EASWARI ENGINEERING COLLEGE
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QUESTION BANK
(WITH ANSWER FOR TWO MARK QUESTIONS)

Subject Code : CE 8401
Subject : Construction Techniques & Practices
Course : B.E
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UNIT-1
CONSTRUCTION TECHNIQUES
PART - A

1) Define Framed Structures.
Frame structures are the structures having the combination of beam, column and slab to resist the lateral and gravity loads. These structures are usually used to overcome the large moments developing due to the applied loading.
2) What is a framed structure, and how is a load transfer done in a framed structure?
A RCC framed structure building means that load of the whole structure including the walls is borne by the RCC structure, which comprises of RCC columns, beams & slabs. In this kind of structure brick walls act as partitions only and don't bear any load and therefore walls can be removed anytime for change in architectural plan & design of the building. In RCC framed structure load is transferred from slabs to beams and from beams to columns.
3) What is the load bearing structure technique?
A Load Bearing Structure is a type of structure in which the entire load of structure is carried by the vertical walls and directly transferred to the underlying soil via footing. Structural skeleton (beams, columns,etc) are absent in such structures. Walls are made thicker to increase load carrying capacity.

Uncoarsed Rubble Masonry is placed under the walls along their lengths as footings for efficient transfer of load. Buildings are only stable up to a height of 12–15 m.

4). What are the seismic zones?

A Seismic zone is an area where the rate of seismic activity remains fairly consistent. ... Some people often use the term "seismic zone" to talk about an area with an increased risk of seismic activity, while others prefer to talk about "seismichazard zones" when discussing areas where seismic activity is more common.

5) What are the effects of earthquake on building?

Earthquakes directly effects groundshaking and in turn can generate Landslides, Tsunamis, Liquefaction of ground and may also cause damage tostructure by way of shaking etc.

6) what is load transfer mechanism?

The objective of this research is to develop the joint details, which transfer the stress effectively, and evaluate the load transfer mechanism at the joint. ... Then two types of experiment are conducted to evaluate the load transfer mechanism for the joint.

7) How is a load transfer mechanism effectively done in a building?

In load bearing structure, the load from slab is transferred to the beams and these beams are directly supported on the walls. The walls are supported by the foundation below. The foundation then transfer this load to the soil below.

8) List the latest technology in construction.

Virtual Reality. Augmented Reality. Wearable Technology. Machine Learning. Prefabrication.Predictive Analytics.Connected Job Sites

9) How do earthquake cause building to collapse?

Buildings collapse in an earthquake because of the vibration of the ground. ... During earthquakes the vibration of ground can cause the liquefied sand and excess water to force its way to the ground surface from several meters below the ground.

10) What is the best material to build to resist an earthquake?

Brick and concrete buildings have low ductility and therefore absorb very little energy. This makes them especially vulnerable in even minor earthquakes. Buildings constructed of steel-reinforced concrete, on the other hand, perform much better because the embedded steel increases the ductility of the material.

11) Define responsible sourcing.

Responsible Sourcing, according to the International Chamber of Commerce is a voluntary commitment by companies to take into account social and environmental considerations when managing their relationships with suppliers.

12) what is responsibly sourced concrete?

When it comes to responsible sourcing, the concrete industry is leading other construction materials. Responsible sourcing of construction products is an increasingly important issue for specifiers and clients. It touches all aspects of the supply chain.

13) Define Green building.

Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from design to construction, operation, maintenance, renovation and deconstruction.

14) Define passive building.

Passive building (German: Passivhaus) is a rigorous, voluntary standard for energy efficiency in a building, which reduces the building's ecological footprint. It results in ultra-low energy buildings that require little energy for space heating or cooling.

15) How many buildings are LEED certified.

LEED has grown to become the world's most widely used green building rating system, with nearly 80,000 projects participating in LEED across 162 countries, including more than 32,500 certified commercial projects.

16) Define GRIHA.

GRIHA is an acronym for Green Rating for Integrated Habitat Assessment. Throughout their life cycles, from construction to operation and then demolition, they consume resources in the form of energy, water, materials, etc. and emit wastes either directly in the form of municipal wastes or indirectly as emissions from electricity generation.

PART –B

1. Explain the various steps involved in construction of passive building in detail.
2. Explain in detail about the automation processes of a building.
3. Explain the various steps involved in the construction of high rise building in detail.
4. Define LBS? Explain in detail the analysis process of load bearing structures.
5. Describe the process of load transfer mechanism of a building in detail.
6. Write in detail about ECO Building?
7. Explain in detail about the residential buildings of different seismic zones with case studies.
8. Explain LEED and GRIHA in detail.
9. Explain in detail with case study about residential, office building and other building in each zone.
10. Write in detail about building automation?

UNIT II
CONSTRUCTION PRACTICES

1. What are the general specifications for first class building?
Foundation and plinth. superstructure. damp-proof course.lintels. roofing. plastering. doors and windows.distempering and colour washing. painting.

2. What are monolithic wall? write its classifications?
Monolithic walls:-Walls built of a material requiring some kind of shuttering in the initial stages.
Masonry can be *classified* into the following types
stone masonry. brick masonry. hollow block concrete masonry. reinforced masonry.composite masonry.

3. Define plinth.
Plinth:- It is the horizontal course of stone or brick provided at the base of the wall above ground level. It indicates the height of the ground floor level above the natural ground level. It protects the building from dampness.

4. What are classifications of stone masonry
There are two types ,they are
rubber masonry.
ashlar masonry.

5. What is rubber masonry and ashlar masonry?
Rubber 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.

6. Compare English bond and Double Flemish bond.
English bond double Flemish bond.
More compact and stronger for walls having thickness more than 1(1/2)bricks.
Not pleasing appearance of the facing. No strict supervision and skill required for its construction. More in cost than Double Flemish bond. Less compact and stronger. Better appearance in the facing. Good workmanship and careful supervision is required. Cheaper in cost-because number of bricks bats are used.

7. What are the defects in brick masonry.

Defects in brick masonry:-
Sulphate attack. Crystallization of salts from bricks.Corrosion of embedded iron or steel. Shrinkage on drying.

8. Mention the common sizes of building blocks.
The common sizes of building blocks are
390x190x300 mm- standard size hollow block.
390x190x200 mm- hollow building tiles.
390x190x100 mm- hollow concrete blocks for partition.

9. What the types of flooring commonly used.
mud flooring, muram flooring, cement concrete flooring, mosaic flooring, tiled flooring,marble flooring

10. Define damp proof course., what are its causes of dampness.
Definition :-The courses which are laid to check the entry of water or moisture into the building are called damp proof courses.
Causes:- faulty design of structure faulty construction or poor workmanship use of poor quality materials in construction.

11. Define roofs.
Roof:-A roof is defined as the uppermost part of the building which is constructed in the form of a frame work to give protection to the building against rain , heat wind etc..

12. What are the uses of water proofing compounds.
Uses:- When water proofing compounds is added to cement during construction it prevents leakage. It is available in powder form. It is mixed with cement by hand before cement is mixed with aggregate.

13. what are the condition for filters.
Condition for filter:-
It should remove harmful particles from air.
It should be workable under different velocity.
It should have very low frictional resistance.
It should not cause contamination of incoming air.
it should be easy to clean.

14. Define fire resistance

Fire Resistance:- It is the time during which an element of structure fulfils its function in building safely in the event of fire of known intensity. Fire resistance is also defined as an index of fire safety of buildings.

15. Define acoustics
Acoustics:-The term acoustics is defined as the science of sound, and it describes the origin ,propagation and sensation of sound.

16. What are the conditions for good acoustics of an auditorium:-
Conditions for good acoustics of an auditorium:-
The initial sound should be of adequate intensity or loudness. It is important for a speaker to be heard over a long distance.The sound produced should be evenly spread over the whole area covered by audience. If the sound is not evenly distributed echoes will be established.
the initial sound should be clear and distinct.For music hall ,the initial sound should reach the audience with same frequency and intensity. All undesired sound should be reduced.

17. Define scaffolding
Scaffolding:-It 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.,

18. Write the types of scaffolding.
Types of scaffolding:-
Single scaffolding or Brick layer scaffolding.
Double scaffolding or Masons scaffolding.
Ladder scaffolding.
Cantilever or Needle scaffolding.

19. Write any some materials used for joints.
bituminous felt
Metal strips
Fibre board
these are some of the materials used for joints.

20. Define flooring
Flooring:- The properly supported horizontal surfaces which divide the building into
different levels for providing accommodation one above the other within space are

called floors.

PART - B

1) Explain the method of providing a damp proof course in a building
2) Explain in brief about the various types of flooring
3) Compare stone, brick and concrete hollow block masonry
4) Explain the construction of a steel grillage foundation
5) Explain the modern method of laying the bricks .
6) explain the fabrication and erection steel truss
7) Explain fire protection methods and procedures
8) Explain the air conditioning devices
9) Explain the construction methodology of RCC cooling tower using slip form techniques
10) Detail the method of scaffolding provided to plaster the outer walls at the first floor Level.

UNIT-III
SUB STRUCTURE CONSTRUCTION

1) What is a cofferdam? When it used ?
Cofferdam is a temporary structure constructed to exclude water from the site to construct a permanent sub-structure, without the interface of water. It is used when the well foundation is to be carried in running water.

2) What is a caisson? What are the types of caisson?
It is a special type of foundation used for the construction of bridge piers in preventery deep water, where it is either difficult to construct a cofferdam or to prevent its leakage.
Types:
a) Box caisson
b) Open caisson
c) Pneumatic caisson

3) What are the components of well foundation?
The components of the well foundations are,
a) Well curb
b) Cutting edge
d) Steining

4) What are the operations involved in open caisson method of foundation?
The open caisson method of foundation consists of the following operations:
a) constructing or fabricating the caisson and preparing site to receive it.
b) placing the caisson over the site of the pier.
c) excavating the soil from the interior of the caisson and advancing the
d) caisson so that its cutting edge is at or below the bottom of the excavation and continuing this process until the foundation in the hard stratum is reached.
d) sealing the bottom of the caisson to exclude water and soil.

5) What are the uses of sheet piles?
The uses of sheet piles are,
a) For preventing leakage of pile material and water.
b) For preventing the structure from shocks ,vibrations, etc,.
c) For deep excavations to enclose soils to prevent lateral crust or pressure.

6) What is a shoring?
Shoring is a temporary structure used to support tilted or endangered walls .The walls might have been endangered due to unequal settlement of foundation, removal of adjoining structures or making large opening in the walls.

7) What is meant by pipe jacking?
Pipe jacking is a method of installing a pipe under roadway , railway or highways without using an open cut trench .The pipe jacking procedure uses a casing pipe of sheet or reinforced concrete ie, jacked through the soil.

8) What is dewatering? Where it is used?
Dewatering means removal of excess water from the saturated soil. It is used where the water table is very high or in the case of deep excavations the foundation trenches for buildings and other structures, are filled with seeped water.

9) What is a under-ream pile?
It is a pile with one or more bulbs in its vertical shaft .These bulbs are known as under-reams and it increases the bearing capacity of the soil.

10) Write about spacing of piles?
For piles to be driven on hard stratum the minimum center to center spacing is 2.5 times the pile diameter. In case of friction piles minimum spacing of 3 times the

diameter of the pile shaft is provided. In case of loose soil filled up area or sand the minimum center to center spacing is twice the pile diameter.

11) Explain about suspended scaffolding.
During repair cleaning and painting various types of working platforms are required at various levels which can be easily provided and removed. Such types of platforms can be suspended by ropes or chains from parapet wall of buildings or cantilever beams placed at the top of the structure.This types of working are called suspended scaffolding.

12) Write about centering and shuttering?
Centering is a temporary structure used for the construction of arches , whereas shuttering is a temporary structure used for the construction of R.B. or R.C.C. structures such as beam ,slab ,balcony ,porch ,etc Centering are wooden shaped frames and shuttering are known as mould.

13) What is a Kent ledge?
In well sinking ,to overcome the increased skin friction and the in
weight of the well due to buoyancy, additional loading is applied on the well . It is called Kent ledge.

14) What are the methods used for tunnel driving?
Following are the methods generally used for driving a tunnel,
a) Full face heading
b) Heading and bench method
c) Drifts method
d) Pilot tunneling

15) What is mucking?
The operation of removal of excavated material in tunneling operation is called mucking.

16)W hat are the advantages of drift method?
Drift method of tunnel excavation has the following advantages:
a) It helps to determine the region of bad rock or excessive
ground water before actually taking up the full excavation, so as to enable to take up the corrective measures.
b) The drift provides ventilation while driving the main tunnel.
c) It reduces the consumption of explosives.

17) Explain about cement grouting .Uses .
In this method, cement grout which is a mixture of cement , sand and water is used. The process consists of making a number of holes in ground and then filling these holes by cement grout under pressure. This process is continued till no grout is coming up through the hole.
Uses:
a) The grouting procedure can be used in stopping leakages from rock.
b) It can also be used to fill the voids in soil so as to strengthen the soil and to make the rock or soil water tight.

18) Write the situations under which pile foundation is recommended.
The pile foundation is recommended for the following situations:
a) When spread footing ,raft and grillage foundations are uneconomical.
b) When heavy concentrated loads are to be transmitted by the foundations.
c) Where there is scouring in the soil near the foundations.
c) Where the soil is made up and of a compressible nature.

19) Write the essential features of a pump to be used for dewatering.
The pump to be used for dewatering process should have the following features:
a)The pump should be portable so that it can be easily moved as and whenrequired.
b)The pump should be capable of handling water mixed with impurities such as sand, earth, etc,.
c)The pump should be of strong make.

20) What is the equipment used for driving a pre-cast pile in a sandy soil?
The equipment used for driving a pre-cast pile in a sandy soil is a hammer. Hence maximum stresses are developed at the top due to direct strokes and at the point in overcoming the resistance to penetration. Therefore additional reinforcement is provided.

PART-B

1) Explain the method of sinking a pneumatic Caisson
2) Describe the various methods of dewatering system
3) Describe in detail about piling techniques and its types
4) What do you mean by shoring? Describe in brief various types of shores
5) Describe in detail about the piling techniques and its types
6) Explain the methods of dewatering foundations excavation
7) Describe the various methods of underwater concreting operations system

8) Describe the various methods employed to bring a tilted well to position while constructing a
well foundations
9) Explain in detail about sinking of cofferdam and diaphragm walls.

UNIT-IV
SUPER STRUCTURE CONSTRUCTION

1. What are launching girders?
For erection of large beams in buildings or bridges, temporary girders are used. Such girders are called launching girders. Launching girders are usually of steel as it would be lightcompared to concrete girders.

2. What are bridge decks?
In bridges, the structure supporting the carriageway is called decks. The bridge deck transfers the load to the piers or abutments. The bride decks can be classified as slabs, T-beam and slab, or composite decks. In composite decks, beams are pre-stressed or of steel and the slabs would be concrete cast in situ.

3. What are offshore platforms?
Offshore platforms are structures constructed in the ocean to explore or to produce oil and gas from the sources found below the sea. Offshore platforms are in steel or in concrete.

4. What are Jacket platforms?
The steel offshore platforms are called Jacket platforms. They are vertical towers constructed with steel tubular members supporting the deck, where the machinery for drilling or processing oil or gas is located. They are connected to the ocean floor by means of piles.

5. What are gravity towers?
In concrete construction, the offshore platforms are called Gravity towers which consist of concrete circular shafts supporting the processing platforms. The offshore platforms are subjected to loads from ocean waves.

6. What is a bow-string bridge?
In this type of bridge, the horizontal thrust is resisted by the horizontal ties. The supports take up only the vertical reaction. They, therefore require thinner sections. Bow-string girdes of R.C.C are commonly adopted for arch bridges having span of 30m to 45m. At various points along the length of a tie beam, vertical posts or

suspenders connecting the tie beam to the arched rib are provided. The flooring is resting on the tie beam and transfers its load to the arch through the suspenders. The flooring may be of simple slab or beam and slab construction.

7. What are cable-stayed bridges?
These bridges provide a larger width for purposes of navigation by eliminating intermediate piers. They consist of cables provided above the deck and are connected to the towers. The deck in case of cable stayed bridges is either supported by a number of cables meeting in a bunch at the tower (fan form) or by joining at different levels on the tower (harp form).

8. What are chimneys?
Chimneys are structures used to escape the gases to such a height that the gases donot contaminate the surrounding atmosphere. The cross sectional area of the chimneyis kept large enough to allow the passage of burnt gases.

9. State the dimension of flue hole opening in chimney.
40 x 40 cm

10. What are the various loads acting on a chimney?
1. Self weight of masonry chimney
2. Weight of lining
3. Wind pressure
4. Seismic forces

11. How is lining made in chimney?
The mareial used for lining should be capable of withstanding hightemperature upto 2000 F. The fire bicks are used for lining in brick masonry chimneys. The fire brick lining must be free to expand and contract independently of the main chimney. The height of lining depends on the purpose of chimney.

12. What are the various types of chimneys?
R.C.C chimney
Brick chimney
Self supporting stacks
Guyed steel stack

13. What are the forms used in the construction of chimney?
Jump forms, Slip forms

14. What are cooling towers?
Cooling Towers are used to cool the water that is used to recondense the steam that is used to generate electricity.

15. What are the methods of prestressing?
1. Pre tensioned Metod
2. Post tensioned Method

16. What are the systems of prestressing?
1. Freyssinet System
2. Magnel-blaton System
3. Lee-Mc. Call or stress steel system

17. What are the advantages of prestressed cement concrete?
1. It is possible to take the full advantage of compressive strength of concrete and high tensile strength of the steel used.
2. 15 to 30% of the concrete is saved.
3. 60 to 80% of the steel is saved.
4. Presressed concrete members are thinner in section and hence there is greater reduction of the self weight of the member.

18. How are domes erected?
Domes are usually erected with a central temporary support on which the supporting ring rests. If the span is greater than 40 – 50m, the tower of an erecting frame serves a sthe support.

19. What are shells?
Shalls are three dimensional structures constructed as storage tanks or roof
for large column free areas, such as exhibition halls, sports complex or theatres.

20. How are shells classified ?
1. Singly curved shells like cylindrical shells
2. Doubly curved or spherical shells

PART-B

1) Explain the construction sequence of launching of bridge girders
2) Briefly explain the erecting procedure of light weight components on tall structures
3) Explain in detail the construction procedure of a bow string girder bridge

4) Explain insitu prestressing in high rise structures
5) Describe in detail about the erection of light weight components on tall structures
6) Explain the construction procedure for prestressing in high rise structures
7) Explain the construction sequence of sky scraper in detail?
8) Explain in detail the construction procedure of a bow string girder bridge
9) Explain the dewatering methods
10) Write short notes on domes & shells

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.

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 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