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.   2X10
   a.   Mention the need of kerb and coping in culverts.
   b.   Under which circumstances, fall is provided in canal?
   c.   What are the components of a drainage siphon?
   d.   Differentiate between original work and repair work.
   e.   Differentiate between lumpsum contract & item rate contract.
   f.   Define earnest money deposit (EMD) .
   g.   What is the weight of a 16 mm dia. reinforcing bar of 4 m length?
   h.   Define muster roll.
   i.   What is RERA and when it was formed in Odisha?
   j.   Define setback and bin card.

2.   **Answer Any Six Questions.**   6 x 5

   a.   An RCC slab of 5m x 3m x150 mm is reinforced with 10 mm dia bars along shorter span with alternate bent ups at 150 mm spacing c/c.8 mm bars are used straight along longer span at 250 mm spacing c/c.6 nos of 8 mm bars used as binder to support bent up bars along longer span 3 nos on each side. The slab is having a bottom cover of 20 mm and side cover of 15 mm. No end hooks are provided in any reinforcing bar in this slab. Estimate the quantity of reinforcing bar used in this slab.
   b.   Define measurement book(MB). Mention the procedure for making entries of measurement of work in an MB.
   c.   Estimate the quantities of following items from Fig.1.   2.5x2
        i. Earthwork in excavation
        ii. Foundation Concrete (1:3:6)
   d.   Write short notes on administrative approval.

   e.   Elaborate the method of execution of work through contractors and Engineering Department.
   f.   Estimate the quantities of following items from Fig.2.   2.5x2
        i. Earthwork in excavation
        ii. Cement concrete 1:4:8 in foundation
   g   Explain building byelaws and mention the objectives of it.
        Answer Any Three Questions
3   Estimate the cost of earthwork for a portion of a road of 1 km length from the following   10
     data. The cost of earthwork is Rs.800/- for banking and Rs. 950/- for cutting. Also draw the
     longitudinal section and typical section. Formation width of the road is 10 m and side slope
     is 2:1 in banking and 1.5:1 in cutting. Length of the chain is 40 m.
4   Estimate the quantities of following items from Fig.1.   5x2
     i. 1st class brickwork in 1:4 cm
     ii. Cement Pointing in 1:6
5   Estimate the quantities of following items from Fig.2.   5x2
     i.1st class brickwork in 1:4 cm
     ii. Cement Pointing in 1:6
6   Estimate the quantities of following items from Fig.3.   5x2
     i. Earthwork in Excavation
     ii.Foundation Concrete in (1:3:6)

7   Write short notes on.   2.5x4
   i.   Administrative approval
   ii.   Technical Sanction
   iii.   Measurement Bill
   iv.   RA Bill

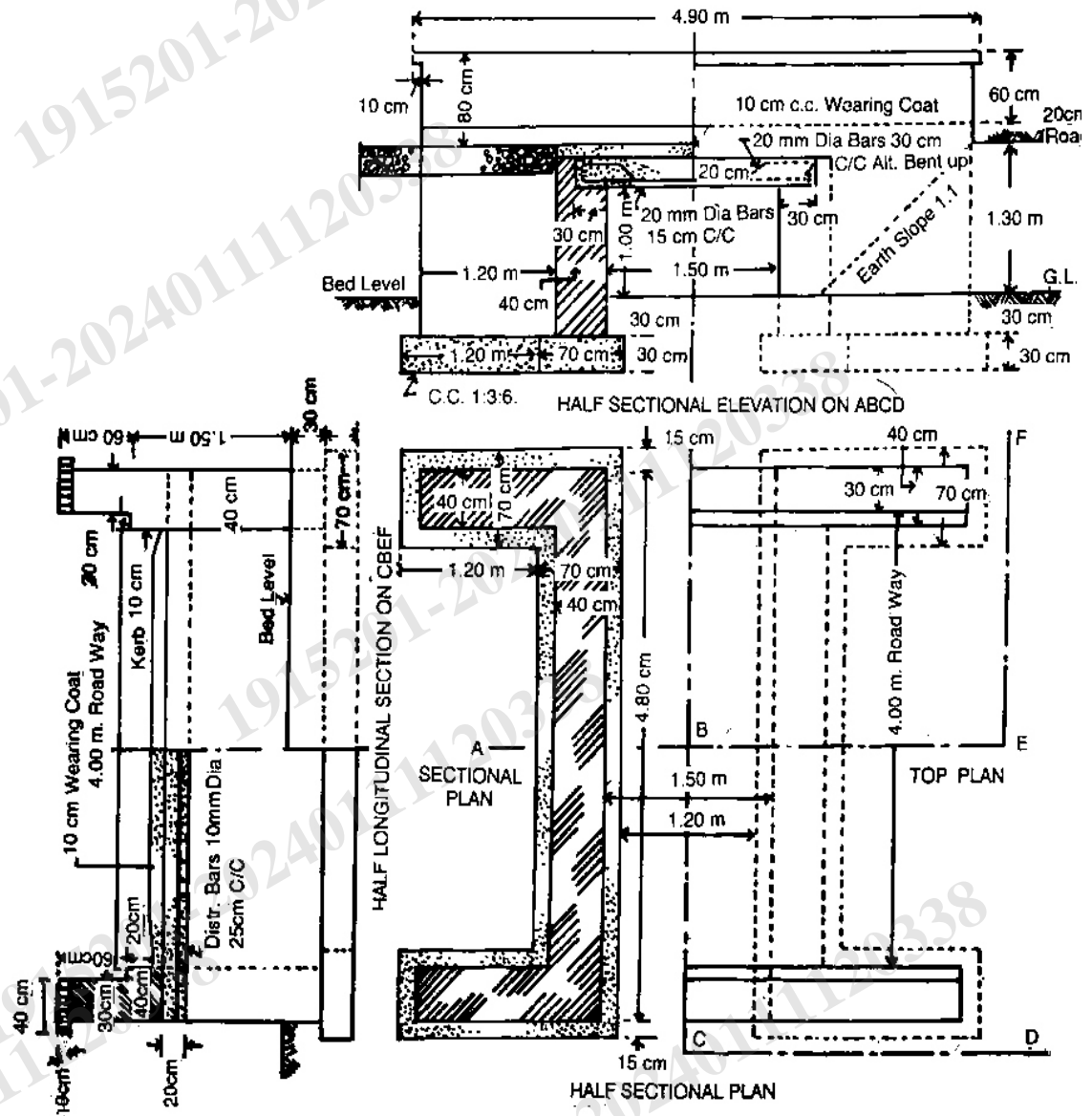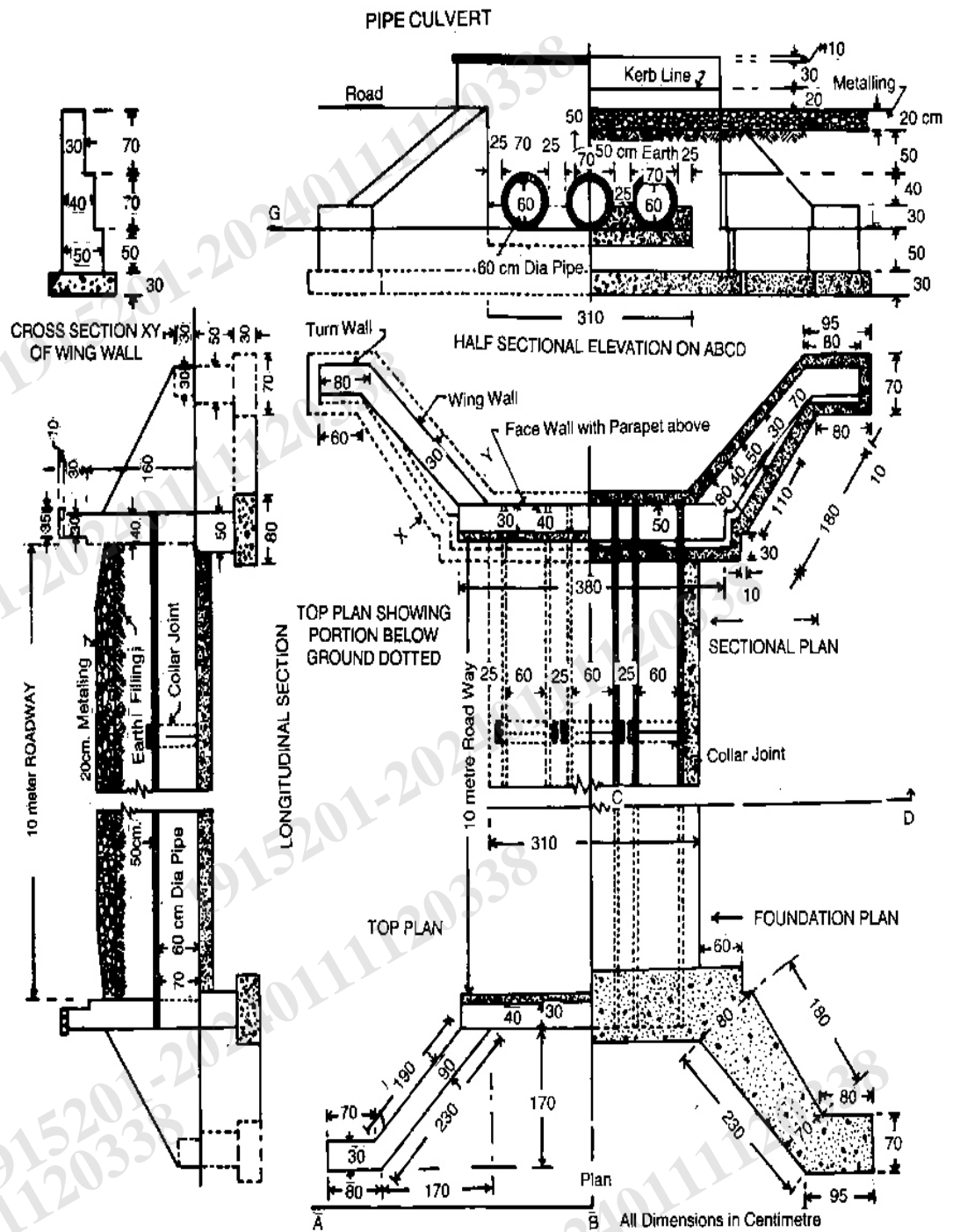R.C.C. SLAB CULVERT 1.50 m SPAN with standard modular bricks

Figure-1

PIPE CULVERT

CROSS SECTION XY
OF WING WALL

HALF SECTIONAL ELEVATION ON ABCD

LONGITUDINAL SECTION

TOP PLAN SHOWING
PORTION BELOW
GROUND DOTTED

SECTIONAL PLAN

FOUNDATION PLAN

TOP PLAN

Plan

Figure-2

All Dimensions in Centimetre

Road

Kerb Line

Metalling

50 cm Earth

60 cm Dia Pipe.

Turn Wall

Wing Wall

Face Wall with Parapet above

Collar Joint

20cm. Metalling

Earth Filling

60 cm Dia Pipe

50cm.

10 meter ROADWAY

10 metre Road Way

20 cm

Figure-3