

UNIT-V CONSTRUCTION EQUIPMENT

1. What are the advantages of using trenchers?

The advantages of using trenchers are

- It is a faster and cheaper method of trenching
- It digs only as much as is necessary
- It is a continuous process and is not like that of back hoe excavator

2. Define dredging.

Dredging is the process of excavating from river bed, lake or sea for the purpose of deepening them. It is an important operation in navigation canals, harbours, dams etc. Dredgers are of three types namely

3. Mention the various operations involved in grading?

The various operations involved in grading are

- grading
- spreading
- finishing and leveling
- Ditch digging
- cutting
- bank cutting
- earthen road maintenance
- earthen road construction and
- repairing gravel road

4. What are the factors affecting the selection of drilling equipment?

The factors affecting the selection of drilling equipment are

- the nature of terrain
- required depth of holes
- rock hardness
- the size of the project and
- the purpose for which holes are required.

5. Define hardness. Which is the hardest known substance?

Hardness is defined as the resistance of a smooth plane surface to abrasion. It is the hardest known substance with hardness 10.

6. Define texture. What are its classification.

Texture is defined as the grain size of the rock. It is classified into 5 categories such as

- porous rock
- Loose grained rock
- Granitoid rock
- Fine grained rock and

- Dense rock

7. What are the types of drilling equipment?

The types of drilling equipment are

- Percussion drills and Rotary drills
- Rotary drills are further classified as
- Pressure drilling and Abrasion drilling

8. Define blasting?

Blasting is the process of discharging of an explosive to loosen the rock.

9. What are the parameters to be examined while blasting for quarrying?

While blasting for quarrying or excavation, the following parameters are to be examined.

- Spacing of the drill holes
- Diameter of the drill holes
- Depth of the drill holes
- Burden of the rock at the toe
- Burden of the rock at the crest
- Degree of fragmentation desired and
- Strength of the explosives to be used

10. What are the types of dredgers?

- Dipper dredger,
- Ladder dredger and
- Suction dredger

11. Mention the sequence of operations involved in driving the tunnel through rock?

The sequence of operations involved in driving the tunnel through rocks are

- Setting up and drilling
- Loading the holes with explosives and firing
- Ventilating and removing the dust resulted by explosion
- Loading and hauling the muck
- Removing ground water from the tunnel
- Erection of supports for the roof and sides
- Placing reinforcement
- Placing the concrete lining
- Curing and shuttering removal

12. What are the objectives of ventilation system in a tunnel?

The main objects of ventilation system in a tunnel are

- to provide fresh air for workers
- to remove poisonous gases and fumes produced by explosion
- to remove the dust caused by drilling, blasting mucking and other operations performed in the tunnel.

13. Define mucking?

Mucking is the operation of loading the broken rock or earth for removal from a tunnel. Mucking is done by hand in small tunnels, drifts and pilot tunnels.

14. What is a tractor? Mention its types?

Tractor is an earthmoving equipment which converts engine energy into tractive energy. The two types of tractors are

- crawler or tract type and
- wheel or pneumatic type

15. Define compaction?

Compaction is defined as the process of densifying or increasing the unit weight of a soil mass through the application of static or dynamic force, with the resulting expulsion of air.

16. Define surface load?

Surface load is defined as the ration of total applied load and the total contact area of the minimum number of feet which come simultaneously in contact with even ground without penetration.

axle load kg

(ie) Surface load =

Contact area of feet cm²

17. What are the factors influencing compaction?

The factors which influence compaction are

- static weight
- number of vibratory drums
- roller speed
- drum diameter
- frequency and amplitude
- relationship between frame and drum weight
- driven or non driven drum
- centrifugal force and
- total applied force

18. Name the equipments used for volume batching?

The equipments used for volume batching are

- aggregate feeders
- cement silo
- water measuring device and
- mixing unit

19. What are the various types of conveyors?

The various types of conveyors are

- belt conveyor

- roller conveyor
- chain or cable conveyor
- pipe line conveyor
- screw conveyor and
- elevating conveyor

20. What are the advantages of using belt conveyors?

The advantages of using belt conveyors are

- It is capable of handling light or heavy, fine or coarse, wet or dry material.
- It can handle, thousands of tons of material per hour for several kilometers.
- It can handle not materials up to 1600c.
- It operates without noise.

PART-B

- 1) Explain in detail any one type of the earth work equipment
- 2) Briefly explain the equipment used for material handling
- 3) What are pile hammers? Name the principle types of hammers
- 4) What are the different types of tunneling and rock drilling equipment explain, briefly
- 5) Briefly explain about the equipment used for material handling and erection of structures
- 6) Explain Scrapers and earth movers with sketches