

H-101/12

5TH SEM./ CIVIL /2020(W)
Th5 Estimating & Cost Evaluation- II

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer All questions

2 x 10

- What do you mean by Technical sanction?
- Define special repair with example.
- Define E.M.D.
- Calculate the standard weight of 12mm dia mild steel bar of 3m length.
- Calculate the quantity of stone grit 20mm gauge @ 1.3cum % sqm and binder @210kg % sqm for a road of length 2K.m and metalled width is 4m.
- Find the area of temporary land required for 2km length of a road having formation width 8m, average height of bank is 1.5 m. Side slope is 2(horizontal):1(vertical). Depth of borrow pit is 20 cm.
- 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 $1\frac{1}{2} : 1$. Thickness of stone pitching 15 cm. Length of road is 300m.
- Define "Imprest Money".
 - What is "RERA"? Write down the date of establishment of RERA in Odisha.
- Differentiate between isolated & combined footings.

2. Answer Any Six Questions

6 x 5

- Write down different method of execution of work in P.W.D.
- Calculate the quantity of pointing works involved from Figure -2.
- Calculate the quantity of 1st class brickwork in Figure -1.
- What do you mean by Tender? Write a notice inviting tender for any work.
- Write short notes on Muster roll and Acquittance roll.
- Estimate the quantity of fundamental items involved for the construction of a tube well having following data.
Dia of tube well =40mm, depth = 40m . The length of strainer is 3m. The pipe is projected 20 cm above G.L . One ordinary hand pump and four sockets are used.
- What do you mean by building bye-law? Write down the objectives of it.

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.

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.....→									

Estimate the items involved for the construction of a new state highway of WBM 10 road from the following data.

Length of road=200 m

Metalled width= 6m

Thickness of grade I metal soling=80mm

Wearing coat of grade-II metal =12cm loose and compacted to 8cm

Surface to be finished with 2 coats of bitumen as given below.

First finishing coat= 12mm chips @0.018m³ and bitumen @1.32kg per m² of road surface.

Second finishing coat=6mm chips @0.010m³ and bitumen @1.36kg per m² of road surface.

Consumption of fuel @ 0.45kg per kg of bitumen.

5 Calculate the quantity of "Earthwork in Excavation" for the construction of a canal 10 fall from the drawing given in Figure-1.

6 Prepare a quantity estimate for the following items of works of a slab culvert given 10 in Figure-2.

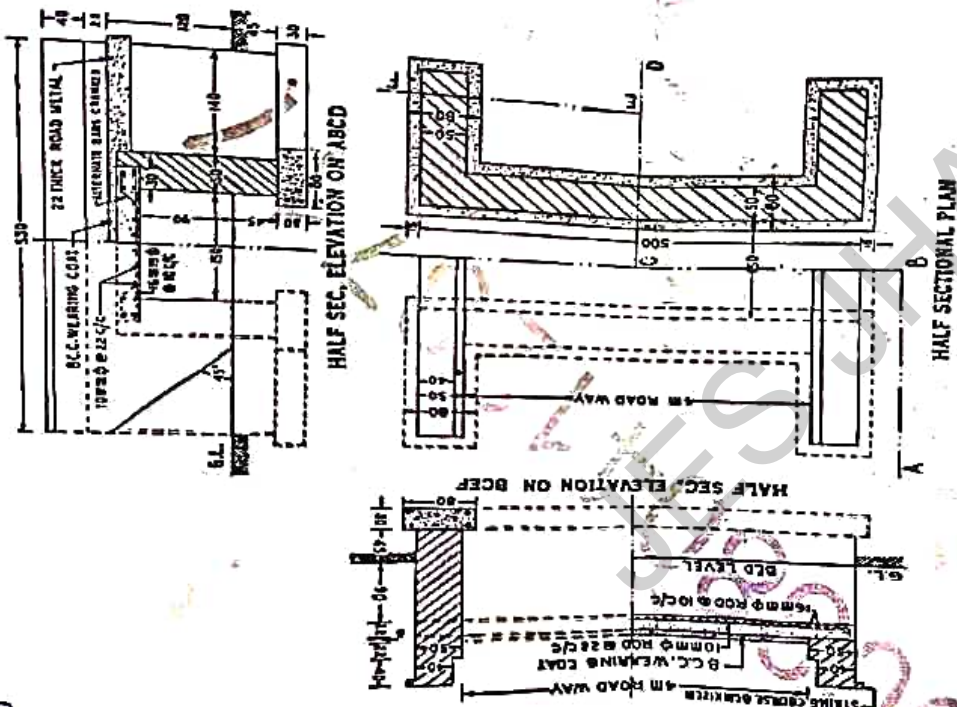
(a) Earthwork in excavation [3]

(b) Cement concrete works in foundation [2]

(c) 1st class brick work in cement mortar [5]

Calculate the quantity of reinforcement for a R.C.C slab of size 4m×5m×12cm 10 thick. 10mm dia rods are placed in short span@20cm c/c with one side 45° crank with end hooks. 10 mm dia rods are placed in long span @ 25cm c/c with one side 45° crank with end hooks. 4 nos 10mm dia bars along short span and 4 nos along long span are provided as top bars. Provide clear cover = 25mm and side cover =40 mm.

Fig 2



All dimensions in centimetre scale 1/75

FIG. 2

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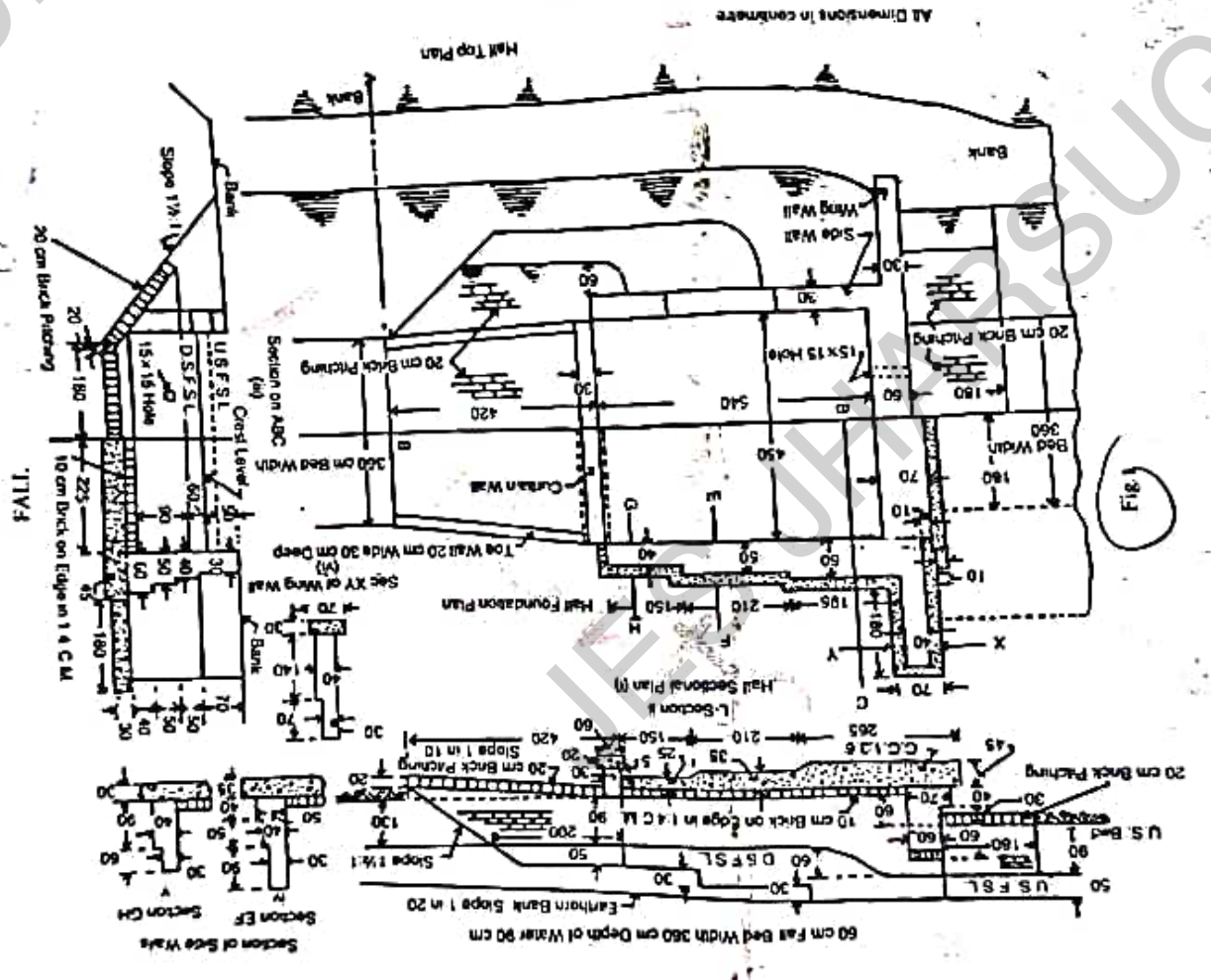


Fig.

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5th Sem./ Civil/2021(W)

TH 5 Estimation & Cost Evaluation-II

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1 & 2
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1 Answer All questions

2 x 10

- a. What is a Culvert and when Hume pipe Culvert is preferred?
- b. What is the total length of straight bar hooked at both ends having straight length L and dia D?
- c. What indent and stock?
- d. Classify different types of work?
- e. Define tender and contract.
- f. Define Lead and Lift.
- g. Calculate the additional length of bent up bar for 45° cranked bar?
- h. Calculate the number of main bars required for a slab of 2.1m X 4.8m provided with 16 mm dia bars @ 30cm C/C ?
- i. Enlist different components of hume pipe culvert.
- j. What is final bill and running bill ?

2 Answer Any Six Questions

6 x 5

- a. 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 1.00m and 1.60m. The formation width is 10 mtr and side slopes 2:1 (Horizontal: Vertical). Assume that there is no transverse slope.
- b. Estimate the following item involved for the fall from fig 2.
 - i. Earth work in excavation
- c. Estimate the volume of concrete for the footing given in the fig 5 ?
- d. Explain muster roll and measurement book.
- e. Estimate the cost of earthwork for a portion of a road from the following data.
Road width at the formation surface is 8 metre. Side slope 2:1 in banking and 1½:1 in cutting.
Length of the chain is 30 metre.

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

Take the rate of earthwork as Rs. 275.00 per cum in banking and Rs. 350.00 per cum in cutting.

- f. Estimate the quantities of items of a tube well from fig No 4 . 5
- g. Estimate the following items of a fall from fig 2
 i. Cement Pointing in 1:3 cement mortar.
 ii. Brick pitching.
- 3 Estimate the following items of work of a slab culvert from Fig No 1. 5+5
 i. I class brickwork in 1:4 cement mortar.
 ii. R.C.C Work.
- 4 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.
 i. Earthwork in excavation in foundation.
 ii. First class brickwork in cement mortar (1:4).
- 5 Estimate the following items involved for septic tank shown in Fig No 3. 3+3+2+2
 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.
- 6 Estimate the items involved for construction of a WBM road from the following data: 10
 Length of road =150 m.
 Formation width =10m.
 Metalled width = 8 m.
 Thickness of grade-I metal solving = 90mm.
 Wearing coat of grade-II metal =12 cm thick loose and 8cm thick compacted surface to be finished with 2 coats of bitumen as given below:
 First finishing coat = 12 mm chips @ 0.020 m³ and bitumen @ 1.24 kg per m² of road surface.
 Second finishing coat = 6 mm chips @ 0.02m³ and bitumen @ 1.24 kg per m² of road surface.
 Consumption of fuel @ 0.45 kg per kg of bitumen.
- 7 Write short notes on : 2 ½ x 4
 (a) Regular Establishment
 (b) Aquittance role
 (c) Administrative Approval.
 (d) Tender and contract

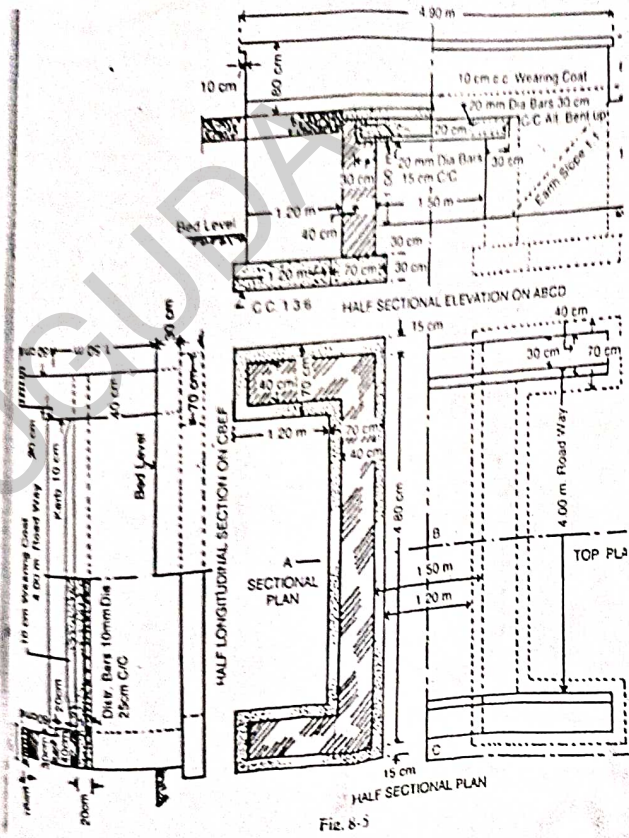


Fig 1

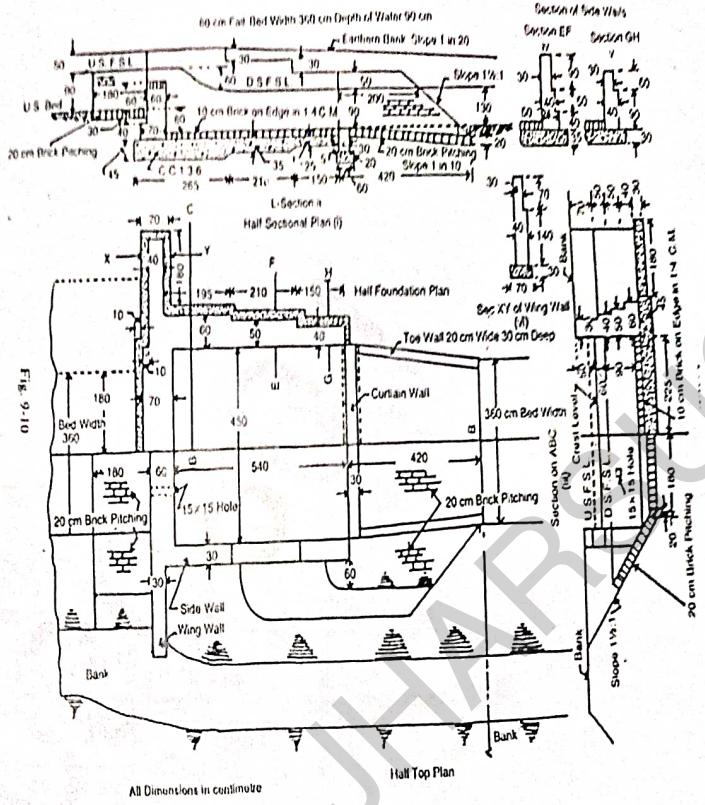


Fig 2

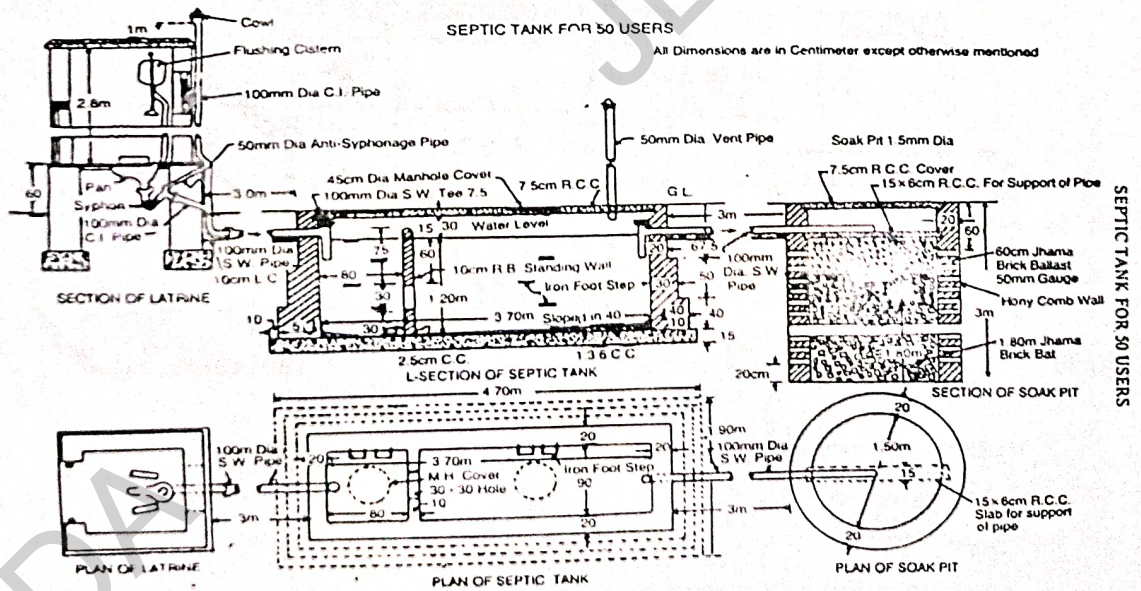
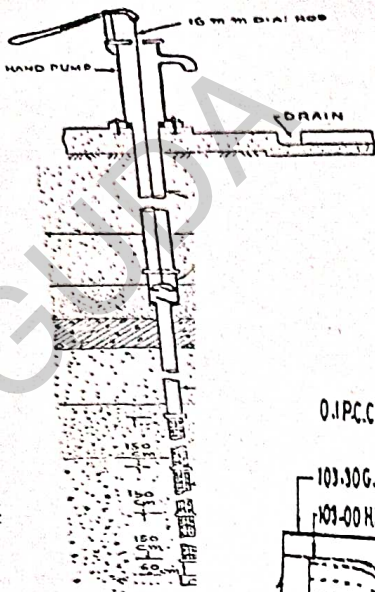
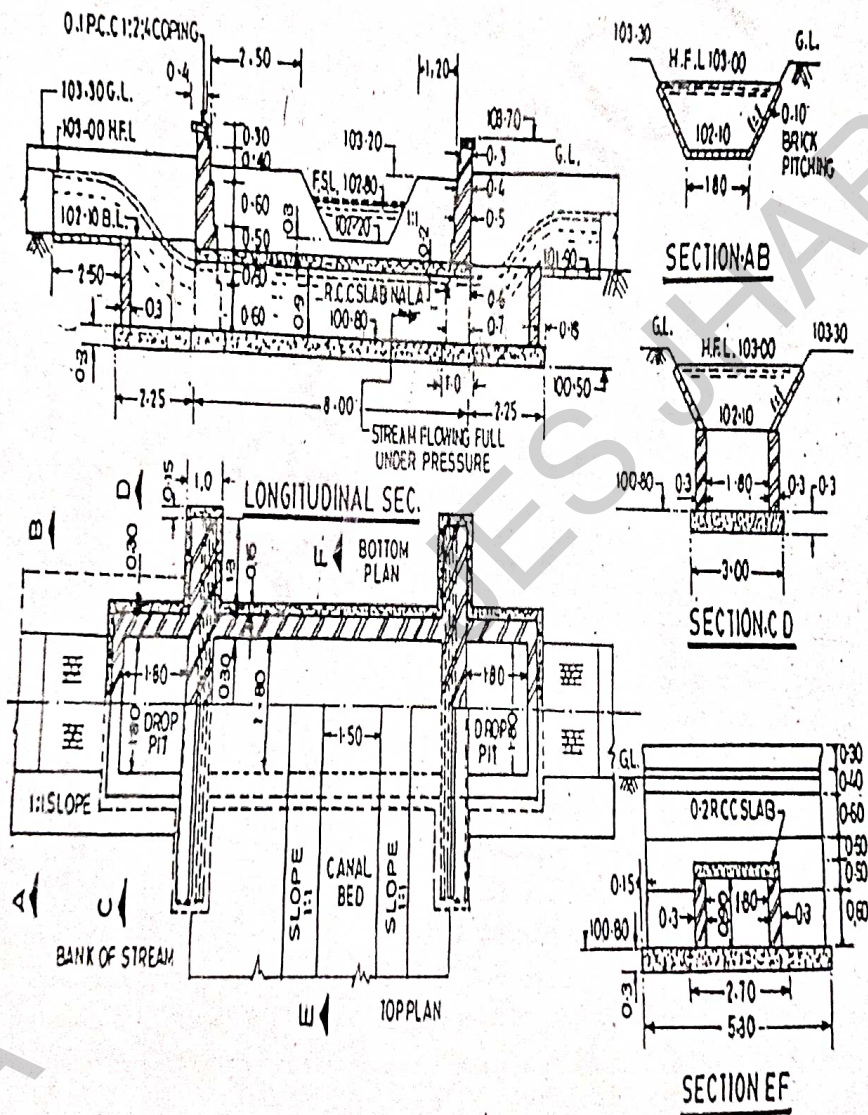


Fig 3



Trapezoidal column footing

(Fig 4)
(Fig 5)



(Fig 6)