade-I metal soling = 90 mm Wearing coat of grade - II metal = 12 cm thick loose and 8 cm thick compacted surface to be finished with 2 coats of bitumen as given below: First finishing coat = 12 mm chips @  $0.020 \text{ m}^3$  and bitumen @  $1.24 \text{ kg}$  per  $\text{m}^2$  of road surface. Second finishing coat = 6 mm chips @  $0.02 \text{ m}^3$  and bitumen @  $1.24 \text{ kg}$  per  $\text{m}^2$  of road surface. Consumption of fuel @  $0.45 \text{ kg}$  per kg of bitumen.



**FIGURE 1**

## CHAPTER: -4 Miscellaneous estimate

### 2 MARKS

- 1) Differentiate between isolated and combined footings.

### 5 MARKS

- 1) Estimate the quantity of fundamental items involved for the construction of a tube well having following data. Dia of tube well = 40 mm, depth = 40m. The length of strainer is 3m. The pipe is projected 20 cm above GL. One ordinary hand pump and four sockets are used.
- 2) Estimate the volume of concrete for the footing given in the fig 1?
- 3) Estimate the quantities of items of a tube well from fig No. 2.