

Construction (REVISED COURSE)
Engg. (3 Hours)

11 to 2
 [Total Marks : 100

MASTEN

- N.B.**(1) Question No. 1 is compulsory.
 (2) Answer any four out of remaining six questions.
 (3) Figures to the right indicate full marks.
1. (a) Explain the method of tunnelling through hard rock by 'heading and benching' method. 12
 —Discuss step by step procedure
 —Draw neat sketch
 —Enlist the equipment required.
 (b) Discuss the factors to be considered for selection of construction equipment. 8
 2. (a) Draw neat sketches for : 8
 (i) Stone column (ii) Grouting applications.
 (b) What is vacuum concrete ? Why it is necessary ? Explain the step by step procedure of vacuum concreting. 12
 3. (a) Explain the method of construction of concrete diaphragm wall. 8
 (b) Determine the owning and operating cost per hour for an excavating equipment 12
 from the following data :
 (i) Purchase cost = Rs. 25 lakhs
 (ii) Useful life = 10 years (2000 hrs/year)
 (iii) Engine horse power = 30 (diesel)
 (iv) Salvage value = 10% of purchase cost
 (v) Maintenance and repair cost = 100% of depreciation
 (vi) Investment cost = 10% of average annual investment
 (vii) Lubrication cost = 25% of fuel cost.
 4. (a) Discuss different excavating equipment, with their suitability. 10
 (b) Discuss different methods of concreting under water. 10
 5. (a) A shovel is down for 5%, 8%, 12% and 16% of the time respectively in the first four years of use. The operating cost is Rs. 800 per hour. The shovel works for 2500 hours in a year. The average productivity factor is 0.8. Workout the down time cost, cumulative down time cost and cumulative cost per hour. 10
 (b) Explain different types of soil compacting equipment stating operations and suitability. 10
 6. (a) What is mass concrete ? What precautions will you take for mass concreting ? 10
 (b) What is a Cofferdam ? Discuss different types of Cofferdams. 10
 7. Write short notes on : (any four) :— 20
 (a) Tunnel boring machine
 (b) Sand drains
 (c) Cranes
 (d) Special formworks for concreting
 (e) Pile hammers.