

Pre-Engineering Interview Questions And Answers Guide.



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Pre-Engineering Job Interview Preparation Guide.

Question # 1

Tell me can You Solve Problems with Your Hands as Well as Your Head?

Answer:-

It's one thing to tackle engineering problems in a theoretical, cerebral context. But often you've literally got to get your hands dirty to make something work the way it's supposed to.

Do you tinker on your own car? Are you handy around the house? You'll probably get interview questions like these "as a measure of [your] practical knowledge," says Dominic Halsmer, dean of the School of Science and Engineering at Oral Roberts University.

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Question # 2

Explain me in block work seawalls what is the purpose of slip joints?

Answer:-

Joints which are formed from the cope level to the toe level of seawalls through a complete vertical plane are known as slip joints. Such joints are designed so as to handle the differential settlements between the seawalls adjacent panels. In the slip joints the aggregates inside the half-rounds channels enables some vertical movements. These vertical movements are induced by differential settlements. This enables in the interlocking of the adjacent panels of the seawalls to link the panels in one unit against the earth pressure (lateral) which is exerted on the seawalls.

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Question # 3

The electrical energy consumed by a coil is stored in the form of:

- A. an electrical field
- B. a force field
- C. an electrostatic field
- D. a magnetic field

Answer:-

D. a magnetic field

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Question # 4

Tell us what Software Do You Really Know?

Answer:-

When Crawford Hentz questions mechanical engineering candidates about their experience with software packages like SolidWorks, Pro/ENGINEER and AutoCAD, she's looking for more than surface-level working knowledge. "I ask, "What's the coolest thing you know how to do with the package?" she says.

Here, the employer is attempting to gauge fluency, or applied expertise. It's nice to merely be familiar with, say, COSMOSWorks, says Crawford Hentz. It's another thing entirely to use the program for finite-element analysis on the LEDs Osram Sylvania manufactures, which "don't mind getting cold but hate to get hot," she says.

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Question # 5

Explain me what do you understand by "preset" during the installation process of bridge bearings?

Answer:-

During the installation of bridge bearings the size of the upper plates is reduced to save the material costs. This process is known as preset. Generally the upper bearing plate comprises of the following components:

- > Length of bearing
- > 2 x irreversible movement.
- > 2 x reversible movement.

The bearing initially is placed right in the middle point of the upper bearing plate. No directional effects of irreversible movement is considered. But since the irreversible movement usually takes place in one direction only the displaced direction is placed away from the midpoint. In such cases the length of the upper plate is equal to the length of the length of the bearing + irreversible movement + 2 x reversible movement.

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Question # 6

Explain me in case if concrete box girder bridges how is the number of cells determined?

Answer:-

When the depth of a box girder bridge exceed $1/6$ th or $1/5$ th of the bridge width then the design recommended is that of a single cell box girder bridge. But in case the depth of the bridge is lower than $1/6$ th of the bridge width then a twin-cell or in some cases multiple cell is the preferred choice. One should also note that even in the cases of wider bridges where there depths are comparatively low the number of cells should be minimized. This is so as there is noticeably not much improvement in the transverse load distribution when the number of cells of the box girder is higher than three or more.

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Question # 7

Explain me why is propping required for long structures once the formwork is removed?

Answer:-

Once the process of concreting is performed the striking of the form works should be done as soon as possible as delay in this process can lead to the discoloration of the concrete structures. In case of long structures particularly long span structures once the structures have attained enough strength to support themselves it is essential to provide them with propping as creep deflection can take place which can greatly reduce the integrity of the structure. Due to the above mentioned reasons propping should be done after the removal of form work. Also the props should not be made to stand long as it can lead to over stress for the structures.

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Question # 8

Please explain why concrete barriers have curved surface profiles?

Answer:-

The concrete safety fencings are made to contain vehicles in their carriageway being travelled so as to reduce the chances of rebounding into the roads leading to more hazards. In the case of normal fencings upon vehicle crashes the fencings give away so as to absorb as much energy as possible henceforth reducing the impact on the vehicles. But in the case of concrete barriers their purpose is not to absorb energy of vehicles crashing into the barrier but to retain them. They have a curved design so as to allow the vehicles that hit them to slightly go up on the barrier but not overturn. They also prevent the vehicle from again getting back on the road by rebounds. This helps in vastly reducing the chances of other vehicle hazards.

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Question # 9

In reclamation works what are the importance of geotextiles and sand?

Answer:-

The primary purposes of geotextiles and sand in reclamation works are as follows:

* Geotextiles: They are used to separate the marine mud from the reclamation fill. Also geotextiles are used as reinforcements in reclamation processes to increase its stability. It is still debated as to whether the usage of geotextiles is better or are the old processes followed are better as the performance has not been comparable to the conventional methods.

* Sand: In reclamation process sand is used to spread the load of any future public dumps placed on top of it. Sand also acts as a drainage for the excess pore water pressure of band drain installations.

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Question # 10

As current travels within a conductor:

- A. the magnetic field aids the current
- B. a magnetic field is developed around it
- C. the wire tries to point north
- D. an electrostatic field opposes the current

Answer:-

B. a magnetic field is developed around it

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Question # 11

Explain are You Keeping Pace Technically and Technologically?

Answer:-

Just because you felt technically and technologically up-to-date two years ago, it doesn't mean you'll be viewed that way today.

"The half-life of knowledge for mechanical engineers is shrinking," says Greg Hutchins, principal engineer for Quality Plus Engineering. So, he advises, ask yourself: "What are you doing to keep current in technology?"

If you want to be taken seriously, be able to share a detailed listing of thoughtfully chosen continuing education activities with the interviewer. Perhaps you're pursuing your professional engineering license, or maybe you're completing a short online course on sensor technology.

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Question # 12

Tell me briefly the various methods of concrete curing?

Answer:-

Curing is the process of maintaining the moisture and temperature conditions for freshly deployed concrete. This is done for small duration of time to allow the hardening of concrete. The methods that are involved in saving the shrinkage of the concrete includes:

- (a) Spraying of water: on walls, and columns can be cured by sprinkling water.
- (b) Wet covering of surface: can be cured by using the surface with wet gunny bags or straw
- (c) Ponding: the horizontal surfaces including the slab and floors can be cured by stagnating the water.



(d) Steam curing: of pre-fabricated concrete units steam can be cured by passing it over the units that are under closed chambers. It allows faster curing process and results in faster recovery.

(e) Application of curing compounds: compounds having calcium chloride can be applied on curing surface. This keeps the surface wet for a very long time.

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Question # 13

Tell me why should curing not be done by ponding and polythene sheets?

Answer:-

The primary purpose of curing is to reduce the heat loss of concrete that is freshly placed to the atmosphere and in order to reduce the temperature gradient across the cross-section of the concrete. Ponding is not preferred for curing as this method of thermal curing is greatly affected by cold winds. In addition to that in ponding large amounts of water is used and has to be disposed off from the construction sites. Polythene sheets are used on the basis that it creates an airtight environment around the concrete surface henceforth reducing the chances of evaporation over fresh concrete surfaces. But the usage of polythene can be a drawback as it can be easily blown away by winds and also the water lost by self-desiccation cannot be replenished.

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Question # 14

Tell me briefly the advantages and disadvantages of using plastic and timber fenders?

Answer:-

The advantages and disadvantages of using plastic fenders are as follows:

Plastic fenders are low in strength with a relatively high resistance to abrasion. Plastic fenders are resistant to chemical and biological attacks. Plastic fenders have moderate energy absorption capacity. The berthing reactions are also comparatively moderate and depends on the point of contact. Also since they are made from recycled material they are environmental friendly.

The advantages and disadvantages of using timber fenders are:

timber fenders are low in strength and are very susceptible to marine borer attacks and rotting. The energy absorption capacity is very low. Also generally the contact pressure between the vessels and the fender are high.

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Question # 15

Explain me in the roof of a pumping station explain briefly the components of a waterproofing system?

Answer:-

The components of a typical waterproofing system on the roof of a pumping station are as follows:

* Right above the structural finish level of the roof (concrete) a uniform thickness screed is applied so as to facilitate the application of the waterproofing membrane. The surface provide for the membrane should always possess good cohesion properties and must be thin so as to prevent any un-uniformity. This thin layer also acts as a layer of thermal insulation.

* Right above this layer the waterproofing membrane is deployed to secure the water tightness of the roof.

* In order to enhance the thermal insulation of the roof an insulation board is sometime placed right above the waterproof membrane. The insulation board helps in the maintenance of a stable temperature in both weathers.

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Question # 16

What is magnetic flux?

- A. the number of lines of force in webers
- B. the number of lines of force in maxwells
- C. the number of lines of force in teslas
- D. the number of lines of force in flux density

Answer:-

- A. the number of lines of force in webers

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Question # 17

Explain what are the steps involved in the concreting process?

Answer:-

The major steps involved in the process of concreting are as follows:

1. Batching
2. Mixing
3. Transporting and placing of concrete
4. Compacting.

* Batching: The process of measurement of the different materials for the making of concrete is known as batching. batching is usually done in two ways: volume batching and weight batching. In case of volume batching the measurement is done in the form of volume whereas in the case of weight batching it is done by the weight.

* Mixing: In order to create good concrete the mixing of the materials should be first done in dry condition and after it wet condition. The two general methods of mixing are: hand mixing and machine mixing.

* Transportation and placing of concrete: Once the concrete mixture is created it must be transported to its final location. The concrete is placed on form works and should always be dropped on its final location as closely as possible.

* Compaction of concrete: When concrete is placed it can have air bubbles entrapped in it which can lead to the reduction of the strength by 30%. In order to reduce the air bubbles the process of compaction is performed. Compaction is generally performed in two ways: by hand or by the use of vibrators.

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Question # 18

Basic Pre-Engineering Job Interview Questions:



Answer:-

- * What is rigging?
- * What are the techniques to measure road difference?
- * Explain major differences between routine maintenance and major maintenance.
- * What you understand by Richter scale?
- * How do we calculate the power of centrifugal pump?
- * What is a tensile strength? What is the tensile strength of wood?
- * Difference between pre-tensioning and post-tensioning.
- * Explain the difference between shear and tensile strength.
- * Why the statue of liberty is made of Copper?
- * What is the difference between TOR steel and TMT steel?
- * Which code is used for TOR & TMT steel bar?
- * Explain major difference between auto level and dumpy level?
- * What is the L/D ratio of cantilever beam?
- * What is the ratio of steel and concrete to use in slabs , beams, columns ?
- * What is pre-stressed concrete?
- * What are the ingredients of pre-stressed concrete?
- * What do you mean by honeycomb in concrete?
- * Why is concrete cube test carried out?
- * How do you calculate the power of centrifugal pump?
- * What is aggregate?
- * What is absolute pressure? How absolute pressure is calculated?
- * What is the absolute pressure scale?
- * What is gravity flow?
- * What is a projection line?
- * What is horizon or horizontal mining?

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Question # 19

Strengths and Weaknesses Based Pre engineered building interview questions:

Answer:-

- * Would you rather write a report or give it verbally?
- * Who else have you applied to/got interviews with?
- * What would be your ideal working environment?
- * When was the last time you were in a crises?
- * Your greatest weakness in school or at work?

Answer as sincerely as possible. Don't lie as if you are discovered, it shall be very bad situation. Think of actual examples you can use to describe your skills. Try to include improvement activities that relate to the job.

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Question # 20

Situational Pre engineered building interview questions:

Answer:-

- * What parts of your education do you see as relevant to this position?
- * You have not done this sort of job before. How will you succeed?
- * What relevant experience do you have?
- * Have you ever had difficulty working with a manager?
- * How do you think you can make a contribution to this company?

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Question # 21

Electricity may be generated by a wire:

- A. carrying current
- B. wrapped as a coil
- C. that has neutral domains
- D. passing through a flux field

Answer:-

- D. passing through a flux field

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Question # 22

Explain me under what circumstances should pot bearings be used instead of elastomeric bearings?

Answer:-

Pot bearings are preferred over elastomeric bearings in situations where there are chances of high vertical loads in combinations of very large angle of rotations. Elastomeric bearings always require a large bearing surface so that a compression is maintained between the contact surfaces in between the piers and the bearings. This is not possible to maintained in high load and rotation environment. Also the usage of elastomeric bearings leads to the uneven distribution of stress on the piers. This results in some highly induced stresses to be targeted at the piers henceforth damaging them. Due to the above reasons pot bearings are preferred over elastomeric bearings in such cases.

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Question # 23

In the given circuit, what will the voltage be across R3 25 mu.gifs after the switch is moved to position 2?



- A. 2.88 V
- B. 5.9 V
- C. 8.34 V
- D. 14 V

Answer:-

- B. 5.9 V

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Question # 24

Explain me in the design of bridge arguments what considerations should be made to select the orientation of the wing walls?

Answer:-

Some of the most common arrangements of wing walls in cases of bridge arguments are as follows:

- * Wing walls parallel to abutments: This method is considered to take least amount of time to build and is simple as well. But on the downside this method is not the most economical. The advantage of this type of design being that they cause the least amount of disturbance to the slope embankment.
- * Wing walls at an angle to abutments: This design method is considered to be the most economical in terms of material cost.
- * Wing walls perpendicular to abutments: The characteristic of this design is it provides an alignment continuous with the bridge decks lending a support to the parapets.

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Question # 25

Tell me during reclamation how can the occurrence of mud waves can be rectified?

Answer:-

There are several solution to the rectification of the problem of mud waves:

- * Complete removal of all the disturbed mud: This method can be considered to be one of the fastest methods. As soon as the disturbed mud is removed some filling material is used to replace the disturbed mud. But economically this method can be expensive as compared to others.
- * Accelerated consolidation of disturbed mud: In this method surcharging loads are placed on top of the mud waves. Along with this band drains are installed to accelerate the consolidation process. This method is quite slow compared to the other methods.
- * Partial removal of the disturbed mud: This method is the hybrid of the above two methods where the top layer is removed whereas the lower level is treated with the surcharging process.

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Question # 26

Phone Based Pre engineered building interview questions:

Answer:-

- * What are your long-term goals or career plans?
- * What are the qualities of a good leader?
- * What has been your biggest professional disappointment?
- * Who was your favorite manager and why?
- * Tell me about yourself.

Don't stress yourself with the idea of winning or losing.

The best strategy for effectively answering these tough Pre engineered building interview questions is to prepare for it.

Be sure to discuss a very specific example.

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Question # 27

Difficult Pre-Engineering Job Interview Questions:

Answer:-

- * Tell me about the most challenging engineering project that you have been involved with during past year.
- * Describe the most significant written technical report or presentation that you had to complete.
- * In your last engineering position, what were some of the things that you spent the most time on, and how much time did you spend on each?
- * What do you enjoy most/least about engineering?
- * What new engineering specialty skills have you developed during the past year?
- * Do you have any patents? If so, tell me about them. If not, is it something you see yourself pursuing and why or why not?
- * Think of a specific engineering project when you answer this question. What could you have done to be more successful in achieving your goal(s)?
- * Describe a time when you confronted a problem that really tested your engineering know-how.
- * What is your overall career objective? Do you see yourself working in engineering ten years from now? If not, what do you think you will be doing?
- * Give me an example of a time in which you were effective in doing away with the "constant emergencies" and "surprises" that engineers often face.
- * Describe a time when as a member of the engineering department, you were instrumental in building a good long-term relationship with another department within the company.
- * Tell me about your greatest success in using the principles of logic to solve an engineering problem in your last job.
- * Give me an example of a time when you applied your ability to use analytical techniques to define problems or design solutions.
- * To what extent has your engineering background required you to be skilled in the analysis of technical reports or information?
- * Describe a time when you used your engineering knowledge to solve a problem for which there appeared to be no answer.
- * Tell me about a time when you became aware of a hazardous workplace condition. How did you handle it?
- * Tell me about your experience in dealing with routine engineering work. How do you keep from getting bored?
- * I expect the engineer that I hire for this position to be precise - detailed oriented in everything he or she does. What checks and balances do you use to make sure that you don't make mistakes?
- * Give me an example of a time when you had to teach a skill to other engineers.
- * Some of the best-engineered ideas are born out of an individual's ability to challenge, others' ways of thinking. Tell me about a time when you were successful in do this.
- * On your last project assignment, what problems did you identify that had been previously overlooked?
- * How has your present or last engineering job changed while you've held it?



- * If I offer you a position as an engineer with us, how do you plan to get off to a jackrabbit start?
- * Give me an example of something that you have learned from a mistake that you made on a job at a client site.
- * Tell me about a time when a project team effort that you were involved in failed.

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Question # 28

Video Based Pre engineered building interview questions:

Answer:-

- * What was the most difficult period in your life, and how did you deal with it?
- * Describe a situation in which you had to collect information.
- * Give some examples of teamwork.
- * How would you weigh a plane without scales?
- * Situation in which you had to arrive at a compromise.

You may receive very helpful advice from an outsider who, like the interviewers, may tell if you answer properly or not.

Be sure to discuss a very specific example. Ask a friend or relative of yours to help you practice answering Pre engineered building interview questions.

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Question # 29

Competency Based Pre engineered building interview questions:

Answer:-

- * What techniques and tools do you use to keep yourself organized?
- * Why did you decide to pursue this career?
- * How do you feel about taking no for an answer?
- * How do you react to instruction and criticism?
- * If you were hiring a person for this job, what would you look for?

Study the specific job duties of the position desired.

Just speak out about your basic values that you adopt at the workplaces.

Be sure that you refer to something that was beyond your control.

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Question # 30

Behavioral Pre engineered building interview questions:

Answer:-

- * Give examples of ideas you've had or implemented.
- * Give me an example of a high-pressure situation?
- * What kind of personality do you work best with and why?
- * What steps do you follow to study a problem before making a decision?
- * Describe a situation where you had to plan or organise something.

Connect your ability to the company's requirements. Make sure you're well prepared for this Pre engineered building interview questions as you won't likely get a second chance to really shine. Focus on positive achievements and views.

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Question # 31

Fresh Pre-Engineering Interview Questions:

Answer:-

- * For what advice or assistance do fellow engineers turn to you?
- * Tell me about the most challenging technical proposal you've ever written.
- * What factors would you consider in building an engineering department from scratch?
- * How do you communicate priority projects with a team of other engineers without making them feel overwhelmed?
- * Describe a specific engineering project that you were responsible for that required a lot of interaction with a variety of people over a long period of time.
- * What do you get out of engineering that you couldn't get from any other kind of work?
- * Describe a typical day out in the field in your last or present job.
- * What media contacts do you have that would help us market our technical products/services?
- * What step-by-step criteria do you use to make difficult decisions that involve other engineers?
- * To whom did you turn for help the last time that you ran into a major technical problem, and why did you choose that person?
- * Give me two examples of technical decisions that you had to make on your last job.
- * Tell me about a time when you had to make a difficult decision that affected the entire engineering department.
- * In the field of engineering, priorities often change quickly. Give me an example of a time when that happened. How did you handle it?
- * How can you best use your engineering education and prior work experience to help our company grow?
- * How long have you been looking for an engineering spot? Have you had any job offers yet? If so, why are you still looking?
- * Tell me about a time when you had to take disciplinary action with an engineer who reported to you.
- * Tell me about the last time you lost your temper in the field.
- * What personal characteristics do you feel are necessary to be a successful engineer?
- * What single technical skill or ability is your best asset?
- * What kind of hours did you typically work in your most recent engineering job?
- * What kinds of information would you request or require before you felt you could do justice to a project assignment?
- * Describe two specific technical contributions you would expect to make during the first six months on the job if you joined our company.
- * Tell me about a time when you surpassed all expectations by going "above and beyond" for a client.
- * What have you specifically done to make the work of the engineers who report to you easier?
- * How do you feel about the workload in the engineering department on your present or previous job?

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Question # 32

Communication skills Based Pre engineered building interview questions:

Answer:-

- * What do you think this position involves.
- * What do you consider your most significant accomplishment?
- * Who has impacted you most in your career and how?
- * What support training would you require to be able to do this job?
- * Do you have the qualities and skills necessary to succeed in your career?

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Question # 33

General Pre-Engineering Interview Questions:

Answer:-

- * How can you distinguish between sorption, absorption and adsorption?
- * What is modular elasticity?
- * Discuss some applications of modular elasticity.
- * What is difference between engineering stress and true stress?
- * What are some structures that are subjected to fatigue?
- * What is the tensile strength of wood?
- * Explain soil analysis?
- * What is soil enforcement?
- * How can you achieve soil enforcement?
- * What is a bearing capacity of soil?
- * Why does the pressure increase under soil?
- * How to increase a bearing capacity of soil?
- * What you understand by building codes?
- * Explain moment of inertia and its importance.
- * Which is the best book for building construction?
- * How do we determine the specific gravity of a cement?
- * What are the causes of building collapse?
- * Explain the latest method to detect a crack in a building?
- * How do we test on design and style in a software?
- * Explain different types of RCC pipes.
- * Explain the design for RCC multi-storied building?
- * What are the benefits of RCC pipes over steel designed pipes?
- * Elaborate advantages & disadvantages of using crusher dust instead of sand in RCC work.
- * How can you produce desired alloys and discuss their applications in daily life.
- * Can inverted beams used in pipes during construction? If yes, explain how it can be implemented?

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Question # 34

Tell me for what purpose bedding is used under storm water drains, explain?

Answer:-

Beddings are primarily made up of granular or concrete materials. They are primarily used for the following purposes:

- * They are used to provide a more uniform support for the under pipes so that the bending moment longitudinally can be reduced greatly.
- * In order to enable the pipes to get more load-supporting strength.
- * They are also used to act as a platform to achieve a more correct alignment and level pre and post construction.
- * In case of pipes which contain spigot and socket joints, it enables pipes to get supported along pipe lengths in place of sockets. Otherwise it can lead to uneven stress being induced on the pipes eventually damaging it.

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Question # 35

Tell me do You Truly Understand Clients/Customers and Teamwork?

Answer:-

There's a difference between the fantasy of engineering as a form of individual expression and the reality of engineering as a business.

"When you're in school, you're designing to please yourself," says Crawford Hentz. "You get to 'build a robot.' But in a manufacturing or product development setting, you're dealing with 'build me a toolbox that looks like this and can sing [the national anthem]."

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Question # 36

Explain what are the different type of slump test indications?

Answer:-

Slump tests are performed to empirically measure the workability of fresh concrete. It is used to measure the consistency of the concrete. In general there are three different types of slumps that occur in slump tests. They are as follows:

- * True Slump
- * Shear Slump
- * Collapse Slump

True Slump: This type of slump is characterized by the general drop of the concrete mass evenly without visible signs of deterioration or disintegration.

Shear Slump: It indicates that the concrete mix is deficient in cohesion. This type of slump leads to segregation and bleeding. Henceforth in the long run effecting the durability of the concrete.

Collapse Slump: This type of slump is indicates that the mix of concrete is simply too wet. The mix is considered to be harsh and lean.



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Question # 37

What type of device consists of a coil with a moveable iron core?

- A. solenoid
- B. reed switch
- C. relay
- D. armature

Answer:-

- A. solenoid

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Question # 38

Tell me why is the use of granular sub-base in concrete carriageways not preferred?

Answer:-

Some of the reasons why granular sub-base is not preferred in concrete carriageways:

- * Sub bases are permeable and hence water can seep through them easily. The soil particles get pumped out through the joints on the application of traffic loads. This results in the creation of voids underneath the pavement structure. This leads to the weakening of the concrete surface and it can crack easily upon intense traffic loads.
- * Instead if lean concrete is used for carriageways it greatly increases the strength of the roads and the load carrying capacity of the roads is increased.
- * Sub-bases implementation requires a lot of workmanship which can lead to an un-uniform distribution of the sub-base. This can lead to the cracking of the carriageway when there is severe traffic loading.

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Question # 39

Explain me why should pumping be not used in case of concreting works?

Answer:-

During the pumping operation the pump exerted pressure must overcome any friction between the pumping pipes and the concrete, also the weight of the concrete and the pressure head when the concrete is placed above the pumps. Since only water is pump able, all the pressure generated is by the water that is present in the concrete. The major problem due to pumping are segregation effects and bleeding. In order to rectify and reduce these effects, generally the proportion of the cement is increased in order to increase the cohesion, which leads to the reduction of segregation and bleeding. Also if a proper selection of the aggregate grading can vastly improve the concrete pump ability.

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Question # 40

What are the different approaches in designing the floors of the service reservoirs?

Answer:-

In general there are two main approaches of designing the reservoir floors to prevent leakage of water due to seasonal and shrinkage movements:

- * In this approach the movement joints of the reservoir floor panels are such that the free expansion and contraction of the panels takes place. Every panel is isolated from the other panels and two panels have a sliding layer between them to help in sliding.
- * The second method does not provide any room for free movement. With seasonal and shrinkage movements, some cracks are designed to voluntarily occur on the floors of the service reservoirs. These tiny cracks are spread throughout the floor and are simply too minute to cause any leakage or corrosion of the floors. But the difference also in this method is that the amount of reinforcement used is much more than the first approach.

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Question # 41

Explain me why are steel plates inserted inside bearings in elastomeric bearings?

Answer:-

In order to make a elastomeric bearing act/ function as a soft spring it should be made to allow it to bulge laterally and also the stiffness compression can be increased by simply increasing the limiting amount of the lateral bulging. In many cases in order to increase the compression stiffness of the bearing the usage of metal plates is made. Once steel plates are included in the bearings the freedom of the bulge is restricted dramatically, also the deflection of the bearing is reduced as compared to a bearing without the presence of steel plates. The tensile stresses of the bearings are induced into the steel plates. But the presence of the metal plates does not affect the shear stiffness of the bearings.

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Question # 42

Tell me for a washout valve why are two gate valves required in normal practice?

Answer:-

The washout valves are primarily used for normal maintenance works such as that of water main. This can be like to allow water to flow out during the cleaning of the water main. The junctions at which a pipe branches out to a washout point usually a gate valve is installed so that the two pipelines are separated. The gate valve installed above usually remains open during normal operation. Another gate valve is installed further downstream and this remains closed during normal operation of the washout valve. In case this valve is not installed then the pipe section of the branched out pipe would remain dry during normal operation and high chances of damage and leakage can take place. When the downstream valve is installed the branched out water main contains water under normal operation. With two gate valves installed a leakage can be detected immediately.

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Question # 43



Explain me what reinforcements are used in the process of prestressing?

Answer:-

The major types of reinforcements used in prestressing are:

- * Spalling Reinforcement: The spalling stresses leads to stress behind the loaded area of the anchor blocks. This results in the breaking off of the surface concrete. The most likely causes of such types of stresses are Poisson's effects strain interoperability or by the stress trajectory shapes.
- * Equilibrium reinforcements: This type of reinforcements are required where several anchorages exist where the prestressing loads are applied in a sequential manner.
- * Bursting Reinforcements: These kinds of stresses occur in cases where the stress trajectories are concave towards the line of action of load. In order to reduce such stresses reinforcements in the form of bursting is required.

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Question # 44

Explain me why are pull-out tests performed for soil nails?

Answer:-

Pull out tests are performed for primarily the following reasons:

- * In order to detect and the verification of the bond strength among the soil and the grout adopted during the design of soil nails. This is considered to be as the primary objective of performing pull out tests for soil nails.
- * For the detection of any slippage or occurrence of creeps.
- * To detect the elastic and deformations (plastic) of any of the test nails employed. Observations are made during the loading and unloading cycles of the soil nails repetitively.
- * To achieve the perfect balance the test nails should always be loaded so that the ultimate soil/grout mixture with an upper limit of 80%.

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Question # 45

Tell me the mechanism of cavitations in pipes and drains?

Answer:-

The formation of air bubbles in a fluid due to low pressure conditions lower than the saturation pressure is known as cavitations. This is considered to be a high potential damage condition where the strength and durability of the pipes can be greatly reduced. Cavitation works on the principle of Bernoulli's Equation. When fluids are at high velocities the pressure head of fluids reduce accordingly. But since the fluid pressure is lower than the saturation pressure the dissolved gases get released from the flowing fluid. These air bubbles suddenly collapse on entering a region of high pressure. This leads to the damage of the pipelines as a high level of dynamic pressure is created.

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