

(3 Hours)

[Total Marks: 80

Note:

- i. Q. No. 1 is **compulsory**
- ii. Attempt **any 3** out of remaining 5
- iii. Support all **theory and numerical** with neat sketch

1. Explain any four (20 M)
 - A. Stone Crushing Equipments
 - B. Bulldozers and Power Shovel
 - C. Forms for Concrete
 - D. Drilling and Blasting Equipments and Pattern
 - E. Standard and Special equipments
 - F. Cranes
2. A. You are appointed as a 'Equipment Planner' for a Project site. Project details are as follows: a). A high-rise structure is to be constructed with Stilt+ Podium + 30 storey. b). Due to low soil SBC, Pile foundation is recommended. c). Concreting plant is to be set up at a space on-site. You need to plan various construction activities and construction equipment & machinery required for the same at various construction stages. (10 M)
 - B. Explain in detail about Mass Concreting and Vacuum Concreting along with neat sketches. (10 M)
3. A. Discuss the following ground improvement techniques (10 M)
 - a. Sand drains
 - b. Stone Columns
 - B. Explain the method of construction of diaphragm wall. It is constructed along the plot size 120m x 80m and it is 8m in height. Draw a neat sketch and discuss step by step procedure. Enlist the equipments. (10 M)
4. A. A bull dozer is purchased for Rs. 30,00,000/- It has a useful life of 10 years at the end of which salvage value is Rs. 5,00,000/- It has a horse power of 150 and runs on a diesel engine. Cost of diesel is Rs. 60/- per litre. Consider 20% of average investment cost towards financing, taxes & insurances. The machine works for 3000 hours in a year. The maintenance and repair cost is 50% of depreciation. Consider lubricant cost as 25% of fuel cost. The Operating factor is 0.8. The operators monthly salary is Rs. 5000/- . Consider field repair and servicing cost as 30% of depreciation cost. (15 M)
 - B. What are the different factors for selection of Construction Equipments? (05 M)

Turn Over

5. A. Explain method of tunnel driving mention below: (12 M)
a). Full face heading
b). Heading & Bench Method
c). Drift Method
d). Pilot Tunnel Method
- B. Explain Tunnel Boring Machine in detail with neat sketches. (08 M)
6. A. A construction equipment cost Rs. 20 lakhs, Salvage Value is Rs. 3 lakhs and economic life of the equipment is 10 years. Calculate the depreciation & Book Value for each year by Straight line Method, Sinking Fund Method, Sum of year digit Method and Constant percent method. (12 M)
- B. Explain Single and Double Acting Hammers with neat sketch. (08 M)
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