

QP Code : 2673

Revised
(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 Hoe.
ii. Standard and Special equipment.
- b Enlist the factors taken into consideration while working out the operating cost of equipments.
- c State whether the following statements are True or False alongwith the reason for the same :
i. Dragline is more efficient than a shovel.
ii. Cement with less C_3S content is unsuitable for mass concreting.
- d Define :
i. Caissons.
ii. Shotcreting.
iii. Cofferdams.
iv. Friction pile.
- e Draw a neat labeled sketch of a top slewing crane.
- Q 2 (20)**
- a A backhoe excavator with a cost of Rs 10 lakhs and output 40 HP is used for excavation of 120 numbers of isolated footings each of size 4m * 4m * 3.5m. Two dumpers, costing 7.5 lakhs each, and having a combined output of 40 HP, are also employed. The useful life can be taken as 10 years. Salvage value is 10 %. Maintenance & Repair cost is 75 % of depreciation. Investment cost can be taken as 20 % of average investment. Salary for 1 operator is Rs 8000/month. Cost of fuel is Rs 70/litre. Find out the cost of equipment per cu.m of work done. 10
- b Write short notes on (Any two) 10
i. Working of an air compressor.
ii. Diaphragm wall construction.
iii. Balancing of equipments.
- Q 3 (20)**
- a Explain the working of a dragline and clamshell with neat sketches. 08
b Draw a neat sketch and explain the working of a gantry crane. 06
c Enlist the various pile driving equipments & explain diesel hammer. 06
- Q 4 (Any four) (5 marks each) (20)**
- a 'Tunneling in hard rocks is easier.' Justify.
b Explain the various types of drill holes taken during drilling.
c Explain various types of Air locks.
d Following are the results of a core logging programme carried out at various

QP-Con. 11420-15.

[TURN OVER

locations for a proposed tunnel. What do these indicate :

- i. No of core pieces is more.
- ii. Drill water is dirty.
- iii. Surface of the fractures are smooth.
- iv. Core samples gets disintegrated when exposed to air.
- v. Number of fractures with smooth surface is more than the number of fractures with uneven surfaces.

- e Explain the working of a centrifugal pump with neat sketch. (20)
- Q 5**
- a What precautions you will take on site to ensure production of good quality concrete? 07
- b What precautionary measures are to be taken for hot weather concreting? 07
- c Explain Reinforced earth technology as a method of ground improvement. 06
- Q 6**
- a Explain with a neat sketch bridge construction using incremental launching method. Mention the conditions in which this method is preferred. (20)
08
- b Differentiate between top slewing and bottom slewing crane 06
- c Explain well-point system as a method of dewatering of trenches. 06
- Q 7**
- a Discuss the role of construction equipments in speedy and economical completion of large construction projects. (20)
08
- b Explain grouting. What are the different methods? What are its applications to civil engineering projects? 08
- c Write a note on different types of claddings. 04
-