Department of Civil Engineering
College of Engineering, Pune
End Semester Examination
Year: T.Y. B. Tech. (Civil Engineering)
Sub: Tunnels, Docks & Harbour and Railway Engineering [CE-09002]

Max. Marks : 60   **27 NOV 2014**   Duration : 3 Hr.   2 to 5 pm

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Que. 1 Describe with flow diagram various signaling systems used in Railway Engineering. Further, explain signaling system based on Locational Characteristics. Draw neat sketch to support your answer. **(10)**

Que. 2 Describe with neat sketches various signaling systems used in Ports and Harbour. Further, draw diagrams to illustrate various types of port and harbour signaling systems. Suggest the importance of each signal, its location and functioning in detail. **(10)**

Que. 3 Answer the following questions.

a) A ship is travelling in a deep sea and it is near one of the port. Assuming a satisfactory luminous range find the geographical range or distance at which the light is first visible on the horizon from the light house if the height of the light house is 140m and height of the observer in ship is 25m above sea level. **(05)**

b) Following are the details of an excavation made to cross an urban traffic road. **(05)**

      Overburden : 10m

      Length of road in hill : 100m

      Type of Strata: Soft disintegrated rock

      Width of Road : 7.5m

Suggest with suitable sketches the best method of excavation and its support system. Also suggest the precautions to be taken during excavation and after completion of the work.

Que. 4 Answer the following questions.

a) Explain difference between a port and a harbour. Classify harbours in general. **(5)**

b) State and explain the principle of NATM which explains the functioning of TBM. **(05)**

Que. 5 Write Short notes on any Ten. **(20)**

  i) Gauge Uniformity   ii) Breakwater   iii) Calling on signal   iv) Pusher gradient
  v) Dolphins   vi) TBM   vii) Hump yard   viii) Ruling gradient
  ix) Pipe jacking method x) Soil freezing technique xi) Dry dock
  xii) Base plates in railways

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