

UNIT I CONSTRUCTION TECHNIQUES

1. What is a structural system?

The term structural system refers to the system in the structure comprised of interconnected structural members through which loads on the structure are transferred safely to the ground without exceeding allowable stress in members.

2. What are the advantages of framed structure.

- It is possible to carry out construction of framework of upper floors and finishing of lower floors simultaneously and hence speed in construction
- It is possible to make changes in wall at any time
- Walls can be of low cost materials
- Can resist vibrations in earthquake zones and industrial buildings
- Economic to construct on soft soil

3. Discuss about seismic effect on high rise buildings

Larger horizontal displacement occur. Non structural elements like glass windows, wooden doors, shelves gets crushed or severely damaged. Pounding of buildings with each other results in huge damage.

4. What is responsible sourcing?

Extraction of materials in a legal way, emissions of toxic gases within permissible limits is called responsible sourcing. There should be documented set of criteria describing obligations in supply of construction.

5. Define green buildings.

A 'green' building is a building that, in its design, built, constructed, operated, maintained or reused with objectives to protect occupant health, optimum usage of natural resources and reduction in environmental impact.

6. List out the materials used in green building?

- Earthen materials
- Wood (or) Timber
- Bamboo
- Structural Insulated Panels (SIP)

- Insulated Concrete Forms (ICF)
- Slate
- Straw
- Natural fiber
- Cellulose
- Cork
- Rice husk ash, fly ash

7. Define smart buildings

A smart building is any structure that uses automated processes to automatically control the building's operations including heating, ventilation, air conditioning, lighting, security and other systems.

8. Define building automation.

It is a distributed control system that integrates different types of building systems together into one centralized location. Building automation systems are primarily utilized to control the heating, ventilation, and air conditioning (HVAC) in a building, but are also used to control lighting, security and other building systems.

9. Define passive buildings

The Passive buildings are buildings which maintain a thermal comfort without the requirement of extra energy for heating or cooling.

10. Differentiate load bearing and framed structure

The main difference between load bearing structure and framed structure is their members who are responsible for bearing and transferring the load to the subsoil. In load-bearing structure, load-bearing members are walls, while in a framed structure, load-bearing members are beams and columns.

UNIT II CONSTRUCTION PRACTICES

1. Write short notes on construction joints?

This type of joints are provided at the location where the construction is stopped at the end of the days work for any other reason so as to connect the old work and the new work by proper bond. The construction joint may be vertical, horizontal or inclined depending on the type of structure.

2. What is scaffolding?

Scaffolding is defined as the temporary structure employed in the building construction for supporting workers, materials and tools etc., during its construction alteration, demolition, painting and repair etc.,

3. Differentiate rubble masonry and ashlar masonry

- Rubble masonry - Stones of irregular sizes are used. stones may be undressed or roughly dressed. using hammer having wider joints.
- Ashlar masonry - This is a costlier, high grade and superior quality of masonry. The work built from accurately dressed stones with uniform and very fine joints of about 3mm thickness is termed as ashlar masonry.

4. Define damp proof course?

The courses which are laid to check the entry of water or moisture into the building are called damp proof courses. It is due to faulty design of structure faulty construction or poor workmanship use of poor quality materials in construction.

5. Write any some materials used for joints.

- Bituminous felt
- Metal strips
- Fibre board

6. What is site clearance?

Site clearance is the process,

- Surface cleaning of grass, bushes, trees, anthills, hillocks.
- Cleaning of obstructions which may be above or below the ground level such as foundations, old septic tanks, soak pits

- Cleaning of obstructions belonging to other organizations such as water supply lines, underground electric or telephone cables.

7. What is bonding in masonry?

Bonding in masonry is systematic arrangement of bricks or other building units composing a wall or structure in such a way as to ensure its stability and strength.

8. What is frog?

- It reduces the weight of the brick by 10 to 15%.
- It facilitates good bonding between two layers of brick as mortar laid in the depressed area forming good key.
- It houses the name of the brand/company that is manufacturing and selling this brick.
- It ensures good bearing of each brick when mortar is applied while constructing brick masonry wall.

9. Which is the strongest bond in brick masonry?

The English brick bond comprises of alternates rows of headers with rows of stretchers. This type of bond uses more bricks than a stretcher bond and hence it is considered as one of the best and strongest brick bond.

10. What is slipform?

Slipform is a construction method in which formwork is continuously rising vertically as a work process. It is a method of vertical construction of a reinforced concrete section. It is generally used to construct the core wall in building construction and also the lift shafts, stair shafts, towers, etc.

UNIT III SUB STRUCTURE CONSTRUCTION

1. List out the advantages of box jacking?

- Better quality
- Economic and speed in construction
- Saving in man power
- No traffic disturbance

2. Define pipe jacking

Pipe jacking is a trenchless construction method to install product pipe through the ground on line and grade for new service lines, sewer tunnels and utilities.

3. List out the tunnelling techniques.

- Full face heading
- Heading and benching method
- Drift method
- Pilot's tunnel method

4. What is caisson?

Caisson is a box like structure which is constructed above ground and sunk into land or water used in construction of foundation for structures in rivers, lakes, harbour. It is usually rectangular or circular in plan.

5. What is cofferdam?

A cofferdam is a temporary structure which used to remove water from an area and making it possible to carry out construction works like dams, bridges etc.

6. Define shoring

Shoring is the construction of a temporary structure to support temporarily an unsafe structure, used during the repair or original construction of buildings and in excavations.

7. Define dewatering

Dewatering is a term to describe the removal of groundwater or surface water from a construction site. In construction the water is pumped from wells or sumps to

temporarily lower the groundwater levels, to allow excavation in dry and stable conditions below natural groundwater level.

8. List out the types of shores.

- Raking shoring
- Flying shoring
- Dead shoring

9. What is well point

Well point is a perforated pipe through which water enters the pipe. It may be of closed end or self jetting. It consists of screens to prevent entry of sand into well point.

10. What are the techniques used for dewatering?

- Ditches and sumps
- Well point system
- Vacuum dewatering system
- Electro osmosis

UNIT IV SUPER STRUCTURE CONSTRUCTION

1. What is launching girder?

launching girder is a design-and-built machine used in precast post-tensioned bridge construction. It consists of lifting devices and a supporting structure for lifting precast beams and precast bridge segments in position for assembling.

2. What is bridge deck?

A deck is the surface of a bridge. It is the structural element of its superstructure.

3. What is cable stayed bridge?

Cable stayed bridge is a bridge form in which the weight of the deck is supported by a number of nearly straight diagonal cables in tension running directly to one or more vertical towers. The towers transfer the cable forces to the foundations through vertical compression. The tensile forces in the cables also put the deck into horizontal compression.

4. What is bow string bridge?

A bowstring girder bridge or tied-arch bridge has an arch rib on each side of the roadway (deck) and one tie beam on each arches that support the deck.

5. What is offshore platform?

An offshore platform is a large structure used to house workers and machinery needed to drill and/or produce natural resources (i.e. oil, natural gas, mineral ores etc.) through tunnels/wells in the ocean bed. Depending on the circumstances, the platform may be attached to the ocean floor, consist of an artificial island, or be floating.

6. Define shell

Shell roofs are used for covering large span structures without interior columns. e.g assembly halls, recreation centers, theatres, factories, research labs etc. It is a thin, curved plate structure shaped to transmit applied forces by compressive, tensile, and shear stresses.

7. Define prestressing

Prestressing is the introduction of a compressive force to the concrete to counteract the stresses that will result from an applied load. There are two methods of introducing prestressing to a concrete, namely pre tensioning and post tensioning.

8. What is articulated structure?

A structure in which relative motion is allowed to occur between parts, usually by means of a hinged or sliding joint or joints is called articulated structure.

9. List out the types of bridge deck.

- Solid slab deck
- Voided slab deck
- T beam deck
- Box girder deck
- Steel concrete composite deck

10. What is dome?

Domes are double curvature rotational shell obtained by a curve rotating about a central axis.

UNIT V CONSTRUCTION EQUIPMENT

1. List out the factors to be considered for selecting equipment?

- Scope of work
- Type, size and availability of equipment
- Cost and usage of equipment
- Availability of skilled operators
- Useful life of equipment if it is purchased
- Duration of work

2. What are the advantages of using trenchers?

- 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

3. 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.

4. 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.

5. What are the types of dredgers?

- Dipper dredger
- Bucket Ladder dredger
- Grab dredger
- Hydraulic or Suction dredger

6. 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.

7. 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.

8. How will you calculate output of scraper?

Output of scraper is the quantity of material excavated in unit period of time and expressed in cubic metre per hour.

Output = Volume of excavated material / (Time taken for one cycle x no of cycles)

9. . Name the equipments used for volume batching?

The equipments used for volume batching are aggregate feeders, cement silo, water measuring device and mixing unit

10. What are the various types of conveyors?

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