Civil Engineering Knowledge
50 + Civil Engg. Interviews Questions & Answers

175 Civil Engineering Interview Question and Answers

24 min read

By Bhushan Mahajan / 16/12/2019

175 **Civil Engineer Interview Questions and Answers** asked in Top Companies,

1. What are the steps involved in Building Construction?

There are different **steps involved in Building construction** like,

1. Concreting
2. Masonry work
3. Plastering work
4. Flooring work
5. Formwork
6. Steel cutting and Bending

2. How do you measure the volume of concrete?

The volume of concrete is calculated by Multiplying its Length, Width, and Thickness together. For Example – 1m x1m x1m = 1 m^3 of volume of concrete.

3. Why Concrete Cover is provided for reinforcement?

Concrete cover for reinforcement is required to protect the rebar against corrosion and to provide resistance against fire.

4. How to do check level on construction site?

I will check the level on the construction site by Spirit level, Dumpy Level, and Leveling Pipe.

5. What is the accuracy of the dumpy level or minimum reading we can take?

With the help of a dumpy level, we can take up 5mm accurate reading or minimum reading.

6. How do you calculate the weight of 12m long and 10mm dia. Steel on-site?

Its simple,

By multiplying the length of the steel bar with its unit weight

(unit wt of 10mm = 0.60 kg/m)

Weight of steel = 0.60x 12

= 7.2 kg

7. Which is the equation used for calculating the unit weight of the **steel bar?**

($D^2/162$)

8. What is the size of a concrete cube?

15 cm x 15 cm x 15 cm

9. What do you do if any concrete cube fails in 28 days compressive strength test?

If the **concrete cube fails in the strength test,** I will conduct a core cutter test on concrete and send a report to higher authorities.

Read More: What Is Civil Engineering – History, Scope & Top 25 Universities

10. What is the mix ratio for M – 20 Grade of concrete?

For M20, the Mix ratio is 1: 1.5: 3

11. What is the Unit weight of 12 mm Steel Bars.

0.89 kg/m

12. What is the Density of Steel?

7850 kg/m^3

13. In Fe – 415 Steel Grade, 415 indicates the____________of Steel.

Tensile Strength

14. What is the Volume of 50 kg bag of cement?

0.035 m^3

15. In Residential Building, Average Value of Stair Width?

900 mm

16. The Slope of Stair Should not Exceed.

40°

17. Minimum diameter of steel in Column.

12 mm

18. Standard Size of Brick?

19 cm x 9 cm x 9 cm

19. What is Unit Weight of RCC?

2500 kg/ m^3

20. One Acre = _____________Sq. ft.

43560 Sq. ft.

21. What is the Full Form of UTM?

Universal Testing Machine

22. Cement Expire After?

3 month

23. One square meter = __________ Sq. ft?

10.76 Sq. ft

24. What is unit weight of 25 mm Steel Bars

3.85 kg/m

25. One Hectare = __________Acres

2.47 Acres

26. One Gallon = ___________Liters

3.78 Liters

27. One kilonewton is equal to ____________ kilograms

101.97 KG

28. One Tonne is equal to ___________ kilograms

1000 KG

29. Maximum Free fall of concrete allowed is________?

1.5 m

Read More: 7 Brick Test To Decide Quality Of Bricks

30. Instrument used for level work on a construction site?

Dumpy Level

31. Minimum Bars in Circular Column Should be__________

6 Nos.

32. What is the Full Form of AAC?

Autoclaved Aerated Concrete

33. What is the Full Form of NDT?

Non – Destructive Test

34. What is the Full Form of JCB?

Joseph Cyril Bamford

35. Which Test is conducted to determine the bearing capacity of Soil?

Plate Load Test

36. Ring and ball test is conducted on which construction material?

Bitumen

37. Minimum hook length as per IS Code?

Ans: 75 mm

38. What is the extra length in Bent up bars?

0.45

39. What is Least Count of Dumpy?

5mm

Read More: Thumb Rules For Civil Engineers

40. What is Full of EGL?

Existing ground level.

41. A First Class Brick Should Absorb Water More than?

20 %

42. Number of Bricks used in 1 Cubic meter of Brickwork?

500 Nos.

43. The Normal Consistency of Portland Cement?

25 %

44. The Expansion in Portland cement is tested by…

Soundness Test

45. According to IS Code, Full Strength of Concrete is achieved after?

28 Days

46. What is the Volume of 1 bag of cement?

0.035 m^3

47. Minimum Grade of Concrete Used For RCC?

M – 20

48. Cement Expire After?

3 month

49. What is the Full Form of DPR?

Detailed Project Report

50. What is the initial and final setting time for cement?

Initial: Less than 30 min and 600 min.

51. What are the Responsibilities of a Construction Manager in the project?

Responsibilities of a Construction Manager in the project

1. Supervising the construction Site.
2. Estimate the proper cost of the project
3. Purchasing the materials required for construction before work begins.
4. Purchasing the materials required for construction before work begins.
5. Analyzing the proposals.
6. Construction Scheduling & Monitoring

52. What can be the potential risk factors for workers on the construction site?

Following are the risk factors for workers, for not following the safety protocols:

- Risk to fall from height
- Failure Scaffold and Trench
- Change of Electric shock and arc blast
- Motion injuries

53. What you know about Hybrid Foundation

Hybrid Foundation is used to reduce the amount of settlement in high rise building, which contains both soils supported mat and piles.

54. What are the different ways of demolition?.

Demolition is commonly done through Hydro-demolition, Dismantlingand Pressure Bursting.

55. Explain Floating Slab Foundation?

Type of mat foundation having the hollow mat formed by the grid of thick reinforced concrete walls between two thick reinforced concrete slabs is termed as **Floating Slab Foundation.**

---

56. Explain what is flashing?

Joints in a building can be sealed and protected from water penetration through extended construction called as **Flashing**. It can be installed at the walls and **parapets.**

57. State different types of roof systems?

Following are the types of roof system,

- Slate or Stone roofs
- Wood shingle roofs
- Metal roofing systems

58. What can be the phase inspections done by local authority while construction?

Various inspections during the construction includes,

- Inspection of Site
- First or pre-construction Inspection
- Inspection of Foundation before placing of concrete
- Framing inspection
- Insulation inspection is done after insulation
- Lastly, the final inspection is done after the completion of the construction

59. State out some of the Inspections, done after the completion of construction?

Listed are some of the checking or inspection is done on the exterior side of the construction is,

- Storm sewer system
- Safety provision (terraces, porches, areaways)
- Accessory buildings
- Drainage

- **Retaining wall**
- Compaction of fill material
- Caulking at opening
- Pavement edging
- Protection against moisture penetration
- Design of dwelling structure

60. Alternate Bid is_______?

An alternate bid is a proportion stated in the bid to be subtracted or summed from the base bid amount. Alternate materials or methods of construction force Alternate bids are to be proposed.

61. Explain the Order of Change request?

Change order request is a written document given by the owner, requesting an adjustment to the contract sum or an extension of the contract time. It can be issued by the architect or owners representative.

62. What are the components covered within Construction Cost?

Materials required, labor expense, equipment and services, contractor's overhead, and profit are covered under the estimated construction cost While compensation or salary paid to the architect, consultant, or engineers, cost of the land, and other costs that is owner's responsibility is not covered in it.

---

63. What does the Critical Path Method (C.P.M) mean?

It (CPM) is a strategy along with the method of representing the respective tasks and activities to be involved in the construction with respect to a symbolic diagram.

64. Explain the term is Demising Wall?

Demising wall act as a boundary that separates your land or house from neighbor's house or property.

The Significance of the labor and material payment bond is if the contractor fails to pay for all labor, materials, equipment's or services in accordance with the contract, he or she will guarantee payment to the owner under this bond. Hence It is a bond between the owner and the main contractor.

66. Explain what is progress payment?

A progress payment is a payment done by the owner to the contractor in parts after the completion of a certain amount of construction. Technically it is a difference between the completed work and material stored and a pre-determined schedule of values or unit costs.

67. What is a Structural Frame or Systems?

Beams and **columns** form load-bearing assembly on a foundation called **Structural frames**. However, the columns and beams are mostly fabricated off-site and can be assembled on site.

68. Explain the concept "release of lien"?

Documentation executed by any individual or firm in the availability of supplying labor, material, or professional service on a project, which will release its mechanic's lien against the project property.

69. What is an Architect-Prepared Contract?

A contract is an agreement prepared by the architect between the owner and himself which is further reviewed by an attorney before its execution is an architect -Prepared Contract. It is a legal contract with all terms and conditions including adequate legal protection offered for both parties.

70. What 1/8 on the architect ruler indicate?

1/8 on the architect ruler is a scale that converts 1/8 inch onto the drawing to 1 foot. Its representation will be a drawing with a scale of 1/8″= 1 foot.

71. What are software programs that can be used by architects?

The list of software programs is as follows:

- AutoCAD
- 3DS Max
- Sketchup
- Photoshop
- Adobe creative suites
- Microsoft office
- Digital Media
- Their use is based on the type of architectural project.

72. Explain what are the skills required for a good architect?

Conceptual understanding related to designing models,

- Basic knowledge of computer and architectural software programs
- Various Engineering abilities
- General and Bussiness aptitude
- Knowledge about 3D model Designs

73. What things architects have to take care of before starting any project?

- The owner has to have proper planning permission for the building to be constructed.
- Whether the certain listed grade is approved or not
- Basic Knowledge is required of building appliances and materials that are costly. Environment care should be taken while construction

74. What are different dimension tools in CAD?

For accessing CAD dimension tools one must go to CAD>Dimensions. The wide range of dimension tools is listed below:

- Manual dimensions
- Interior dimensions
- Point to point dimensions
- Display temporary dimensions moving objects using dimensions

- Auto exterior dimensions
- Auto interior dimensions
- End to end dimensions

75. What are the most helpful and best engineering Apps?

Some of the best apps for civil engineering are,

- Sketchbook
- Photoshop Express
- Flipboard
- Evernote
- STEEL
- Dropbox
- Instagram
- Houzz
- AutoCAD Ws
- Magic Plan

76. What are Wooden Shingles?

Slats or sheets rectangular in shapes that are nailed to the exterior surface are called **wooden shingles**. The shingling method is a traditional weatherproofing method for building.

77. What could be the common problems that architect has to tackle?

Common problems faced by architecture are,

- The client would sometimes not be able to know what they want that is when the architect will face problems in designing the structure.
- When budget is limited
- When the requirement of the customer is custom design at standard design cost
- When an architect is provided with less space to work

78. What is the standard roof height like to be?

The **standard height of the roof** can be one or two stories tall. If you do not need to make the roof taller and yet you won't make it look bigger from outside, you can use a mansard roof containing multiple floors. Pitch is adjusted so as to give a bigger look.

79. List the types of roofs used?

Types of Roofs are as listed below,

- Gull wind roof
- Mansard roof
- Bell cast roof
- Sawtooth roof
- Monitor roof, etc.
- Half hipped roof
- Dutch gable roof
- **Skillion roof**
- Gambrel roof

80. List out the problems one might be facing while having a Cantilever balcony?

Cantilever balconies are unsupported and extend in an outward direction, so the problems with Cantilever balconies are as such;

- Excess amount of deflection or bounce
- Weakness of the deck structure is liable
- Water damage to the interior of the house along with rotting is caused.
- Unevenness within the house interior
- Balcony for gardening or other purposes is not safe as it is not designed to lift excess amount of weight and may result in earlier failure.

81. For what type of building Built-in balconies are suitable and what are their pros?

An older building serves the requirement of Built on balconies. This balcony is well supported in front of the facade on four columns and are backed to the wall with brackets.

The advantages of built-on balconies areas listed below:

- Dismantling of old ones is possible and the new ones can be erected immediately in front of the face.
- The work can take place outside of the house, so there is no interference to the interior of the building.

82. Distinguish between Built Area and Super Built-up Area?

Difference between Built up area and super built up area,

The **built-up area** includes **carpet area** plus area covered by the walls, pillars as well as ducts. It is having 10% more area than that carpet area

On another hand, **Super built-up** area includes your built-up area plus the area that you use as building amenities like the passage of lift, stairs, and lifts, gym, club, etc.

83. What is the ideal size of the living room ranging from small to large?

1. Very small size living room= 7 x 10 feet

2.Small living room= 10x 13 feet (for two 2 seater sofa)

3.Medium living room= 12×18 feet (for 3 Seater sofa)

4.Large living room= 15×20 feet (for 4 seater or 5 seater sofa)

84. What Do You Understand by M25 Concrete?

According to the standards IS code 456: 2000, M represents Mix, and 25 is the characteristic compressive strength of concrete.

85. Maximum temperature that is allowable for fresh concrete used according to the ASTM?

32°C is the maximum temperature.

86. What is Grunting?

Grunting is a kind of process in which a mix of cement & sand is in the proportion of 1:3 is shouted on a concrete surface with the use of a cement gun under the pressure of 2 to 3 kg/cm2. It is a process with high effectiveness maintained for repairing concrete walls or damaged surfaces.

87. For filling cracks in masonry structures involve_____ the type of bitumen.

Plastic bitumen

88. Explain the terms bending moment (BM) & Shear force (SF)?

A bending moment is a reaction that tends to bend the element when an external force or moment is applied to it in a sudden or gradual manner. The most common or simplest example is the beam.

The sheer force acts perpendicular to its longitudinal (x) axis. For design purposes, the beam's ability to resist shear force is a major objective than its ability to resist an axial force. The axial force acts parallel to the longitudinal axis.

89. What is the type of bitumen used is for filling cracks in masonry structures?

Plastic bitumen is the best-suited bitumen used is for filling cracks in masonry structures.

90. What is the process called for covering the concrete placed on the exposed top of an external wall?

Coping

91. ——– is the wall constructed to resist the pressure of an earth filling.

The **Retaining wall**

92. What is the duration of the minimum curing period?

As per IS 456 – 2000 recommendations the curing period of concrete must be at least 7 days in case of OPC (Ordinary Portland Cement), and at least 10 days for the concrete with added mineral admixtures. It is also mandatory for OPC exposed to dry and hot weather conditions to have at least a 10-day curing period.

93. What is the minimum recommended weight of fine aggregate for sieve analysis as per ASTM C136?

300 g

94. Duration in hours for CBR samples to be soaked?

96Hrs duration is well sufficient for CBR samples to be soaked.

95. What is the bearing capacity of soil?

The **bearing capacity of soil** is the ability of soil to withstand the load imposed by the Foundation.

96. What do you mean by honeycomb in concrete?

Air Pocket is another name for honeycomb in concrete which is usually formed during concrete casting.

97. What field tests are necessary for the quality check of cement?

. Following are the tests cement should undergo on field;

1. On looking, Cement should have a grey color with a light greenish shade.
2. It should feel smooth when rubbed between fingers. If the hand is inserted in heap cement or its bags, it should feel cool.
3. When a pinch of cement is thrown in Water then cement should float for some time before it sinks.
4. Cement should be lump-free when checked by putting the hand in the mixture.

98. What are the types of cement?

Various types of cement which are used for quality construction are listed below: **Portland Pozzolana Cement** (PPC), Low Heat Portland Cement, Colored Portland

Cement, Hydrophobic cement, **Ordinary Portland Cement (OPC)**, White Portland Cement (WPC), Rapid Hardening Cement, Portland Slag Cement, Sulphate resisting Portland Cement, White Portland Cement (WPC), etc.

99. What do you mean by Water-Cement Ratio and how it is related to the strength of concrete?

The Water-Cement Ratio: Ratio of weight of water to the weight of cement used in a concrete mix. A lower constant ensure higher strength and durability but is difficult to mix i.e. low **workability of Concrete** Mix. **Admixtures** are added to deal with workability.

100. List the steps involved in the concreting process?

Steps In Concreting are as given below:

1. **Batching of Concrete**
2. Mixing.
3. **Transportation of Concrete**
4. **Compaction of Concrete**
5. Curing

101. What is Bursting Reinforcement?

Tensile stresses induced during prestressing operation are called as bursting reinforcement and it is maximum where the stress trajectories are concave towards the line of action of the load.

102. What are the major difficulties faced during pumping concrete works?

Difficulties are discussed below,

1. The force needs to overcome the friction between concrete and the pumping pipes along with the weight of concrete and the pressure head.
2. Segregation and Bleeding are the major problems associated with pumping.
3. Aggregate selection is important in this process to reduce errors in work.

103. Reason for concrete being weak in tension?

Concrete is a combination of materials like several aggregate types, cement, pozzolana, water, air, etc which are stick together with a cement paste. The zone called the **“interface zone”** is the weakest link in the structure. During compression, that interface is the only to transfer compressive stresses from aggregate to aggregate. Which does not require exceptional strength.

While the scenario under tension is not the same. The aggregates in tension are trying to pull away from each other and the bond is what holds it tightly. Since it is significantly weaker than the aggregates, it is what results in failure.

104. Explain grouting?

Grout is a fluid form of concrete that is used to fill the voids and this method is nothing but grouting.

105. What is the recommended slump for the column?

75 to 125 mm

106. What is the range for the bearing capacity of granite?

Around in between 30 to 35 kg/cm^2

107. What are the recommended standards of tamping rod used in cube filling for cube test?

According to the IS code 2386, a 16 mm steel rod with rounded edge is recommended specifications.

108. Explain What are the functions of columns in a building**?**

Support structural load and transfer it through beams to the foundation.

109. What are the uses of Groynes?

Uses of Groynes are,

- Stop the longshore drift.
- Slow down erosion.

110. What do we call the portion of a brick cut across the width?

BAT

111. State and Explain reinforcements used in the process of prestressing?

The major types of reinforcements used in prestressing are:

1. **Spalling Reinforcement:** The Spalling stress adjured leads to stress behind the loaded area of the anchor blocks. Which results into the breaking off of the surface concrete.
2. **Equilibrium reinforcements:** In this type several anchorages exist where the prestressing loads are applied in a sequential manner.
3. **Bursting Reinforcements:** Various stresses occurs in case of the stress concave trajectories towards the line of action of load. In order to reduce such stresses, here the reinforcement in the form of bursting is required.

112. Explain what is QA & QC?

Quality Assurance (QA): Set of activities to make sure quality in the processes by which works are done is termed as Quality Assurance (QA). It is the process of managing for quality.

Quality Control (QC): Quality Control can be defined as a set of activities that ensure quality in work. This activities focus on identifying defects in the actual products produced.

113. List down the Ratio of Grades M5, M7.5, M10, M15, M20, M25, M30, M35, M40?

The grades are having the following ratios:

1. M5 – 1:5:10
2. M7.5 – 1:4:8
3. M10 – 1:3:6

4. M15 – 1:2:4
5. M20 – 1:1.5:3
6. M25 – 1:1:2
7. M30, M35, M40 – Design Mix Followed

114. The length of each fish plate is________

457.2mm

115. Rail chairs are used to fix what?

Double headrails

116. ______ is a highly effective process for repairing concrete walls or damaged surfaces.

Flat bearing

117. Explain cement soundness?

It is the property of cement that ensures that the cement does not go through any unwanted expansion or experience any change in volume once it has been set. **Cement soundness** is a necessary process to help cement get rid of any possibilities of the mortar or concrete from getting expanded.

118 What is used to check to creep of concrete?

Anchors

119. What Are The Materials Used In Building A Gravity Dam?

Compacted earth and concrete are used depending on the dam type. Many gravity dams could be constructed of compacted earth. While high dams are generally made out of concrete. The spillway is a necessary requirement for dams.

120. What made you decide to become a civil engineer?

My passion and interest in learning building works have encouraged me to become a civil engineering. I love working as a civil engineer and learn at every stage of my work.

121. What is the Purpose of the Gap in the Road on the Bridge?

The purpose of the gap in the road is to allow road **expansion and contraction** caused due to temperature changes, without damaging or deformation the road.

122. In Indian railways, the minimum formation width in embankment for a single line of board gauge is

6.1m

123. The direction of the engines are changed using the device called _______

Turntable

124. _______ provided to prevent the vehicles from moving beyond the end of the rail at terminals.

Buffer stops

125. How important is Moment Of Inertia in Civil Engineering?

This concept is used to resolve various issues in civil as well as mechanical engineering. It measures the opposition of any kind of body against a certain momentum that is rotating.

126. Name the type of clearance: "The distance between the running edge of the stock and switch rails at the switch heel ".

Heel clearance

127. What are the tests used for checking brick quality?

Absorption test, Hardness Test, Shape & size test, crushing strength test, soundness test, etc. are performed to determine the brick quality. For example, In the water absorption test, brick is dipped in freshwater for 16 hours in water. And depending on the weight of brick its class is decided such as if the weight of brick after dipping in water doesn’t exceed 20% it can be considered as a first-class brick if below 22.5% it can be considered as second class brick, and so on.

128. Name the clearance that is defined as the distance between the adjacent faces of the stock rail and the check rail.

Flange way clearance

129. Explain what is the void ratio?

Void ratio is the ratio of the volume of voids to volume of solids.

130. Stock rails are fitted against ______

Tongue Clearance

131. the angle subtended between the gauge faces of the Stock rail and check is ______

The switching angle is

132. Explain the Critical Path Method (C.P.M)?

Critical Path Method is a strategy and method which uses the symbolic diagram to represent the respective tasks and activities involved in the construction.

133. How can Specific Gravity of Cement be Determine?

The composition of cement is itself in powder form. Hence it is not easy to measure its specific gravity. Ultimately knowing its specific gravity is not particularly useful.

Finding a conclusion to a solution is that the more useful question is “What is the typical density of concrete?” And according to the rule of thumb, its answer is that the normally cured concrete has a density of about 150 pounds per cubic foot.

134. Define Throw of a switch?

The distance between the running face of the stock rail and the toe of the tongue rail is known as the Throw of a switch.

135. ______ (in mm) is the maximum value of the throw of a switch for a broad gauge track.

995 mm

---

136. In INDIA, the crossing number for passenger turnout can be taken as

12

137. A warning signal, which is first visible to the driver, is known as

Outer signal

138. List out the different steps involved in building construction?

Major steps involved in Building construction like,

- Concreting
- Masonry work
- **Plastering work**
- Flooring work
- **Formwork**
- Steel cutting and Bending

139. How will you measure the volume of concrete?

It is a simple task of multiplying its Length, Width, and Thickness together. For Example – 2m x 2m x 2m = 8 m^3 of the volume of concrete.

140. Why Concrete Cover is provided to reinforcement?

The function of the cover is to protect the reinforcement bars against corrosion and to provide ultimately provide resistance against fire.

141. How to do check level on construction site?

Spirit level, Dumpy Level, and Leveling Pipes are used to check levels on construction sites.

142. What is the accuracy of the least count we can take of the dumpy level?

5mm is the least count for dumpy level. It is the accuracy that can be provided by dumpy level.

143. How will you calculate the weight of 12m long and 10mm dia. steel bar on-site?

Here, we can multiply the length of the steel bar by its unit weight

(unit wt. of 10mm = 0.60 kg/m)

Therefore, Weight of steel = 0.60x 12

= 7.2 kg

144. Which is the equation used for calculating the unit weight of the steel bar?

(D^2/162) is the general equation used to calculate unit weight of steel bar.

145. State the size of a concrete cube?

15 cm x 15 cm x 15 cm

146. What is the procedure to be followed if any concrete cube fails in 28 days compressive strength test?

After the failure of the concrete cube in compression strength test, conduct a core cutter test on concrete, and a report is sent to higher authorities.

147. _____ is the mix ratio for M – 20 Grade of concrete.

1: 1.5: 3

148. State the Unit weight of 12 mm Steel Bars.

0.89 kg/m