



Open Book Exam

Total Mark (100) degrees

Systematic arrangement of calculations, neat drawings and clear answers are essential. Any data not given can be reasonably assumed. The exam consists of ten questions. All of them must be answered.

Question (1) (20 %):

A reinforced concrete open water channel was 1500 m long and all dimensions in m are shown in figure (1).

Calculate the total amount of excavation materials in m^3 to construct the channel if soil swelling factor is 22%. and if a truck of $20m^3$ capacity were used to transport the excavation materials from the site to the quarry 50Km away from the construction site calculate the optimum time to excavate the channel and also the optimum number of the trucks to transport the excavation materials daily if the rate of excavation is (20m long/daily) of the channel.

Finally if a concrete mix plant was 60Km away from the site and mixing trucks is $14m^3$ capacity calculate the optimum number of the mixing trucks that can used to construct the reinforced concrete channel facility daily?

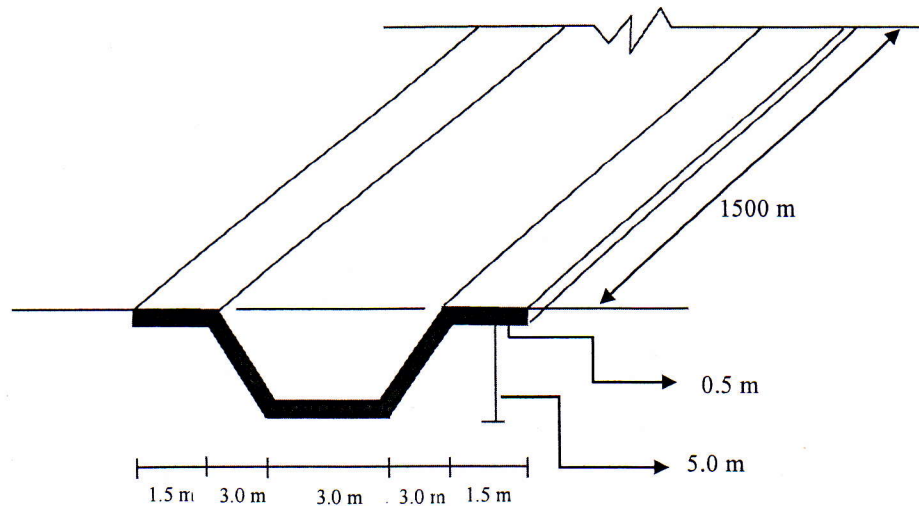


Figure (1): Reinforced concrete open channel

Question (2) (10 %):

What are the responsibilities of the construction engineer in the planning and site preparation phases of a construction project?

Question (3) (10 %):

For concrete formwork what are the sequences that should be taken by the supervisor engineer to submit or check (check list) the formwork before casting?



Question (4) (10 %):

Safety is an essential subject in construction project what are the different phases and levels of safety that must be taken in consideration during construction process for construction project?

Question (5) (10 %):

Reinforced concrete offshore structures need special equipments for drilling-retaining-dewatering-casting and testing of reinforced concrete elements casting an offshore structure. Specify the different construction equipments required, the cycle of working process of each machine, and finally the critical path that may govern the time of construction of the offshore structures, use free hand sketches as possible as you can?

Question (6) (10 %):

What are the advantages and disadvantages of the slip form and tunnel from modern construction methods? Use free hand sketches to clarify your answers?

Question (7) (10 %):

Design analysis and installation of formwork can affect by many internal and external conditions discuss using free hand sketches?

Question (8) (10 %):

For reinforced concrete box section RC bridges and reinforced concrete silos what are the optimum modern construction methods you prefer for construction and why? Use free hand sketches as possible?

Question (9) (10 %):

High rise building needs special design for formwork and method of construction discuss and give examples for different phases of the high rise building (foundations – basements – super structures – walls – slabs – core of elevators – storage tanks)?

Question (10) (10 %):

Marine and offshore structures can constructed by using different new modern technological construction methods specify one new method for each and state briefly the method of statement of the proposed constructed method you suggest?