

## 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.

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- Q.1 A) What are the factors affecting the economic life of equipment. 05  
 B) What are the methods of dust controlling in tunnel excavation. 05  
 C) Define and differentiate Standard equipment and Special equipment. 05  
 D) Write a short note on slip form. 05
- Q.2 A Determine owning and operating cost per hour for an excavator 10  
 following data:  
 Purchased cost = Rs.35 lacs  
 Useful life = 15 years (2500 hours/year)  
 Engine capacity = 50 HP  
 Salvage value = 10% of purchase cost  
 Investment cost = 12% average annual investment  
 Lubrication cost = 20% of fuel cost  
 B) What are commonly used compacting equipment in construction industry? 10  
 Explain Pneumatic tyred roller with neat sketch with respect to components, working, suitability and factors affecting its performance.
- Q.3 A) What are the different types of crushers used for production of aggregate? 10  
 Describe gyratory crusher with neat sketch stating components and it's working.  
 B) Enlist the various excavating equipment. Explain with neat sketch the 10  
 Trenching machine in respect of its working, suitability and factors affecting the performance.
- Q.4 A) What do you understand by ground improvement? What properties of 10  
 ground are improved by stone column? Discuss the ground improvement technique by Stone column with a neat sketch stating diameter, depth, spacing and materials of columns.  
 B) Enlist the different methods of tunneling in soils and rocks. Explain the 10  
 working of tunnel boring machine.
- Q.5 A) What are pile driving hammers? Explain the working of Diesel Hammer 10  
 with neat sketch.  
 B) What is mass concrete? What are the effects of mass concreting during and 10  
 after placing? What precaution will you take for mass concreting?
- Q.6 Write short notes on any four 20  
 i- Vacuum concreting  
 ii- Sand drain  
 iii- Balancing of equipment  
 iv- Shaft in tunnel  
 v- Cladding types  
 vi- Sheep foot roller