

CBSGS

3 Hours

[Total marks :100

N.B.

Q 1 is compulsory.

Attempt any four out of the remaining questions.

Numbers to the right indicate full marks

- Q 1 (All sub questions carry 04 marks each) (20)**
- a Point out the difference between :
i) Shovel and Back-hoe. ii) Rated and unrated equipment.
- b Enlist the components of operating cost of equipments.
- c List out the equipments required for :
i) Construction of an earthen dam. ii) Construction of a multistoried building.
- d Define: i) Shotcreting. ii) Cladding.
- e Draw a neat labeled sketch of a top slewing tower crane.
- Q 2 (20)**
- a A backhoe excavator with a cost of Rs 20 lakhs and output 40 HP is used for excavation of 100 numbers of isolated footings each of size 4m * 4m *3.5m. Two dumpers, costing 7.5 lakhs each, having a combined output of 40 HP, are also employed. Useful life = 10 years. Salvage value = 10 %. Maintenance & Repair cost is 75 % of depreciation. Investment cost = 20 % of average investment. Salary for 1 operator is Rs 8000/month. Fuel cost = Rs 70/litre. Find out the equipment cost/cu.m of work done. 10
- b Write short notes on 10
i) Working of a centrifugal pump. ii) Diaphragm wall construction.
- Q 3 (20)**
- a Explain the working of wheel type and ladder type trenching machines with neat sketches. 08
- b Draw a neat sketch and explain the working of a jaw crusher. 06
- c Enlist the various pile driving equipments & explain diesel hammer. 06
- Q 4 (20)**
- a Explain the working of a TBM. 07
- b Explain the various types of drill holes taken during drilling. 06
- c Explain the working of a rotary vane air compressor with neat sketch. 07
- Q 5 (20)**
- a State precautionary measures for mass concreting & hot weather concreting. 10
- b Explain Stone column and sand drains as methods of ground improvement. 10
- Q 6 (20)**
- a Differentiate between top slewing and bottom slewing crane 08
- b Explain well-point system for dewatering of trenches and dewatering of tunnels. 12
- Q 7 (20)**
- a Discuss the role of construction equipments in speedy and economical completion of large construction projects. 10
- b Explain grouting. What are the different methods? What are its applications to civil engineering projects? 10