

NOOURISLAM COLLEGE OF ENGINEERING

Civil Engineering Department

2 Marks Question and Answer

CE 1204 CONSTRUCTION TECHNIQUES,EQUIPMENTS & PRACTISE

Prepared

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CE 1204 CONSTRUCTION TECHNIQUES,EQUIPMENTS & PRACTISE
TWO MARK QUESTION AND ANSWER

UNIT 1

1. What do you understand by shoring?

The temporary support provided to an unsafe structure or to a structure undergoing alteration is called a shore and the method of construction is called shoring.

- i. When a wall shows signs of building out due to bad workmanship.
- ii. When a wall cracks due to unequal settlement of foundation and the cracked wall needs repairs.
- iii. When openings are to be made or enlarged in the wall.

2. What are the types of shores?

- 1) Raking shore
- 2) Flying shore
- 3) Dead shore

3. What do you understand by SCAFFOLDINGS?

These are temporary erections constructed to support a number of platforms at different heights raised for the convenience of workers so as to enable them to work easily and raise the needed materials.

4. Give the materials of formwork?

Formwork can be made out of timber, plywood, steel, precast concrete, fibre glass, used separately or combination.

5. What are the classifications of piles?

1. Load bearing piles
 - i. Based on the load bearing
 - a) Bearing pile
 - b) Friction pile
 - ii. Based on the pile materials
 - a) Cast-iron
 - b) Cement concrete
 - c) Sand
 - d) Steel
 - e) Timber
 - f) Wrought-iron
2. Non-load bearing piles

6. What are the classifications of stone masonry?

- 1) Rubble Masonry
 - i. Coursed Rubble Masonry
 - ii. Uncoursed Rubble Masonry
 - iii. Random Rubble Masonry
- 2) Ashlar Masonry
 - i. Ashlar fine Masonry
 - ii. Ashlar chamfered
 - iii. Ashlar block-in-course

7. Define BONDING?

The interlocking arrangement of bricks,so as to avoid the occurrence of continuous vertical joints is known as bond.

8. What are the different types of bonds?

- i. Header bond
- ii. Stretcher bond
- iii. English bond
- iv. Flemish bond
- v. Raking bond
 - A. Diamond bond
 - B. Zig-Zag bond
- ix. Garden wall bond

9. Distinguish between English and Flemish bond?

English bond	Flemish bond
<p>1.It consist of headers and stretchers in alternate course.</p> <p>2.A queen closer is placed next to the Quion header in each header course to the full thickness of the wall to create bond.</p> <p>3.Each alternate header lies centrally over a stretcher of the stretcher course.</p>	<p>1.It consist of headers and stretchers placed alternate in every course.</p> <p>2.A queen closer is placed next to the Quion header in alternate course to create bond.</p> <p>3.A large number of the 5cm lap joints occur in the bond.</p>

10. What are the advantages of hollow concrete block masonry?

- 1) Concrete block are regular in size,requiring no dressing work.Hence construction is very rapid.
- 2) Blocks are light and therefore easy to handle.
- 3) There is great saving in the material.
- 4) Hollow blocks are structurally stronger than brick.
- 5) Thinner wall can be easily constructed,resulting in increase in the floor area.

11. Point out the stepwise manufacture of hollow blocks?

- The cement-aggregate ratio should not be leaner than 1:6.2.
- The aggregate should have a mixture of fine aggregate 60% and coarse aggregate (6 to 12 mm size) 40%.The finess modulus as the mixed aggregate should be between 2.9 to 3.63.
- Block should be taken out from the moulds only when concrete has sufficiently set.

- Concrete should not have very lean consistency.If hand moulding is done,the hollows should be vertical.Proper compaction should be obtained.
- Machine casting is preferable to hand casting,to obtain better finish.
- After taking the blocks out the mould,they should be kept under shade for atleast one week.After that, the blocks may be stacked with cells horizontal.
- Block should be used only after about 3 to 4 weeks of their taking out of the curing tank.
- The compressive strength of blocks should not be less than 30 kg/cm^2 (N/mm^2) after 28 days curing.

12. What are the requirements of good floor?

- Adequate strength and stability.
- Adequate fire resistance
- Sound insulation
- Damp resistance
- Thermal insulation

13. Give some aspects you consider while choosing the floor type?

- Initial cost
- Appearance
- Cleanliness
- Durability
- Damp resistance
- Sound insulation
- Thermal insulation
- Smoothness
- Hardness
- Fire resistance
- Maintenance consideration

14. Give the types of flooring?

- Mosaic flooring
- Terrazo flooring
- Tiled flooring
- Granite flooring
- Marble flooring
- Pre-cast concrete flooring
- Plastic and PVC tile flooring
- Mud and Murram flooring
- Brick flooring
- Concrete flooring
- Timber flooring
- Stone slab flooring

15. Define Dampness?

The moisture in a building finding its way through walls,floors or roof is called as dampness.

16. Define Damp Proofing?

In order to prevent dampness in building,some treatments are given to the buildings during its construction.Such a treatment is known as damp proofing.

17. Give some bad effects of Dampness?

- It reduces the life of the structure.

- It causes unhygienic condition and affects the health of a occupants.
- It causes unpleasant and foul smell and makes it difficult to store household articles.
- It causes corrosion of the metals used in the construction.
- It causes dry rot in the wooden members provided in the building.
- It causes efflorescence in brick work due to which the brick gets disintegrated to powder.
- Plasters get softened and crumble.
- The paints and distempers get blistered and bleached thus damaging their good appearance.
- It causes unsightly patches in walls,floors and ceilings.
- Electrical fittings get damaged.

18. State the methods of DPC?

- Membrane damp-proofing
- Integral damp-proofing
- Surface treatment
- Gunting
- Cavity wall construction

19. Give some materials of DPC?

- Hot bitumen
- Mastic asphalt
- Bituminous felts
- Metal sheets of lead,copper and aluminium
- Dense stones laid in cement mortar.
- Dense bricks
- Cement mortar with water-proofing agents
- Cement concrete layer

20. Distinguish between pre-cast and concrete piles?

Concrete pile	Pre-cast concrete pile
<p>1.It is difficult to maintain the reinforcement in correct position during construction.</p> <p>2.Underwater construction of these pile is very difficult.</p> <p>3.Extra cost of transport of pile is eliminated.</p>	<p>1.The portion of reinforcement in pile is not disturbed from its original portion.Underwater construction of these piles is very easy.</p> <p>2.Underwater construction of these piles is very easy.</p> <p>3.These piles are heavy in weight.Hence it's difficult to transport ,handle and drive them.So the cost will increase.</p>

21. What is the use of Air condition?

- It helps in preserving or maintaining health, comfort and convenience of occupants of g residential building.

- It helps in improving the quality of products in certain industries such as artificial silk, cotton cloth, etc. In other case of industries, it provides comfortable working conditions for the workers, resulting in the increase of the production.
- It provides more comfortable entertainment in theatres, etc.

22. What are the classifications of Air condition?

Functional Classifications

- Comfort air conditioning
- Industrial air conditioning

Classification based on season/temperature

- Summer air conditioning
- Winter air conditioning

23. What are the essentials of air conditioning system?

- Filtration
- Heating (in winter season)
- Cooling (in summer season)
- Humidification
- Dehumidification
- Air circulation or distribution

24. Give the principles and factors in acoustical design?

- Site selection and planning
- Dimension
- Shape
- Seats and seating arrangement
- Treatment of interior surface
- Reverberation and sound absorption

25. What is fire load?

Fire load is the amount of heat in kilocalories (K cal) which is liberated per square meter of the floor area of any compartment by the combustion of the contents of the building and any combustible part of the building itself. This amount of heat is used as the basis of grading of occupancies.

26. What is a slip form?

In slip form construction the forms are raised while the concrete is in plastic state and such forms are therefore sometimes referred to as the climbing forms or sliding forms.

27. What are the advantages of slip forms?

- The construction of joints is eliminated as the concrete can be placed continuously for the entire structure. Hence for structure which must be watertight the slip form construction is most desirable.
- The construction work can be carried out speedily as the time lost in removing and resetting the forms saved.
- There is considerable saving in the cost of forms as there is less wastage of form and they can be used several times.

28. Name the essential parts of slip forms?

- Sheathing
- Wales or ribs
- Yokes

- Working platform or deck
- Suspended scaffolding
- Lifting devices

29. Define foundation?

A foundation is therefore that part of the structure which is in direct contact with the ground to which the loads are transmitted.

30. What are the requirements of good foundations?

- The foundations shall be constructed to sustain the dead load and imposed loads and to transmit these to the sub-soil in such a way that pressure on it will not cause settlement which would impair the stability of the building or adjoining structures.
- Foundation base should be rigid so that differential settlements are minimized specially for the case when super imposed loads are not evenly distributed.
- Foundation should be taken sufficiently deep to ground the building against damage or distress caused by swelling or shrinkage of the sub soil.
- Foundation should be so located that its performance may not be affected due to any unexpected future influence.

31. Give the different types of shallow foundation and deep foundation?

Shallow foundations

- Spread footing
- Combined footing
- Strap footing
- Mat footing

Deep foundations

- Pile foundation
- Pier foundation
- Well foundation

32. What are the classifications of bricks?

- First class bricks
- Second class bricks
- Third class bricks
- Fourth class bricks

33. What are the classifications of stone masonry?

- Butt joint or square joint
- Rebated joint or lapped joint
- Tongued joint and grooved joint or joggle joint
- Bed joint or table joint
- Cramp joint
- Plugged joint
- Dowel joint
- Rusticated joint

34. What are the causes of dampness?

- Moisture rising up the wall from ground
- Rain travel from well top
- Rain beating against external walls

- Condensation
- Miscellaneous causes

35. What are echo and reverberation?

When a reflecting surface is so much far from the source that the sound, after being reflected from it, causes a distinct repetition of the direct sound, the reflected sound is known as echo. Persistence of a sound in an enclosure after the source of sound is known as reverberation.

36. Why weather proofs are made on flat roofs?

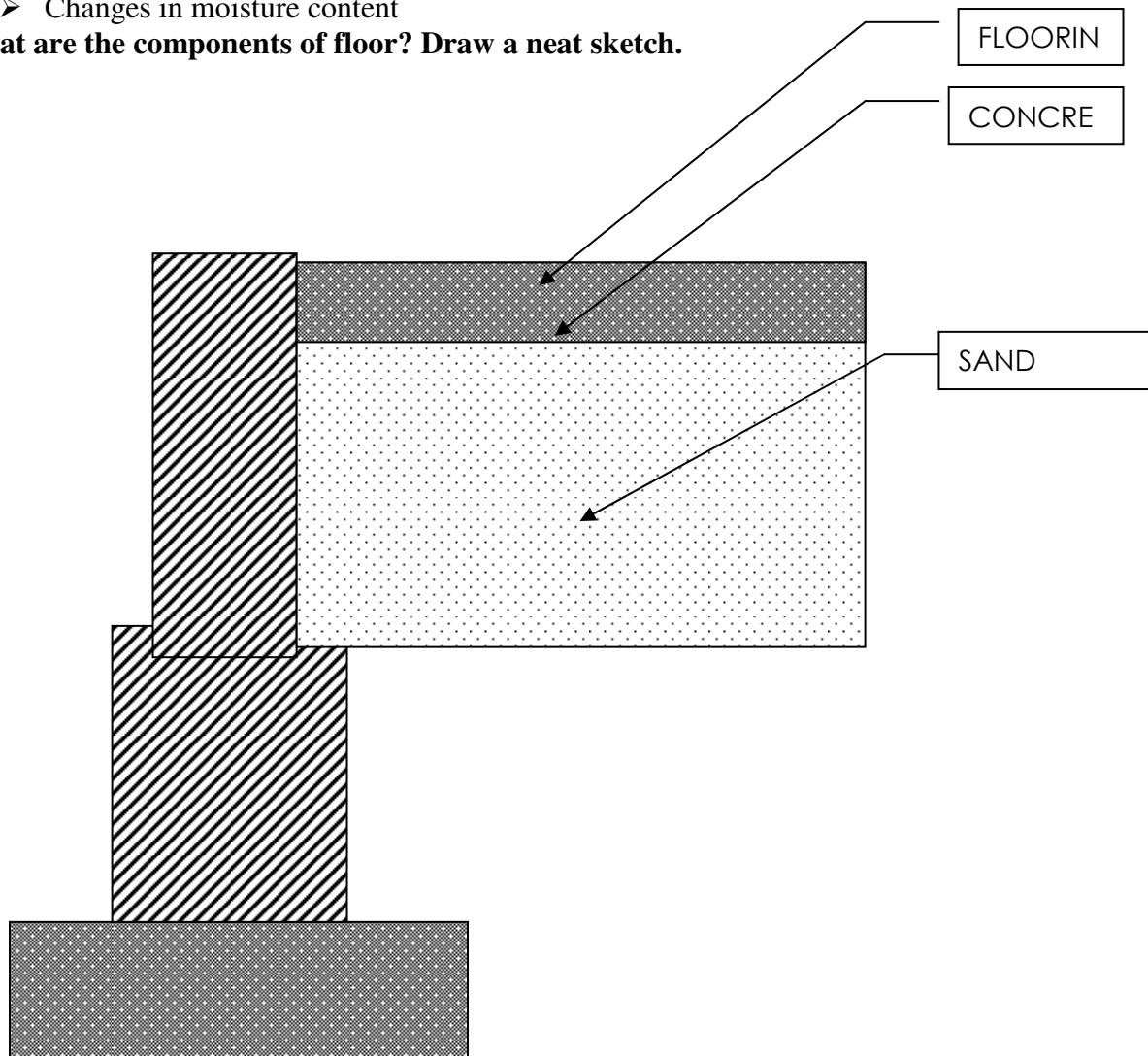
To keep the building dry is one of the basic requirements of design. The presence of moisture in any building structure deteriorates the strength of material resulting in reduction in durability of failure of the structure.

37. What is expansion joint? Why it's provided?

These joints are necessary to allow for changes in volume of concrete caused by

- Temperature changes
- Shrinkage due to hydration of cement during setting, and
- Changes in moisture content

38. What are the components of floor? Draw a neat sketch.



39. What is the economy in formwork?

It should be noted that total cost of concrete construction also include the cost of the formwork used. The formwork, which does not form the part of the finished concrete structure, sometime exceeds the cost of concrete itself.

The use of irregular shapes or forms should be avoided as far as possible.

The form should be cleared and oiled after each use.

40. When the removable of formwork are done?

The form should be removed until the concrete has hardened sufficiently and they may be left in place for as possible up to maximum days of 28 in normal weather conditions.

A hard metallic sound indicates the concrete has hardened sufficiently for safe removal of formwork.

41. How the piles are classified based on functions?

- Bearing pile
- Friction pile
- Screw pile
- Compaction pile
- Uplift pile
- Batter pile
- Sheet pile

42. How friction piles differ from compaction piles?

Friction pile

Pile are driven up to such a depth that frictional resistance developed at the side of the pile equals the load coming on the pile.

Compaction pile

They are used to compact loose granular soils in order to increase their bearing capacity. These piles themselves do not carry any load.

1UNIT 2

43. What are the techniques used in Box/Pipe Jacking?

Techniques used in Box/Pipe jacking requires the construction of just two pits:

- The Trust
- Reception pits

Dimensions of the pits vary according to site conditions. Excavation of soil can be by manual or mechanical means depending on the type of machines used.

44. Give the applications of Box Jacking?

The applications of Box Jacking are:

- Underground Pipes
- Ducks and culverts

45. Give the advantages of Box/Pipe Jacking?

The advantages of Box/Pipe Jacking are:

- Environmentally friendly with minimal damage to the surface.

- Highly accurate and cost effective.
- Suitable for all kinds of profiles for a wide variety of soil conditions.
- Traffic congestion and additional pollution will not cause.
- Extremely suitable for all kinds of underground utility infrastructure.

46. List the disadvantages of Box/Pipe Jacking?

The disadvantages of Box/Pipe Jacking are:

- Limited tunnel run resulting in more required shafts (approximately every 1000 ft).
- Relatively straight alignment required (minimum radius of curvature approximately 400ft).
- Difficulty in replacing damaged pipe.

47. When is Diaphragm walls used?

A diaphragm wall is basically a deep trench excavated in soil in to which reinforced concrete is placed. Diaphragm walls are used in permanent and temporary foundation walls for deep basements in earth retention schemes for highway and tunnel projects, as permanent walls for deep shafts for tunnel access, and as permanent cut-off walls through the core of earth dams.

48. Give the uses of diaphragm walls?

- To provide structural support for the construction of building basements with underground parking.
- To provide stability to landslide ,highway cuts, and deep building excavations including shafts.
- To provide retaining walls in areas where severe limitations may be posed by noise, vibration, geology, water table and schedule.

49. What is a tunnel? Give the advantages?

A tunnel is defined as an underground passage for transport of passengers, water, sewage, minerals, gas, etc.

Advantages:-

- The society of tunnel construction is increased by the improved modern methods of construction.
- It is more economical than open cuts beyond certain depths.

50. What are the factors you will consider while selection of route in tunneling?

- a) Geological conditions
- b) Right of way
 - Alignment restraints
 - Environmental considerations

51. Give the various methods of tunneling through rock .

The various method of tunneling through the rocks are:

- Full face method
- Heading and bench method
- Cantilever car pump method
- Drift system
- Pilot tunnel method

52. Give the various methods of tunneling through soft ground.

The various methods of tunneling through the soft ground are:

- a) Fore paling method
- b) Needle beam method
- c) Five piece set method

- d) Linear plates method
- e) Other methods
 - Casting methods
 - Square sets and logging method
 - Horse cups method

53. What is cofferdam?

A cofferdam is defined as a temporary structure which is constructed. So, as to remove water/soil from an area and make it possible to carry on the construction work under reasonably dry conditions.

54. What are the uses of cofferdams?

- To facilitate pile driving operations.
- To place grillage and raft foundations.
- To construct foundations for piers and abutments of bridges, dams, locks, etc,

55. What are the factors you will consider while selecting cofferdams?

The factors considered while selecting cofferdams are:

- The area to be protected by a cofferdam.
- The depth of coater to be dealt with i.e, shallow depth of deep depth.
- The possibility of overtopping by floods, tides, etc.
- The nature of bed on which the cofferdam is to test, (i.e.;) previous layer or an impervious layer.

56. What are the types of cofferdams?

The types of cofferdams are:

- Dikes
- Single wall construction
- Double wall construction
- Cellular cofferdam
- Rock-filled
- Concrete cofferdam
- Suspended cofferdam

57. Give the different types of piling?

- Rotary board technique
- Continuous flight Augur piling
- Low head room continuous Augur pile
- Cased flight Augur piling

58. What is grouting?

Grouting is an engineering and art combined to fill up the voids or cavities in rock or soil masses with fluid that will increase the overall strength and impermeability of the mass.

59. Give the types of grouting.

- Chemical
- Cement
- Jet grouting

60. Give the characteristics of grouting materials.

The characteristics of grouting materials are:

- The grouting material has high permeability.
- No vibrations are used.
- Application requires no additional structure used.

- The properties are measurable.
- It has high strength and low deformability.

61. What is caisson ?

The word caisson is derived from the French word 'caisse' meaning a box. In civil Engineering, a caisson is defined as a structure which is sunk through ground or water. They exclude water and semi fluid material during the process of excavations of foundations and which subsequently becomes an integral part of the substructure.

62. Give the uses of caissons.

The uses of caissons are:

- To reach the hard bearing structure for transferring the load coming on support for bridge piers and building columns.
- To serve as an impervious core wall of earth dams. When placed adjacent to each other.
- To provide an access to a deep shaft or a tunnel.

63. What is the difference between cofferdams and caissons?

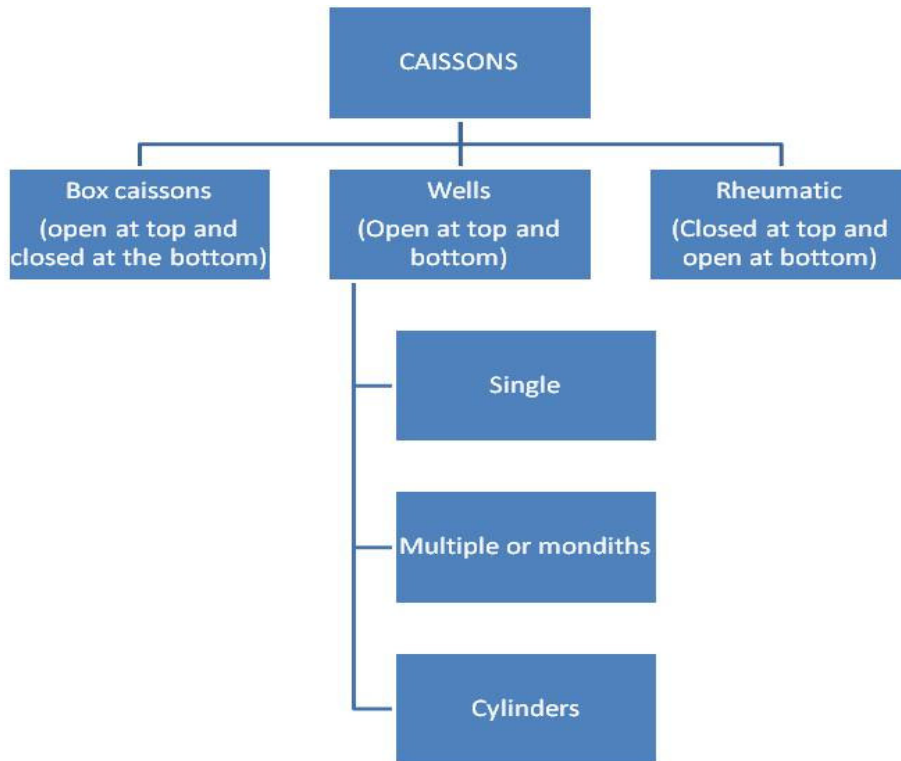
The difference between cofferdams and caissons are:

- The main difference between a cofferdam and a caisson is that the former is a temporary structure while the latter forms the part of the permanent work.
- A cofferdam becomes uneconomical in cases where the place of the foundation work and small as compared to the depth of water under such circumstances ,caissons are most suitable.
- The places at which cofferdam cannot be dewatered successfully,caissons are used.

64. What are the materials used for the construction of caissons?

- Cast iron
- Reinforced Cement concrete
- Steel
- Timber

65. Give the classification of caissons?



66. What are the uses of sheet pile?

The uses of sheet pile are:

- To protect river banks.
- To retain the sides of foundation trenches.
- To resist flow of underground or loose soil or of both.
- To resist bending abrasion or other stresses which may arise in use.

67. Give the different types of sheet piles?

The types of sheet piles are:

- Concrete sheet pile
- Steel sheet pile
- Timber sheet pile

68. What is shoring?Why is it provided?

Shoring is the construction of a temporary structure to support temporarily an unsafe structure.

69. Why is shoring provided in foundation?

When a wall cracks due to unequal settlement of foundation and the cracked wall needs repair. So, shoring is provided in foundation.

70. Give the types of shoring in foundation.

Types of shoring foundation are:

- Sheet piling
- Stay Bracings
- Box sheeting
- Vertical sheeting

- Runner system

71. What is dewatering?

The process of removal of water from an area where the ground water table is high .

72. Give the methods of dewatering.

- Ditches
- Well point system
- Shallow well system
- Deep wall system
- Vacuum method (forced flow method)
- Electro osmosis method

73. What is dam?

A dam is defined as an impermeable or fairly impermeable structure in the form of a barrier which is constructed across a valley along a river to store or hold up a mass of water on one side of it.

74. Give the various types of dams.

The types of dams are:

- Rigid dams or masonry dams
- Non-rigid dams or earth dams
- Miscellaneous dams

75. What are the factors you will consider while you select a earth dam?

The factors considered while selecting earth dam are:

- The angle of repose of the soil forming the dam when saturated by water under pressure.
- The height of dam.
- The impervious nature of the material
- The imperviousness of foundation bed
- The importance of work

76. How are dams classified?

The classifications of dams are:

- Gravity dams
- Arch dams
- Multiple arch dams
- R.C.C. Slab and buttress dams

UNIT 3

77. What are the uses of offshore platform?

The uses of offshore platform are:

- Connect the offshore pipeline grid.
- Provide an efficient means to platform maintenance
- Locate compression, separation, production handling and other facilities.
- Conduct drilling operations during the initial development phase of an oil and natural gas property.
- Oil & gas exploration
- Navigation aid towers.
- Bridges and causeways
- Ship loading & unloading facilities.

78. What are the types of offshore platforms?

The types of offshore platforms are:

- Converted jackup barges
- Fixed tower structures
- Tension leg platforms (TLP's)
- Stationary floating SPAR's

79. What are the classifications of bridge?

Segmental bridges are in two general categories. They are:

- Precast bridge
- Cable bridge

A cable stayed bridge is suspended by multiple cables. Main component of cable stayed bridge are inclined cables, towers, piers and the deck. The cable stayed deck is in compression, pulled towards the towers, and has to be stiff at all stages of construction and use.

80. What are skyscrapers?

Skyscrapers are the multistoried building. The construction of multi-storied building dependent on availability of materials, technology and the availability of services like elevators.

81. Give the uses of silos.

Silos are used to store large quantities of granular bulk solids and to store the green crops and converting them into silage.

82. What are the types of cooling tower?

The types of cooling tower are :

- Mechanical draft cooling tower
- Natural draft cooling tower

83. What is Transmission Tower?

Transmission tower is a steel structure constructed to transmit the signals. Generally, it is used as towers for Television, Radio & Cell phones.

UNIT 4

84. What are the causes of building damage?

a) Atmospheric Agencies

- Rain
- Wind

➤ Temperature

- b) To normal wear and tear.
- c) Failure of structure
- d) Vegetation and chemical reduction

85. How will chemicals damage the building?

The water available in nature contains acids and alkalies and other compounds in dissolved form. such a water acts over the material to give rise to chemical weathering.

Aggressive gases (CO₂, SO₂), corrosive soil (or) water, acid salts.

86. Give some defects in Concrete structure.

The main phenomena resulting from corrosion of reinforcement can be observed at the concrete surface are rust staining, scaling, cracking, spalling delamination and leaching.

R.C.C. work having excessive voids and hollow.

Adjoining existing buildings in order to ascertain whether they have also undergoes similar damage might be caused by natural forces.

- Crowning
- Spalling
- Disintegration

87. What are the materials used for repair?

- Cement slurry
- Cement mortar 1:3 with water proofing
- Bitumen compound
- Base of fabric
- Bitumen, coolant
- Mineral powder for dusting

88. What are the types of defects in floors?

The types of defects in floors are:

- Dusting
- Cracking
- Damages
- Potholes
- Crowning

89. How does vegetation cause distress in buildings?

Stress in a building component can be caused by external force such as dead, live, wind or seismic loads or foundation settlement or internally due to movement of moisture changes.

It is the process of bringing back the partly damaged or affected structures for use.

90. Define Gunting & Shotcrete?

Gunting:

The process of Gunting can be adopted for applying mortar to the wire mesh system. This process applied properly with experienced gunman can give good compaction and uniform surface.

This appears to be a suitable process for the mass production of ferrocement prefabricated units. A continuous process of layer by layer gunting with an interval of about an hour will yield good results.

Shotcrete:

Admixtures can be used in shotcrete to produce the same effects of ordinary concrete. This enables a process to be used in very wet condition and for sealing leakages. A creep of dry shotcrete is similar to that of high quality normal concrete.

91. Give some repair technique followed in rehabilitation of structures?

- Bonding with epoxies.
- Routing and Scaling
- Stitching
- External stressing
- Blanketing
- Over lays
- Grouting
- Autogenous healing

UNIT 5

92. On what basis you will select the equipment for the construction?

- Volume of the material to be removed
- Size of the machine used
- Depth of excavation
- Height to be lifted
- Soil type
- Duration of period
- Rented or purchased
- Production cost
- Spares availability
- Skilled operation

93. List some excavation equipment?

- Tractor
 - a) Crawler or track type
 - b) Wheel or pneumatic type
- Bull dozer & Angle dozers
- Grader
- Scraper
 - a) Crawler-drawn scraper
 - b) Two-axle scraper
 - c) Three-axle scraper
- Power shovels

94. Bring out some difference between crawler and pneumatic type of wheels?

Crawler	Pneumatic type wheels
1.The crawler moves on an endless chain.	1.It moves on pneumatic tyres.
2.They are slow speed.	2.They are faster in speed.
3.They are used for uneven & rough ground.	3.They operate best on smooth roads.
4.They have a speed of about 12 Km/h.	4.They have a speed of about 50 Km/h.

95. What are the three types of scraper?

- Crawler-drawn scraper
- Two-axle scraper
- Three-axle scraper

96. What is the power shovel?

It is used to excavate the earth of all classes and load it into wagons. They are mounted on crawler tracks. It consists of a mounting, cab, boom, dipper, stick, hoist line.

97. Name some compaction equipment?

- Towed static smooth compactors
- Static sheep foot or pad foot compactors
- Static three wheel self propelled compactors
- Static tandem compactors
- Three axle static compactors
- Rubber tyred compactors
- Vibrator compactors
 - a) Tandem vibrator compactors
 - b) Towed vibrator compactors
 - c) Sheep foot & tamping foot vibrator compactors
 - d) Self-propelled vibrator compactors
 - e) Hand guided vibrator compactors

98. What are the types of conveyors?

- Belt conveyors
- Roller conveyors
- Chain conveyors
- Pipe conveyors
- Elevating conveyors

99. Give some advantages of belt conveyor?

- Its suitable levels eliminate a good deal of lifting and lowering of material.
- It requires no stopping or standing but is continuous operation.
- Transportation is affected by friction between material being transported and the belt.
- It largely saves labor cost.
- No noise
- Carry the material horizontal, vertical, inclined.
- It can withstand 160°C.

100. How do you calculate the output of the scraper?

- Size & Mechanical condition of the scraper
- Hauling device
- Condition of the haul road
- Characteristics of soil & work area
- Efficiency
- Output of scraper in bank volume/hr = $\frac{\text{Optimum loose volume loaded/trip} \times S \times 60}{T} \times \text{efficiency}$

Where, S = Swell factor

T = cycle time/trip in minutes.

101. What are the uses of excavators?

It have various earthmoving jobs,like laying pipes,removing trees,excavation of drains,general earth moving jobs of cleaning area,loading,etc,It is also used for excavation of houses & building foundation,trenches for irrigation,sewage,cables,gas & oil pipe lines.Maintenance & cleaning of rivers,cannals,irrigation.It is also used for loading of material like earth,coal,aggregate,etc.

102. What are the types of excavators?

- Crawler mounted excavators
- Truck mounted excavators
- Self propelled excavators
- Excavators mounted on barge or rail
- Hydraulic excavators
- Excavators loader
- Bucket wheel excavators

103. Give the advantages of elevating scraper?

- Better loading ability
- It is self loading one in addition to self propelled capabilities.
- The chain rotated by power independent of the travel of the scraper.
- It has a variable speed
- It has a very good finishing ability.
- Pusher not required
- It gives uniform compaction
- They are capable of loading most materials except rock and boulders.

104. List the factors which will affect the output of the scraper?

- When working in hard ground the surface should be pre broken by a ripper or scarifier and assistance in cutting should be given by a pushing vehicle.
- Where possible the cutting operation should take place down hill to take full advantage of the weight of the unit.
- Haul roads should be kept smooth to enable the machine to obtain maximum speed.
- Recommended tyre pressure should be maintained.
- Size, distance,Road condition,soil type,Efficiency of engine.

105. What is grader?Give its uses?

It is used for leveling and smoothening the earth work.Spreading and leveling the base course in the construction of roads and air fields.This blade can be rotated at 360^0 and also used as ditching and trenching operation.

- Gravel road repairing
- Ditch filling or digging
- Level or sloped ground finishing
- Snow clearance
- Land clearance
- Base course of spreading and leveling

106. What are the types of tractors?

- Crawler type
- Wheel type
 - a) Two wheeled
 - b) Four wheeled

107.What is grad ability?

The maximum slope of the tractor that can work

$$K = \frac{11660 \times T \times G}{R \times W} - \frac{N}{40}$$

K=Gradability

G=Clear reduction

W=Wt. of vehicle

T=Torque

R=really radian

N=Rolling vehicle

108. What is the application of dozer?

- Road cleaning
- Stripping
- Back filling
- Ditching
- Spreading
- Side fills & cuts

109. What does the output of dozer depend on?

The output of the dozer depends on:

- Size & condition of the dozer.
- Distance travelled by the dozer.
- Speed of operation.
- Characteristics of soil being handled.
- Surface on which dozer is operating, soil condition, etc
- Efficiency

110. Give some importance of excavators?

- Excavators are basically used for soil, it is a digging machine.
- The hydraulic system is very productive and efficient.
- It is rotated at 360⁰
- This can be fitted with various multipurpose attachments for various works like laying pipe, removing trees, excavating drain, clearing, loading, etc.

111. Give the application of trenchers?

Trenchers are the equipment used for excavating trenches or ditching of variable depth. It is used to trench the water lines, pipe lines, oil line cables, drainage and sewer. These are useful for digging canal works.

