

• **[1.000] (IP:281474332911219 | 07:06:34 | 07:08:56 | 02:22 | 141.015)**

If you want to prepare and pour 48 m^3 of concrete on slab manually and the productivity of the crew is 0.6 m^3 per hour, how many crews will you need to finish the job in 2 days? NB: Each crew works 8 hours per day.

1. ☒ 5
2. ☐ 24
3. ☐ 15
4. ☐ 10

• **[0.000] (IP:281474332911219 | 07:08:56 | 07:10:41 | 01:45 | 50.789)**

Which type of asphalt is produced by mixing asphalt cement with a solvent to reduce its viscosity and, thus, make them easier to use at ordinary temperatures?

1. ☐ Oxidized Asphalts
2. ☒ Asphalt Emulsion
3. ☐ Penetration Grade Asphalt
4. ☐ Cutback Asphalts

• **[0.000] (IP:281474332911219 | 07:10:42 | 07:11:28 | 00:46 | 45.713)**

Which bending moment (BM) is used as a basis for design in yield line method?

1. ☐ Minimum shear
2. ☒ Minimum BM
3. ☐ Maximum BM
4. ☐ BM at the verge of collapse

• **[0.000] (IP:281474332911219 | 07:11:28 | 07:11:52 | 00:24 | 22.75)**

Which one of the following statements is the advantage of using Gantt chart for project scheduling?

1. ☐ We can easily identify which activities are critical and which are floaters.
2. ☒ It can provide a quick, visual overview of a project.
3. ☒ Can be used for large and complex projects.
4. ☐ Interdependencies among activities are easy to show.

• **[1.000] (IP:281474332911219 | 07:11:52 | 07:12:23 | 00:31 | 19.333)**

During site exploration undisturbed sample for clays shall be taken at every:

1. 1m
2. 2.5m
3. 3m
4. x ® 1.5m

• [1.000] (IP:281474332911219 | 07:12:23 | 07:13:06 | 00:43 | 42.139)

As per standards, which one of the following is NOT true regarding the minimum number of main steel bars provided in R.C.C design?

1. rectangular columns is 4
2. circular columns is 6
3. x ® circular column is 4
4. octagonal columns is 8

• [1.000] (IP:281474332911219 | 07:13:06 | 07:13:58 | 00:52 | 51.217)

A certain concrete gravity dam has the following total forces and moments for reservoir full condition acting on the structure:

$$\begin{array}{lll} \Sigma V_+ = 45,501.00 \text{ KN/m} & \Sigma H_+ = 500 \text{ KN/m} & \Sigma M_+ = 1,630,470.17 \text{ KN.m/m} \\ \Sigma V_- = 14,883.00 \text{ KN/m} & \Sigma H_- = 16,623.92 \text{ KN/m} & \Sigma M_- = 880,919.93 \text{ KN.m/m} \end{array}$$

Compute the overturning and Sliding stability factors?

1. $F_o = 1.40$, $F_{ss} = 1.12$
2. x ® $F_o = 1.85$, $F_{ss} = 0.52$
3. $F_o = 0.54$, $F_{ss} = 0.45$
4. $F_o = 1.75$, $F_{ss} = 1.11$

• [0.000] (IP:281474332911219 | 07:13:58 | 07:14:29 | 00:31 | 30.946)

An approximate method for preliminary analyses of vertical stress increases under the center of rectangular loads is:

1. 3:4
2. x 1:2
3. 1:3
4. ® 2:1

• [0.000] (IP:281474332911219 | 07:14:29 | 07:14:48 | 00:19 | 17.975)

The clay mineral with the largest swelling and shrinkage characteristic is

1. Illite
2. x Kaolinite
3. ® Montmorillonite
4. Feldspars

• [1.000] (IP:281474332911219 | 07:14:48 | 07:16:18 | 01:30 | 21.091)

According to AASHTO Soil Classification, which of the following soils can be recommended as the best subgrade soil?

1. x ® A-1-b
2. A-2-7
3. A-7-5
4. A-7-6

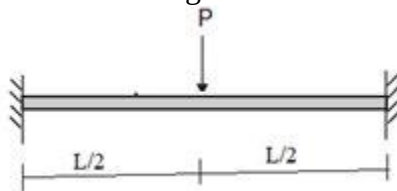
• [1.000] (IP:281474332911219 | 07:16:22 | 07:16:46 | 00:24 | 22.895)

Which one of the following is a measure applied to minimize bleeding in fresh concrete?

1. Decreasing the amount of cement
2. Increasing the amount of water
3. x ® Adding air-entraining admixture
4. Using a uniformly-graded aggregate

• [0.000] (IP:281474332911219 | 07:16:47 | 07:17:25 | 00:38 | 36.966)

A fixed-end beam, of length L and plastic moment capacity M_p , is subject to a point load P as shown in the figure below. Determine the collapse load $P = P_w$



1. $9 M_p/L$
2. $5 M_p/L$
3. ® $8 M_p/L$
4. x $6 M_p/L$

• **[0.000] (IP:281474332911219 | 07:17:27 | 07:18:40 | 01:13 | 72.554)**

Which one of the following reinforcement provisions assure ductility of RC structures according to EBCS 2

1. x Balanced reinforcement
2. Large depth of concrete
3. ® Under reinforced
4. Over reinforced

• **[1.000] (IP:281474332911219 | 07:18:42 | 07:19:11 | 00:29 | 28.892)**

Which of the following is different loading consideration in bridge design which is not applied in building design?

1. Constant live & dead load consideration
2. x ® various live load consideration
3. Constant dead load consideration
4. Constant live load consideration

• **[0.000] (IP:281474332911219 | 07:19:13 | 07:19:27 | 00:14 | 13.516)**

Compute the tensile force resisted by 4 No of bars having diameter 20mm and steel grade S-300.

1. ® 327.8kN
2. 26kN
3. x 377kN
4. 1507.96kN

• **[1.000] (IP:281474332911219 | 07:19:41 | 07:20:50 | 01:09 | 68.072)**

A road with a positive gradient of 1 in 15 is connected to a negative gradient of 1 in 20 by 120m vertical parabolic curve length.

Determine

(i) The visibility distance afforded by this curve for two approaching drivers whose eyes are 1.05 m above the road surface.

As part of a road improvement scheme, a new vertical parabolic curve is to be set out to replace the original one so that the visibility distance is increased to 210 m for the same height of the driver's eye.

Determine:

(ii) The length of the new curve.

1. x ® 92.94 m, and 612 m
2. 86 m, and 590 m,

3. 95 m, and 612 m,
4. 112.4 m, and 704.56 m

• **[0.000] (IP:281474332911219 | 07:20:51 | 07:21:32 | 00:41 | 40.148)**

A point outside interaction diagram of a given column cross-section describes

1. x Larger cross-section
2. Over-sectioned
3. Adequate cross-section
4. ® Inadequate cross-section

• **[0.000] (IP:281474332911219 | 07:21:33 | 07:23:12 | 01:39 | 97.551)**

What will be the estimated length of the wall in which a room is 4m x 3m with 20cm wall thickness?

1. x 14m
2. 15.6m
3. ® 14.8m
4. 12m

• **[0.000] (IP:281474332911219 | 07:23:13 | 07:23:40 | 00:27 | 26.494)**

What type of RC bridge is recommended to use for span length of between 30-90m?

1. ® Box-Girder Bridge
2. Slab bridge
3. Slab and T- Girder Bridge
4. x T-Girder Bridge

• **[0.000] (IP:281474332911219 | 07:23:41 | 07:25:34 | 01:53 | 111.77)**

Which of the following is true about serviceability limit state during analysis of bearing pressure of the soil?

1. ® Vibration resulting in unacceptable effects shall be within acceptable limit
2. Loss of overall stability due to the development of a deep slip surface within the supporting soil shall be within acceptable limit
3. x Failure by sliding under inclined loading shall be avoided
4. Bearing resistance failure caused by shear failure of the supporting soil shall be within acceptable limit

- [0.000] (IP:281474332911219 | 07:25:35 | 07:26:32 | 00:57 | 56.147)

A liquid compressed in a cylinder has a volume of 1000cm^3 at 800kN/m^2 and a volume of 995cm^3 at 1700kN/m^2 . What is the bulk modulus of elasticity (K) in MPa?

1. 250MPa
2. 200Mpa
3. ® 180MPa
4. x 280Mpa

- [0.000] (IP:281474332911219 | 07:26:33 | 07:27:28 | 00:55 | 54.385)

What is return period?

1. x number of years, the reciprocal of which gives the probability of extreme wind less than given wind speed in any one year
2. number of years, the reciprocal of which gives the probability of minimum wind exceeding
3. number of years, the reciprocal of which gives the probability of mild wind less than given wind speed in any one year
4. ® number of years, the reciprocal of which gives the probability of extreme wind exceeding given wind speed in any one year

- [0.000] (IP:281474332911219 | 07:27:29 | 07:28:13 | 00:44 | 43.164)

In which larger to smaller span ratio of a slab do shorter span resists larger moment?

1. Both resists equally
2. ® 1:2
3. x 1:3
4. 1:1

- [1.000] (IP:281474332911219 | 07:28:14 | 07:28:45 | 00:31 | 30.275)

Assume that undrained compressive strength of a soil in a site is 300kPa . It is proposed to construct a single story villa. What type of foundation has to be used?

1. Mat foundation
2. Cantilever footing
3. x ® Isolated footing
4. Wall footing

• **[1.000] (IP:281474332911219 | 07:29:41 | 07:30:06 | 00:25 | 24.638)**

Which of the following arguments best supports the advantage of surface treatment as compared to hot-mix, hot-laid asphalt concrete (HMA)?

1. x ® Surface treatment has a fast method of construction
2. Surface treatment has a higher probability of assuring construction quality
3. Surface treatment has a better durability
4. Surface treatment requires conventional asphalt plant

• **[1.000] (IP:281474332911219 | 07:30:08 | 07:30:37 | 00:29 | 28.852)**

A property of fresh concrete that indicates the suitability of the freshly mixed concrete for the intended purpose?

1. Rigidity
2. Consistency
3. Stiffness
4. x ® Workability

• **[1.000] (IP:281474332911219 | 07:30:37 | 07:31:22 | 00:45 | 39.432)**

For a homogeneous section of a highway under design, the CBR test results on the samples taken every 1 km are summarized below. All values are in percent

10, 13, 15, 10, 12, 14, 15, 11, 6, 15, 13, 10, 15, 8, 15, 13, 8, 14, 8, 12, 7, 11, 9, 15, 9, 14, 10, 15, 9, 17

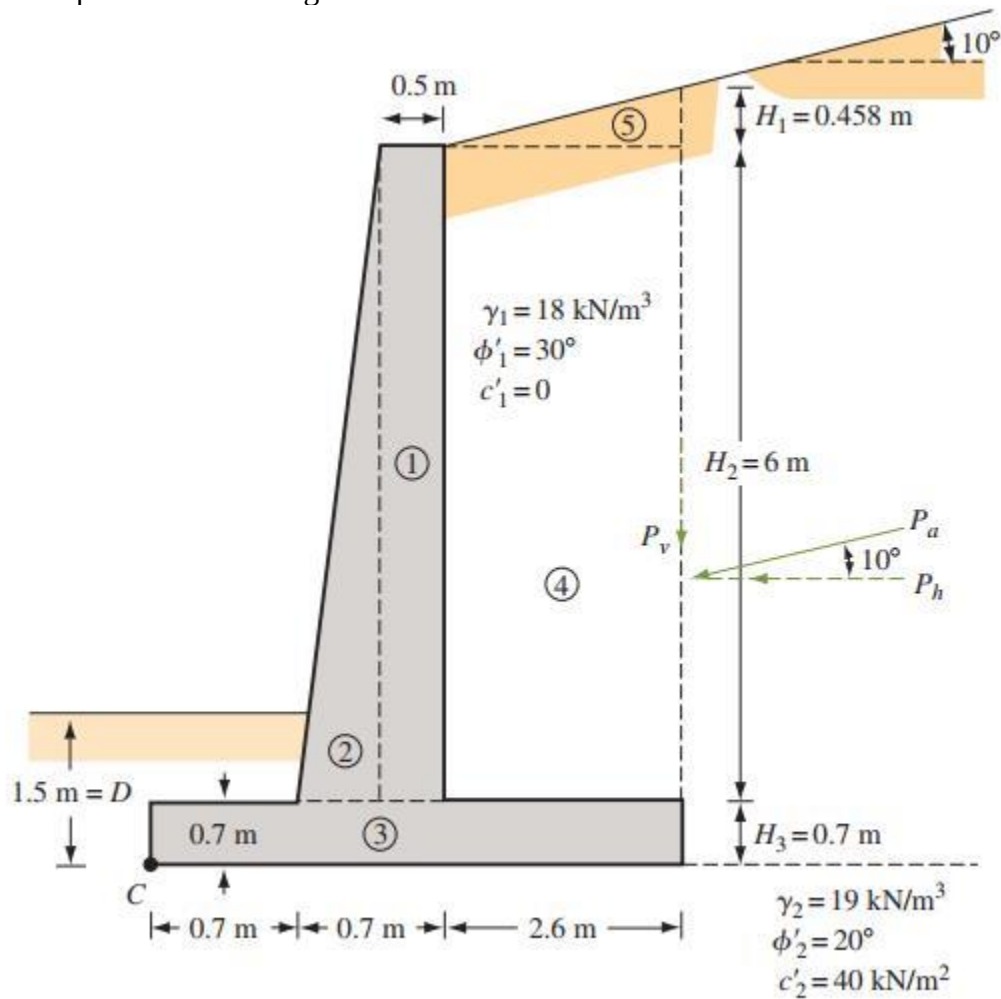
Then what is the design CBR value for the 90th percentile representation of these test values?

1. 15%
2. 17%
3. 7%
4. x ® 8%

• **[0.000] (IP:281474332911219 | 07:31:23 | 07:31:42 | 00:19 | 18.569)**

The cross section of a cantilever retaining wall is shown in Figure below. The factor of safety

with respect to overturning is:



1. x 3.66
2. ® 2.98
3. 1.53
4. 1.12

• [1.000] (IP:281474332911219 | 07:31:45 | 07:33:16 | 01:31 | 90.735)

Select incorrect reflection on deep foundation.

1. Constructing drilled shafts in deposits of dense sand and gravel is easier than driving piles
2. Drilled shafts have high resistance to lateral loads
3. x ® Load transfer mechanism of pier foundation is different from pile foundation
4. Piles driven into clay soil may produce ground heaving

• [1.000] (IP:281474332911219 | 07:33:17 | 07:33:33 | 00:16 | 8.493)

Which of the following is the material has the highest strength weight ratio?

1. ☒ Steel
2. ☐ Masonry
3. ☐ Concrete
4. ☐ Wood

• [0.000] (IP:281474332911219 | 07:33:34 | 07:34:12 | 00:38 | 37.55)

Type of foundation preferred in a situations of limited space on one side owing to the existence of the boundary line and distance between columns is large.

1. ☐ Strap footing
2. ☒ Combined footing
3. ☐ Isolated footing
4. ☐ Strip footing

• [1.000] (IP:281474332911219 | 07:34:13 | 07:34:34 | 00:21 | 19.979)

A risk with a likelihood of moderate having 10% to 50% chance and with a catastrophic consequence can be taken as _____ risk.

1. ☒ Extreme
2. ☐ High
3. ☐ Moderate
4. ☐ Low

• [0.000] (IP:281474332911219 | 07:34:35 | 07:35:13 | 00:38 | 37.606)

Which one of the following is with the least possible conflict points?

1. ☒ Unsignalized four-leg intersection
2. ☐ Roundabout
3. ☐ Unsignalized T-junction
4. ☐ Interchange

• [0.000] (IP:281474332911219 | 07:35:15 | 07:36:15 | 01:00 | 59.611)

Of the following parameters choose the parameters which is not used to execute settlement in the field.

1. ☐ Compression index

2. x Pre-consolidation pressure
3. ® Consolidation ratio
4. Swelling index

• [0.000] (IP:281474332911219 | 07:36:16 | 07:37:32 | 01:16 | 75.277)

A type of roof which slopes in four directions such that the end formed by intersection of slopes results in a triangular and/or trapezoidal form.

1. x Mansard Roof
2. Gable Roof
3. Pyramid Roof
4. ® Hip Roof

• [0.000] (IP:281474332911219 | 07:37:35 | 07:38:05 | 00:30 | 29.306)

The formation of hydraulic jump at the foot of a spillway is one of the common methods of energy dissipation because_____?

1. x it reduces the kinetic energy by increasing the depth of flow
2. ® it destroys more than 90% of total energy by the turbulence produced in the jump
3. its action is not understood
4. it reduces the kinetic energy by decreasing the depth of flow.

• [0.000] (IP:281474332911219 | 07:38:17 | 07:39:38 | 01:21 | 79.563)

Which one is not the right thought about the Full-depth asphalt pavement construction method?

1. Quite popular in the area where local materials are not available
2. It is constructed by placing one or more layers of hot-mix asphalt directly on the subgrade or improved subgrade.
3. x Most cost-effective and dependable type of asphalt pavement for Heavy Traffic
4. ® It consists of more than three layers with better materials on top where the stress intensity is high and inferior materials at the bottom where the intensity is low.

• [0.000] (IP:281474332911219 | 07:39:40 | 07:40:06 | 00:26 | 25.291)

Which of the following is true about a beam under working loads?

1. Crack formation
2. x Plastic hinges formation
3. Applying Plastic analysis
4. ® Applying Elastic analysis

• [1.000] (IP:281474332911219 | 07:40:06 | 07:41:00 | 00:54 | 52.376)

Which one of the following parameters is not used to compute the Value of Free-Flow Speed for multilane highways for capacity and level of service evaluation?

1. Adjustment for lane width
2. Adjustment for lateral clearance
3. Adjustment for median type
4. x ® Adjustment for interchange density

• [1.000] (IP:281474332911219 | 07:41:01 | 07:41:21 | 00:20 | 19.736)

The management function which is the process of choosing appropriate goals and actions to pursue and then determining what strategies to use, what actions to take, and deciding what resources are needed to achieve the goals is expressed as:

1. Staffing
2. Leading
3. Organizing
4. x ® Planning

• [1.000] (IP:281474332911219 | 07:41:22 | 07:41:52 | 00:30 | 28.975)

One of the following is common problems that are associated with poor ground conditions and that necessitate some form of soil improvement.

1. High stiffness
2. x ® High swell-shrink potential
3. Low permeability
4. High shear strength

• [1.000] (IP:281474332911219 | 07:42:01 | 07:42:43 | 00:42 | 41.888)

The type of brick bond used for the walls which are more than full brick will become weaker in longitudinal strength, as the headers being used in the interior of the wall to increase the traverse strength is:

1. Flemish bond
2. English bond
3. x ® Raking Bond
4. Dutch bond

• [0.000] (IP:281474332911219 | 07:42:43 | 07:43:30 | 00:47 | 46.166)

If the number of home-based trips in a traffic study zone in 2020 is 15,000 trips per day, with a predicted annual growth rate of 5%. What will be the number of home-based trips per day in the year 2030?

1. ® 4,883
2. 24,433
3. x 48,866
4. 2,443

• [0.000] (IP:281474332911219 | 07:43:32 | 07:44:21 | 00:49 | 48.772)

High carbon content in the steel causes

1. ® increase in tensile strength but decrease in ductility
2. x increase in tensile strength and ductility
3. decrease in tensile strength but increase in ductility
4. decrease in both tensile strength and ductility

• [0.000] (IP:281474332911219 | 07:44:22 | 07:45:36 | 01:14 | 72.798)

Which of the following type of specifications call for desired materials, producers, systems, and equipment by their trade names and model numbers?

1. x Descriptive Specifications
2. Reference Specifications
3. ® Proprietary Specifications
4. Performance Specifications

• [0.000] (IP:281474332911219 | 07:45:54 | 07:47:04 | 01:10 | 69.344)

Disadvantage installing driven steel piles.

1. x High level of noise during pile driving
2. ® May be damaged or deflected
3. Subject to corrosion
4. Not suitable for average depth piles

• [0.000] (IP:281474332911219 | 07:47:05 | 07:47:57 | 00:52 | 50.937)

Which one of the following is not the cause for shear strength in soils?

1. ® Seismic load

2. Particle interlocking
3. Chemical bonds
4. x Atoms sharing electrons at surface contact points

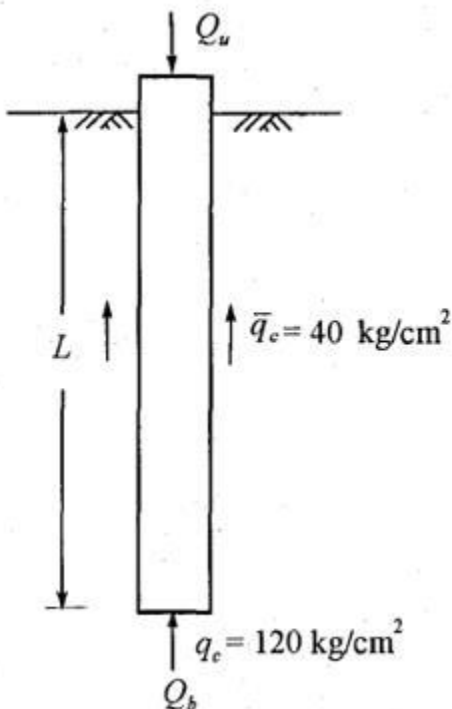
• [1.000] (IP:281474332911219 | 07:47:58 | 07:48:16 | 00:18 | 16.97)

Fatigue limit state relates to:

1. The strength and stability of the structure
2. The usability of the structure including stresses, deformation and crack width
3. Structural survival of the bridge during major earthquake, flood or collision
4. x ® Restrictions on stress range to prevent crack growth as a result of repetitive load during the design life of the bridge

• [0.000] (IP:281474332911219 | 07:48:17 | 07:48:32 | 00:15 | 14.273)

A concrete pile of 0.40 m diameter is driven into a homogeneous mass of cohesion less soil. The pile carries a safe load of 650 kN. A static cone penetration test conducted at the site indicates an average value of $q_c = 120 \text{ kg/cm}^2$ below the pile tip. Tip resistance of pile is limited to 11000 kN/m^2 . The length of the pile with $F_s = 2.5$ to nearest greater whole number is:



1. 9m
2. x 11m
3. ® 10m

4. 12m

• [1.000] (IP:281474332911219 | 07:48:34 | 07:49:47 | 01:13 | 72.3)

Which statement is true about cost versus Span Length?

1. Span length doesn't affect the cost of the Bridge
2. x ® The span length may be influenced by the cost of superstructure (cost/meter) and substructure (cost/pier)
3. If the substructure cost is about 50% of total cost, shorter span is more economical
4. If the substructure cost is about 25% of total cost, longer span is more cost-effective

• [0.000] (IP:281474332911219 | 07:49:48 | 07:50:22 | 00:34 | 33.417)

For a water to cement ratio of 0.45 the water content in cubic meter per bag of cement is

1. 0.111
2. 0.009
3. ® 0.0225
4. x 0.045

• [1.000] (IP:281474332911219 | 07:50:23 | 07:51:03 | 00:40 | 39.014)

Which type of stairs is used for small houses where there are restrictions in available width?

1. Spiral stairs
2. Quarter-turn Stairs
3. x ® Straight Stairs
4. Half-turn stairs

• [0.000] (IP:281474332911219 | 07:51:04 | 07:51:15 | 00:11 | 10.484)

Rocker bearings are suitable for span up to

1. Not suitable for any span
2. 15m to 20m
3. x 6m to 12m
4. ® More than 20m

• **[0.000] (IP:281474332911219 | 07:51:16 | 07:52:43 | 01:27 | 53.32)**

Which Analysis method can we use for finding maximum shear and moment for continuous span bridges?

1. ® Influence line
2. Design chart
3. x Empirical method
4. Design Equation

• **[0.000] (IP:281474332911219 | 07:52:51 | 07:53:05 | 00:14 | 11.42)**

Which of the following contract type is made particularly when the contractor has special skills to undertake particular work which require a high degree of technical competence or is capable of completing the works within a required time period?

1. ® Negotiated tendering
2. Serial tendering
3. x Selective tendering
4. Competitive tendering

• **[0.000] (IP:281474332911219 | 07:53:07 | 07:54:13 | 01:06 | 12.094)**

The design of a cofferdam requires providing an adequate margin of safety not against:

1. ® Buckling
2. Bearing capacity and settlement
3. x Cell overturning
4. Cell sliding

• **[1.000] (IP:281474332911219 | 07:53:25 | 07:55:02 | 01:37 | 47.413)**

Which limit state deals with deflection, cracking, vibration, durability, fatigue, fire resistance and lightning?

1. x ® Serviceability limit state
2. Working stress design method
3. Ultimate strength design method
4. Ultimate limit state

• **[0.000] (IP:281474332911219 | 07:55:04 | 07:56:11 | 01:07 | 65.909)**

For a 250m horizontal circular curve that is located at a PI station of 1+200 with a deflection angle of 22 degree, which one of the following is NOT true the curve?

1. ® The station of point of tangency (PT) is 1+248.6
2. The tangent length (T) is 48.6m
3. x The station of point of curvature (PC) is 1+151.4
4. Curve length (L) is 96.0m

• **[0.000] (IP:281474332911219 | 07:56:13 | 07:57:12 | 00:59 | 57.701)**

Suppose activity A and B are the first activity in a project with duration of 3 and 4 days respectively and both succeeded by activity C which has duration of 5 days. The free float of activity A is _____?

1. ® 1 Day
2. 0 Day
3. x 2 Days
4. 9 Days

• **[1.000] (IP:281474332911219 | 07:57:14 | 07:57:59 | 00:45 | 44.495)**

Factor(s) not affecting field moisture of expansive soils;

1. Evaporation and transpiration
2. The soil's affinity for water
3. x ® Mineral content of water
4. The presence of fissures in the soil

• **[1.000] (IP:281474332911219 | 07:58:01 | 07:58:26 | 00:25 | 24.436)**

A total load of 30kN was applied uniformly distributed on a contact area radius of 152.5 mm, on the surface of a two-layer flexible plate system. Layer 1 has a thickness of 214 mm and an elastic modulus of 300 MPa, while layer 2 has an elastic modulus of 60 MPa. Both layers are incompressible with Poisson's ratio of 0.5. The expected surface deflection is_____.

Use Figure below

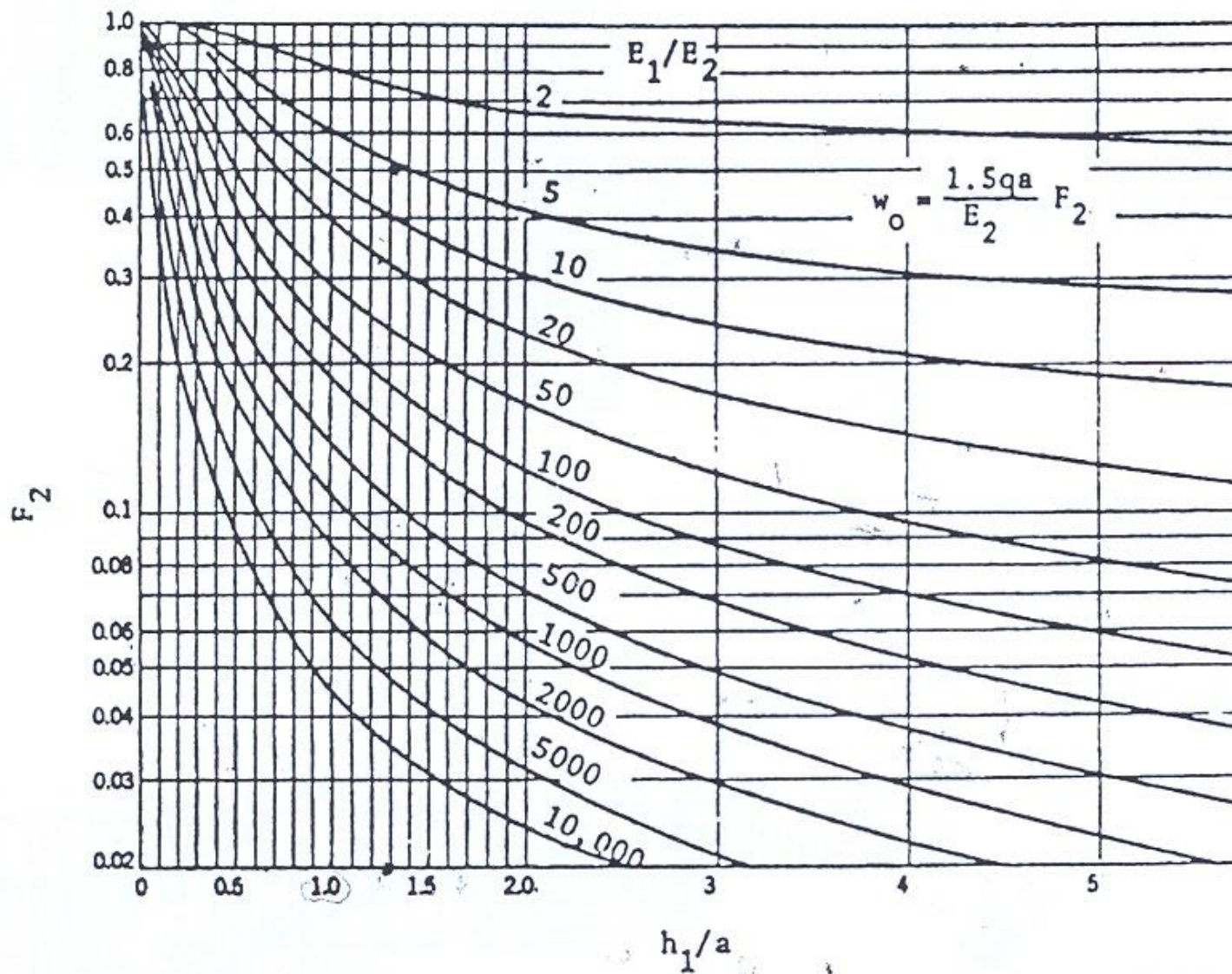


Figure: Vertical surface deflection factor for two-layer system. (Burmister, 1943)

1. x ® 0.78 mm
2. 2.60 mm
3. 0.52 mm
4. 1.26 mm

• [1.000] (IP:281474332911219 | 07:58:29 | 07:59:43 | 01:14 | 72.596)

Equivalent static method of analysis will not be applied for

1. x ® Buildings which are irregular in plan and elevation
2. Can be applied for all types of buildings

3. Buildings which are regular in plan and elevation
4. Have fundamental periods of vibration less than 2sec

• **[0.000] (IP:281474332911219 | 07:59:44 | 08:00:11 | 00:27 | 27.091)**

All of the following are included on the principles of quality management of construction project based on base ISO9001-2005 except;

1. Process approach
2. Relationship Management
3. x Customer focus
4. ® Plan-based decision making

• **[0.000] (IP:281474332911219 | 08:00:12 | 08:01:01 | 00:49 | 48.271)**

The failure due to which member is considered as criteria for ultimate limit state?

1. Elastic stability of members
2. Relaxation of members
3. ® Plastic instability of members
4. x Deformation of members

• **[1.000] (IP:281474332911219 | 08:01:03 | 08:02:00 | 00:57 | 56.419)**

Lateral torsional buckling need to be checked for

1. x ® Laterally unrestrained beams
2. Must be checked for all beams
3. beams whose flange is embedded in the slab
4. laterally restrained beams

• **[0.000] (IP:281474332911219 | 08:02:01 | 08:02:14 | 00:13 | 11.677)**

Which type of weld is used mostly for steel plates of same or similar thickness?

1. Fillet weld
2. x Slot weld
3. Plug weld
4. ® Butt weld

• **[1.000] (IP:281474332911219 | 08:02:15 | 08:03:22 | 01:07 | 66.112)**

Which of the following Engineering Software is used to design and provide support for learning the principles of structural stability evaluation of concrete gravity dams?

1. ☒ CADAM
2. ☐ GeoSlope
3. ☐ Bentley In Roads
4. ☐ Civil 3D

• **[0.000] (IP:281474332911219 | 08:03:28 | 08:04:55 | 01:27 | 1.182)**

An embankment is to be constructed using clay excavated from a nearby "borrow" source. In its natural state in this borrow source, the clay is fully saturated with a unit weight of 17.35 kN/m^3 and a water content of 41.5%. After excavation it is transported and water is added to it before it is compacted to form the embankment. The embankment is to have a volume of $75,000 \text{ m}^3$, with specified properties of dry unit weight equal to 10.40 kN/m^3 and water content of 48.5%. The volume of water (in liters) to be added to each cubic meter of soil excavated from borrow source in order to achieve required water content for compaction is:

1. ☐ 86.6
2. ☐ 860
3. ☒ 87.7
4. ☒ 877

• **[1.000] (IP:281474332911219 | 08:04:57 | 08:05:56 | 00:59 | 58.676)**

An example of costs, which cannot be directly booked under a specific activity in a construction project but required to keep the whole project operational.

1. ☐ Equipment cost
2. ☐ Direct costs
3. ☐ Profit and income Tax
4. ☒ Overhead cost

• **[1.000] (IP:281474332911219 | 08:05:58 | 08:06:10 | 00:12 | 11.946)**

According to the penetration grading system, which of the following penetration grade (PG) bitumen is the hardest?

1. ☐ PG 200/300
2. ☐ PG 120/150
3. ☐ PG 85/100
4. ☒ PG 60/70

• [0.000] (IP:281474332911219 | 08:06:11 | 08:06:20 | 00:09 | 8.732)

Which one of the following is not main type of problems in geotechnical engineering?

1. ® Wind load
2. Deformations
3. x Flow
4. Failure load

• [1.000] (IP:281474332911219 | 08:06:21 | 08:06:59 | 00:38 | 36.513)

Which of the following is incorrect about the General Characteristics of Concrete Dams?

1. Can be constructed as overflow dam
2. Concrete dams require strong and more or less uniform rock foundation.
3. x ® Loads are transmitted through the dam body and to the abutment
4. Concrete dams are hard, none yielding and rigid structures.

• [1.000] (IP:281474332911219 | 08:07:00 | 08:08:01 | 01:01 | 60.215)

One of the following is a proactive measure to be taken against the health hazards in the construction projects?

1. Accident analysis
2. Accident reporting
3. Medical Aid
4. x ® Personal protective equipment

• [1.000] (IP:281474332911219 | 08:08:02 | 08:08:31 | 00:29 | 28.702)

Which of the following is not an Objective of a dam surveillance programme?

1. To accomplish the monitoring and assessment of seepage and instrumentation data.
2. To assist in the scheduling of routine maintenance or, when necessary, of major remedial works.
3. x ® To measure structural displacement and surface movement of the dam
4. To minimize the possibility of catastrophic failure of the dam by the timely detection

• [1.000] (IP:281474332911219 | 08:08:32 | 08:09:11 | 00:39 | 38.532)

Which of the following is NOT the basic design requirement of traffic control devices?

1. Give adequate time for a proper response.
2. x ® Convey a complex meaning
3. Command respect from road users
4. Fulfill a need & command attention

• **[0.000] (IP:281474332911219 | 08:09:13 | 08:09:26 | 00:13 | 13.067)**

An application of one material over another to provide a layer in construction is called _____.

1. x Plastering
2. ® Cladding
3. Varnishing
4. Painting

• **[1.000] (IP:281474332911219 | 08:09:27 | 08:11:09 | 01:42 | 100.995)**

Which one of the following is NOT matched correctly with regard to aggregate?

I. Abrasion or skid resistant aggregate -> Heavy duty floor

II. Resistance to weathering action -> Soundness test

III. Function of Sand in mortar -> Provide strength

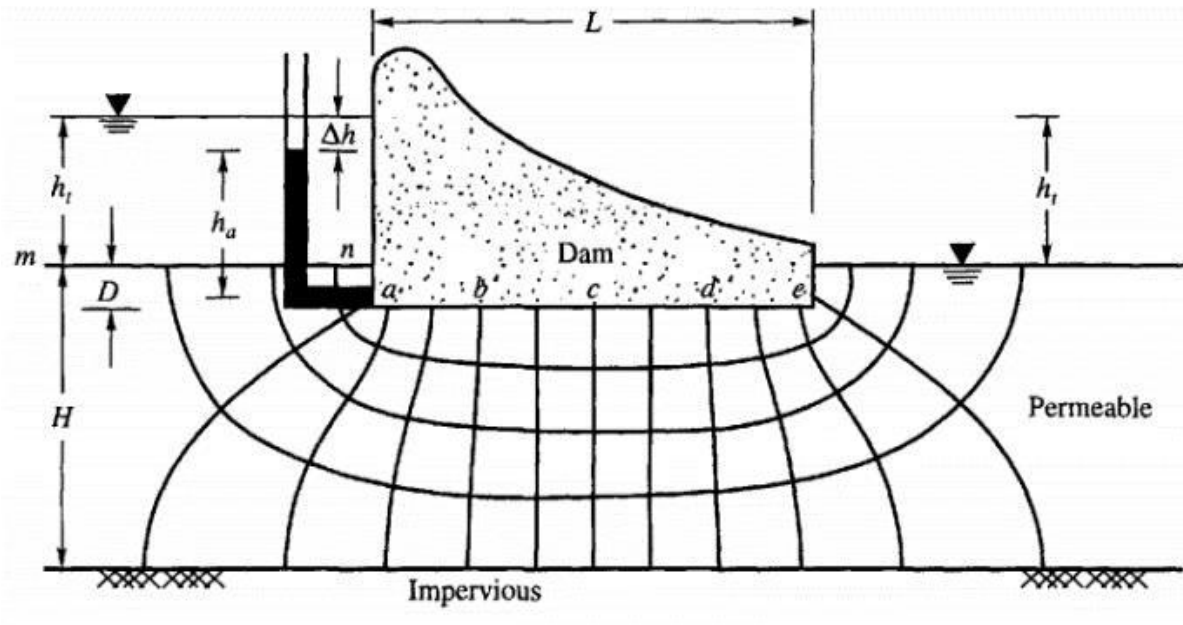
IV. Angular Aggregate -> Gives less workability

1. x ® III
2. II
3. I
4. IV

• **[0.000] (IP:281474332911219 | 08:11:12 | 08:11:52 | 00:40 | 38.84)**

A concrete dam (Fig below) is constructed across a river over a permeable stratum of soil of limited thickness. The water heads are upstream side 16m and 2 m on the downstream side. The flow net constructed under the dam gives $N_f = 4$ and $N_d = 12$. The seepage loss through the subsoil if the average value of the hydraulic conductivity is 6×10^{-3} cm/sec horizontally and 3×10^{-4}

cm/sec vertically by cm^3/sec is:



1. 1.3
2. x 1.17
3. ® 0.626
4. 0.55

• [0.000] (IP:281474332911219 | 08:11:56 | 08:12:52 | 00:56 | 54.407)

One of the following is not true in design of shallow foundation

1. ® Proportioning of footing size designed structurally.
2. Determination of the thickness for footing is designed structurally.
3. x Settlement of the structure shall with in permissible limit.
4. The pressure in the soil should not exceed the bearing capacity of the soil.

• [1.000] (IP:281474332911219 | 08:12:53 | 08:13:11 | 00:18 | 17.904)

Moment Resistant Connections transfer

(I) Moments, (II) Axial force, (III) Shear force

1. I and II
2. x ® I, II and III
3. I only
4. II and III

• [0.000] (IP:281474332911219 | 08:13:12 | 08:13:27 | 00:15 | 14.167)

For which steel class the stress at the extreme fibers can reach the design strength but local buckling may prevent the development of the full plastic moment and are subjected to limitations on their capacity.

1. Plastic cross-sections
2. x Compact cross-sections
3. ® Semi-compact sections
4. Thin-walled sections

• [0.000] (IP:281474332911219 | 08:13:34 | 08:14:02 | 00:28 | 26.614)

Which statement is Not true about direct design method of Flat slab?

1. There must be a minimum of three continuous spans in each direction.
2. ® Rectangular panels must have a long-span/short-span ratio that is greater than 2
3. Direct-design method cannot be used for slabs in un-braced, laterally loaded frames
4. x The service (un factored) live load shall not exceed two times the service dead load

• [1.000] (IP:281474332911219 | 08:14:03 | 08:14:35 | 00:32 | 31.679)

Floor plan is a drawing of the outline of partitions of a building that would be seen when the building was cut horizontally about _____ above the floor level.

1. x ® 1.2 m
2. 2.5 m
3. 0.9 m
4. 2 m

• [0.000] (IP:281474332911219 | 08:14:37 | 08:15:49 | 01:12 | 71.215)

The bending moment is maximum on a beam section where shearing force

1. is maximum
2. x is minimum
3. is equal
4. ® changes sign

• [0.000] (IP:281474332911219 | 08:15:50 | 08:16:55 | 01:05 | 64.385)

Which of the following has a linear relationship among the primary elements of traffic flow?

1. Speed vs. Flow

2. ® Speed vs. Density
3. Flow Vs Headway
4. x Flow vs. Density

• [1.000] (IP:281474332911219 | 08:16:56 | 08:17:39 | 00:43 | 42.665)

According to the ERA 2013 manual, select the highest road functional classification in Ethiopia, which has international importance, and roads terminating at international boundaries.

1. Link road
2. Collector Road
3. Main Access Road
4. x ® Trunk road

• [0.000] (IP:281474332911219 | 08:17:43 | 08:19:08 | 01:25 | 84.429)

Which one of the following is NOT the advantage of using steel roof trusses over timber trusses?

1. Strong and more rigid
2. x Fire and termite proof
3. Light in weight
4. ® Lower maintenance cost

• [0.000] (IP:281474332911219 | 08:19:10 | 08:19:19 | 00:09 | 1.663)

A hydro power plant Conveys a discharge of $50\text{m}^3/\text{se}$ through tunnel to penstocks. If the available effective head is 20m and turbines works for 8hours/day at an efficiency of 85%. The power developed and energy generated by the turbines respectively are_____

1. 83,438 KW ; 66,807KWhr/day
2. ® 8,338.5KW ; 66,708Kwhr/day
3. 8910KW ; 87,6480KWhr/day
4. x 8810KW ; 66,480KWhr/day

• [0.000] (IP:281474332911219 | 08:19:20 | 08:19:35 | 00:15 | 13.998)

A vertical curve that connects an initial grade of +2.0% & a final grade of -3.0% is under design for a stopping sight distance requirement of a 70km/hr design speed with a minimum K-value of 45. what is the minimum length of the vertical curve?

1. ® 225m
2. x 90m
3. 45m

4. 135m

• [0.000] (IP:281474332911219 | 08:19:36 | 08:19:51 | 00:15 | 13.996)

What is the saturation flow rate if the saturation headway is 2 seconds?

1. x 2000 Veh/hr
2. 1500 Veh/hr
3. 2500 Veh/hr
4. ® 1800 Veh/hr

• [0.000] (IP:281474332911219 | 08:19:52 | 08:22:27 | 02:35 | 8.651)

Detect the consistency of the sand soil using relative density. The maximum and minimum unit weights of a granular soil are 18.41kN/m^3 and 14.31kN/m^3 respectively. Use specific gravity of soil 2.65 and void ratio 0.625.

1. ® Medium
2. x Loose
3. Very loose
4. Dense

• [0.000] (IP:281474332911219 | 08:22:28 | 08:22:36 | 00:08 | 6.85)

A cutting of depth 11m is to be made in soil of which the unit weight is 18.4kN/m^3 and the cohesion= 40kN/m^2 . There is a hard stratum under the clay at 13m below the ground surface. Assuming angle of internal friction=0 and allowing for a factor of safety of 1.5, the slope of the cutting in degrees is;

1. x 52
2. 42
3. 32
4. ® 22

• [0.000] (IP:281474332911219 | 08:22:37 | 08:22:40 | 00:03 | 2.513)

The number of vehicles that can enter the on-ramp of an expressway is controlled by a metering system which allows a maximum of 10 vehicles to be on the ramp at any one time. If the vehicles can enter the expressway at a rate of 500 veh/h and the rate of arrival of vehicles at the on-ramp is 400 veh/h during the peak hour,

Determine

(a) The probability of 5 cars being on the on ramp,

(b) The percent of time the ramp is full.

$$P(n) = \frac{1 - \rho}{1 - \rho^{N+1}} \rho^n$$

1. 9.1% and 0.023
2. 2.3% and 0.072
3. ® 7.2% and 0.023
4. x 2.3% and 0.091

• [1.000] (IP:281474332911219 | 08:22:41 | 08:23:49 | 01:08 | 67.195)

Assuming a mixer with a daily rental rate of 500Birr/hr and a vibrator with a daily rental rate of 100 birr/hr, equipment productivity of 0.5 cubic meter per hour, then how much is the equipment cost?

1. 87.5 birr/hr
2. 200 birr/hr
3. x ® 175 birr/hr
4. 62.5 birr/hr

• [1.000] (IP:281474332911219 | 08:23:49 | 08:24:06 | 00:17 | 15.799)

Which one is true about the sequence of the tasks involved in site exploration?

1. Document review - Preliminary site investigation - Reconnaissance of the site - Detailed site investigation
2. Document review - Preliminary site investigation - Detailed site investigation - Reconnaissance of the site
3. x ® Document review - Reconnaissance of the site - Preliminary site investigation - Detailed site investigation
4. Reconnaissance of the site - Document review - Preliminary site investigation - Detailed site investigation

• [0.000] (IP:281474332911219 | 08:24:07 | 08:24:17 | 00:10 | 9.042)

A vertical cut is to be made in a saturated clay with $c = 18 \text{ kN/m}^2$, $\phi = 0$ and $\gamma = 16 \text{ kN/m}^3$.

What is theoretical depth to which the clay can be excavated without side collapse?

1. x 2.5 m
2. 9 m
3. 0.89 m

4. ® 4.5 m

• [0.000] (IP:281474332911219 | 08:24:20 | 08:24:27 | 00:07 | 6.989)

Determine the design tensile strength of two angles 90 x 100 x 10 with yield strength of 275Mpa used as a welded bracing member and The partial safety factor for the section $\gamma_{M1} = 1.1$

1. 150kN
2. x 400kN
3. ® 450kN
4. 300kN

• [0.000] (IP:281474332911219 | 08:24:29 | 08:24:47 | 00:18 | 17.382)

Identify the parameter inducing Larger base shear force in a specific direction of a building

1. Loose cohesion sub soil class
2. ® Smaller fundamental period of vibration
3. Less seismic zone
4. x Larger dead load of the building

• [0.000] (IP:281474332911219 | 08:24:48 | 08:24:53 | 00:05 | 4.999)

At a cut excavation, the cross-sectional area of the earthwork is assumed to be linearly varying from station 1+000 to station 1+020. The cross-sectional areas at these station endpoints are 0.6 m² and 0.8 m², respectively. Using the average-end area method, what is the earthwork volume between the two stations?

1. 7.0 m³
2. ® 14.0 m³
3. x 1.4 m³
4. 1.7 m³

• [1.000] (IP:281474332911219 | 08:24:54 | 08:25:21 | 00:27 | 25.698)

There will be strong band in slab of a building if

1. No hole is observed in a slab
2. x ® There is unsupported edge
3. There is surrounding beam around the slab
4. All edges of a slab are supported

