



Answer the following questions:

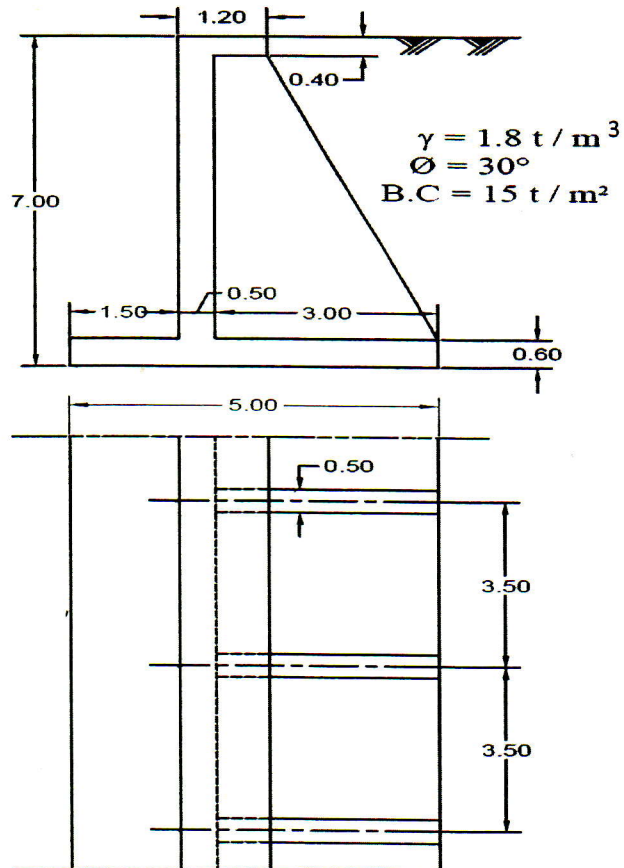
Question 1:

(40marks)

For the following counterfort reinforced concrete retaining wall

It is required to:

- 1) Design of vertical slab.
- 2) Check of stability.
- 3) Design of horizontal slab.
- 4) Design of counterfort.
- 5) Design vertical & horizontal stirrups.
- 6) Details of reinforcement.



Question 2:

(40marks)

A bridge is constructed on a regulator of two vents, the span of each is 7.00 m. The road way is 12.00 m Wide with 2 side foot-paths of 2.0 m each. The pier and abutment are to be constructed in plain concrete. The live load on the bridge are as following:

- 1) Two Lorries of the standard truck-type for road bridge, the plan of which 0.50 m apart.
- 2) A live load of 1000 kg/m² in the spacing around the Lorries.
- 3) A uniformly of 400 kg/m² on the foot-paths.

It's required to:

1. Design R.C bridge and footpaths.
2. Design the piers and abutments.

Question 3:

(20marks)

It's required to construct an arch bridge over a regulator. The regulator has 4 vents of clear span of 3.5 m each. The arch rings are constructed of plain concrete. The depth of the earth filling above the crown of the arches is 60 cm the live load on the road is considered as uniformly distributed = 1.0 t / m^2 . **Design of the Arch Bridge.**

With My Best Wishes

Prof. Mohamed Sobeih

This exam measures the following ILOs							
Question Number	Q1	Q2	Q3	Q1	Q3	Q1	Q2
Skills	A1	A2	A2	B1, B2	B2	C1	C1
	Knowledge & Understanding Skills			Intellectual Skills		Professional Skills	