

03

[REVISED COURSE]

(3 Hours)

[Total marks : 80]

NOTE:

- Question No. 1 is compulsory.
- Attempt any Three out of the remaining five questions.
- Figure to the right indicates full marks
- Assume any suitable data and clearly state the same.

- Q.1 A) Classify the construction equipments based on their performance. Explain the role of construction engineer in construction industry. 10
B) Enlist the different methods of tunneling in Hard rock. State the various stages in construction of tunnel along with the equipments required. Describe with neat sketches how would you proceed to carry out tunneling in rock by the heading and benching method. 10
- Q.2 A) What is meant by balancing of equipment? Cycle time of power shovel of 2 m³ capacity is 30 seconds. Truck of 8 m³ and 12 m³ are available at rate of Rs. 800 and Rs. 1200/day respectively for 10 hrs. The cycle time of 8 m³ truck is 14 minutes. And 12 m³ trucks are 16 minutes. How do you balance the operation of shovel and truck with least idle time and minimum cost. 10
B) What are commonly used hoisting equipments in construction industry? Explain tower crane with neat sketch with respect to types, components, working suitability and factors affecting its performance. 10
- Q.3 A) Classify various aggregate producing equipments. Describe jaw crusher with neat sketch stating components and it's working. 10
B) Define shotcreting. What are the different methods of shotcreting? State the application of shotcreting with merits. 10
- Q.4 A) What do you understand by ground improvement? What properties of ground are improved by sand drains? Discuss the ground improvement technique by sand drain with a neat sketch stating diameter, depth, spacing and specification of sand to be used.. 10
B) Describe different types of blasting materials along with their constituents? What precautions are required to be taken during transportation and storing of blasting materials? 10
- Q.5 A) Describe lining of tunnel in detail. Explain the method of concrete lining in tunnel. 10
B) What is mass concrete? What are the effects of mass concreting during and after placing? What precaution will you take for mass concreting? Explain. 10
- Q.6 Write short notes on any four 20
i- Types of Cladding
ii-Grouting
iii-Slip form work techniques
iv-Drilling pattern
v-Dozer