

QID: 1- Which of the following defect appears due to presences of alkalies in the bricks?

Options:

- 1) Bloating
- 2) Black core
- 3) Cracks
- 4) Efflorescence

Correct Answer: Efflorescence

QID: 02 - For which of the following process Boucherie process is used?

Options:

- 1) Manufacturing of bricks
- 2) Manufacturing of cement
- 3) Production of clay tile
- 4) Treatment of green timber

Correct Answer: Treatment of green timber

QID: 03 - What is the percentage content of asphalt in the cut-back asphalt?

Options:

- 1) 10%
- 2) 30%
- 3) 50%
- 4) 80%

Correct Answer: 80%

QID: 04 - In which of the following test of bitumen Ring and Ball apparatus is used?

Options:

- 1) Penetration test
- 2) Softening point test
- 3) Viscosity test
- 4) Flash and fire point test

Correct Answer: Softening point test

QID: 05 - The defect in timber that causes longitudinal separation of woods between the annular rings is known as_____.

Options:

- 1) knots
- 2) rind gall
- 3) shakes
- 4) twisted fibers

Correct Answer: shakes

QID: 06 - Which of the seasoning method is adopted for the rapid seasoning of timber on large scale to obtain any desired moisture content?

Options:

- 1) Air seasoning
- 2) Boiling process
- 3) Kiln seasoning
- 4) Water seasoning

Correct Answer: Kiln seasoning

QID: 07 - What is the gel-space ratio of a sample of concrete, if the concrete is made with the 600 g of cement with the water-cement ratio of 0.65?

Options:

- 1) 0.012

2) 0.432

3) 0.678

4) 0.874

Correct Answer: 0.678

QID: 08 - The concrete sample is cured at 15 degree Celsius for 28 days. If the origin temperature is taken as -11 degree Celsius, what is the maturity (degree Celsius days) of concrete sample?

Options:

- 1) 112
- 2) 308
- 3) 402
- 4) 728

Correct Answer: 728

QID: 09 - The ingredient of paint which are used to hide the surface irregularities and imparts color is known as_____.

Options:

- 1) adultrants
- 2) drier
- 3) pigments
- 4) solvents

Correct Answer: pigments

QID: 10 - If the least lateral dimension of aggregate is less than 0.6 times of its mean dimension, the aggregate is classified as_____.

Options:

- 1) angular
- 2) flaky
- 3) irregular
- 4) rounded

Correct Answer: flaky

QID: 11 - Explosive required for blasting is measured in _____.

Options:

- 1) cubic meter
- 2) explosive power
- 3) energy released
- 4) kilograms

Correct Answer: kilograms

QID: 12 - Which of the following is the correct statement for length of the long wall as one move from earthwork to brick work in super structure in long and short wall method?

Options:

- 1) Its value decreases
- 2) Its value depends upon the length of the wall.
- 3) Its value increases.
- 4) Its value remains same.

Correct Answer: Its value decreases

QID: 13 - Calculate an approximate estimate (Rs.) of the building with total plinth area of the building is 500 square meters. The rate of the plinth area is Rs. 3,000 per square

meters. The costs of the water supply and contingencies are 7% and 5% of cost of construction respectively.

Options:

- 1) 1500000
- 2) 1650000
- 3) 1680000
- 4) 1870000

Correct Answer: 1680000

QID: 14 - Calculate the cost of the plastering required for a wall of 4 m long, 3.5 m high and 300 mm thick, if the rate of plastering is Rs. 12 per square meter.

Options:

- 1) 101
- 2) 168
- 3) 336
- 4) 423

Correct Answer: 336

QID: 15 - Which of the following is the unit of measurement for the sills of windows?

Options:

- 1) Cubic meter
- 2) Meter
- 3) Number
- 4) Square meter

Correct Answer: Number

QID: 16 - Which of the following area is included in the plinth area of the building?

Options:

- 1) Area of the lofts.
- 2) Area of barsati at terrace level.
- 3) Cornices
- 4) Tower projecting above terrace level.

Correct Answer: Area of barsati at terrace level.

QID: 17 - Which of the following method is used for estimation of depreciation of building?

Options:

- 1) Constant percentage method
- 2) Direct comparison method
- 3) Logistic curve method
- 4) Rental method

Correct Answer: Constant percentage method

QID: 18 - Capitalized value of a property is the product of _____.

Options:

- 1) annual income and annuity
- 2) annual income and interest
- 3) annual income and sinking fund
- 4) annual income and year's purchase

Correct Answer: annual income and year's purchase

QID: 19 - Calculate the total quantity (cubic meter) of the coarse aggregate required for an isolated rectangular footing of size 3 m x 2 m, if 1 : 2 : 4 cement concrete is used. The depth of the footing is 600 mm.

Options:

- 1) 2.05
- 2) 2.46
- 3) 3.16
- 4) 3.82

Correct Answer: 3.16

QID: 20 - What is the actual size (mm) of the standard modular brick as per Indian Standards?

Options:

- 1) 190 x 90 x 90
- 2) 200 x 90 x 90
- 3) 200 x 100 x 100
- 4) 229 x 114 x 76

Correct Answer: 190 x 90 x 90

QID: 21 - Which of the following statement is not correct for the principle of surveying?

Options:

- 1) Location of a point with respect to two references
- 2) Major control points are measured with lower degree of precision.
- 3) Minor control points are measured with higher degree of precision
- 4) Working from part to whole

Correct Answer: Working from part to whole

QID: 22 - Which one of the following set of internal angles (degree) of a triangle does not show well condition triangle?

Options:

- 1) 20, 90, 70
- 2) 25, 45, 110
- 3) 40, 125, 15
- 4) 35, 80, 65

Correct Answer: 35, 80, 65

QID: 23 –

Calculate the magnetic declination, if the magnetic bearing of a line is N81°E and true bearing of a line is N77°E

Options:

- 1) 4 degree eastward
- 2) -8 degree eastward
- 3) -4 degree westward
- 4) 4 degree southward

Correct Answer: 4 degree eastward

QID : 24 - The back sight reading taken from a level at a bench mark is 1.56 m and a fore sight at a point A is taken on an inverted staff is 1.65 m. Calculate the reduced level of the point A, if the reduced level of the bench mark is 150 m.

Options:

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- 1) 146.79
- 2) 149.91
- 3) 152.8
- 4) 153.21

Correct Answer: 153.21

QID: 25 - The ratio of focal length of the objective to stadia interval is called _____.

Options:

- 1) additive factor
- 2) multiplying factor
- 3) staff intervals
- 4) subtractive factor

Correct Answer: multiplying factor

QID: 26 - Calculate the additive and multiplying constant, if the focal length of the objective glass is 250 mm, stadia intercept is 2 mm and distance of the instrument axis from the center of the object glass is 190 mm.

Options:

- 1) 95, 440 mm
- 2) 125, 440 mm
- 3) 440, 95 mm
- 4) 440, 125 mm

Correct Answer: 440, 125 mm

QID: 27 - What is the function of the plumbing fork in plane table surveying?

Options:

- 1) Used for centering of plane table.
- 2) Used for leveling the plane table
- 3) Used for orientation of plane table.
- 4) Used for sighting the object.

Correct Answer: Used for centering of plane table.

QID: 28 - The vernier scale in which 10 divisions of the vernier scale is equal to 9 divisions of the main scale is called _____.

Options:

- 1) direct vernier
- 2) double vernier
- 3) extended vernier
- 4) retrograde vernier

Correct Answer: direct vernier

QID: 29 - The maximum error (mm) on the drawing should not be greater than _____.

Options:

- 1) 0.01
- 2) 0.025
- 3) 0.25
- 4) 0.1

Correct Answer: 0.25

QID: 30 - Which of the following is true for the correction for the curvature?

Options:

1) It is proportional to the distance between the staff and instrument.

2) It is always negative and proportion to square of distance between the staff and instrument

3) It is always positive and proportion to square of distance between the staff and instrument

4) It is always positive and proportion to the distance between the staff and instrument

Correct Answer: It is always negative and proportion to square of distance between the staff and instrument

QID: 31 - The void ratio of a soil sample is given by 0.58. What is the porosity of soil sample?

Options:

- 1) 0.157
- 2) 0.367
- 3) 0.524
- 4) 0.602

Correct Answer: 0.367

QID: 32 - Which of the following bonding is responsible to combine the silica-gibbsite sheet in kaolinite clay mineral?

Options:

- 1) Covalent bond
- 2) Hydrogen bond
- 3) Ionic bond
- 4) Polar covalent bond

Correct Answer: Hydrogen bond

QID: 33 - The maximum dry density and optimum moisture content of a soil is given by 1.65 gm/cc and 20.5% respectively. What is the percentage of air content of soil at OMC, if the specific gravity of particles is given by 2.65?

- 1) 10.4
- 2) 15.5
- 3) 26.8
- 4) 35.7

Correct Answer: 10.4

QID: 34 - Which of the following type of roller is most suitable for proof rolling subgrades and for finishing operation of fills with clayey or sandy soils?

Options:

- 1) Pneumatic rubber tired roller
- 2) Sheepsfoot roller
- 3) Smooth wheel roller
- 4) Vibratory roller

Correct Answer: Smooth wheel roller

QID: 35 - The value obtained from dividing limiting value of circulation by area of closed contour is known as _____.

Options:

- 1) potential function
- 2) stream function

- 3) vorticity
4) None of these

Correct Answer: vorticity

QID: 36 - In which of the following case flow net cannot be drawn?

Options:

- 1) Irrotational flow
2) Steady flow
3) When flow is governed by gravity
4) When flow is not governed by gravity
Correct Answer: When flow is governed by gravity

QID: 37 - Which of the following expression represent the simplified form of Colebrook equation use to calculate the friction factor, if variable have their standard meanings?

Options:

- 1)
 $\frac{1}{\sqrt{f}} = 1.14 + 2 \log \left(\frac{k_s}{D} + \frac{9.35}{Re\sqrt{f}} \right)$
2)
 $\frac{1}{\sqrt{f}} = 1.14 - 2 \log \left(\frac{k_s}{D} + \frac{9.35}{Re\sqrt{f}} \right)$
3)
 $\frac{1}{\sqrt{f}} = 1.14 - 2 \log \left(\frac{k_s}{Re} + \frac{9.35}{D\sqrt{f}} \right)$
4)
 $\frac{1}{\sqrt{f}} = 1.14 - 2 \log \left(\frac{k_s}{Re} + \frac{18.7}{D\sqrt{f}} \right)$

Correct Answer:

$$\frac{1}{\sqrt{f}} = 1.14 - 2 \log \left(\frac{k_s}{D} + \frac{9.35}{Re\sqrt{f}} \right)$$

QID: 38 –

If the velocity gradient is given by θ and dynamic viscosity of fluid is given by μ . What is the shear stress on the wall of the boundary layer in the direction of motion ?

Options:

- 1) $\mu\theta$
2) $\mu+\theta$
3) μ/θ
4) θ/μ
Correct Answer: $\mu\theta$

QID: 39 - In which of the following unit kinematic viscosity of fluid is measured?

Options:

- 1) m/s
2) m/s²

- 3) dyne
4) stokes

Correct Answer: stokes

QID: 40 - The hydraulic radius and cross-sectional area of a channel is given by 4.5 m and 18.5 sq.m respectively. What is the wetted perimeter (m) of channel?

Options:

- 1) 4.11
2) 10.5
3) 18.5
4) 83.3
Correct Answer: 4.11

QID: 41 - Which of the following dimension represents the pressure?

Options:

- 1) $[MLT^{-2}]$
2) $[ML^{-1}T^{-2}]$
3) $[LT^{-2}]$
4) $[ML^{-3}]$

Correct Answer:

$$[ML^{-1}T^{-2}]$$

QID: 42 - The water is flowing through 800 m long circular pipe of diameter 30 cm with the velocity of 0.26 m/s. The friction factor for the pipe is given as 0.016. What is the head loss (cm) in the pipe due to friction?

Options:

- 1) 5.5
2) 14.7
3) 21.3
4) 35.6
Correct Answer: 14.7

QID: 43 - If at the particular instant of time, the velocity of flow does not change with location over a specific region, the flow is called as_____.

Options:

- 1) steady flow
2) unsteady flow
3) uniform flow
4) non-uniform flow
Correct Answer: uniform flow

QID: 44 - Which of the following expression represents the continuity

equation in case of steady incompressible flow?

Options:

1)

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0$$

2)

$$\frac{\partial u}{\partial x} + \frac{\partial P}{\partial y} + \frac{\partial p}{\partial z} = 0$$

3)

$$\frac{\partial u}{\partial x} - \frac{\partial v}{\partial y} - \frac{\partial w}{\partial z} = 0$$

4) None of these

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Correct Answer:

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0$$

QID: 45 - Which of the following statement is correct for sprinkler irrigation method?

Options:

- 1) It is used for rice and jute.
- 2) It is used for the soil has very low infiltration rate.
- 3) It is best suitable for very light soil.
- 4) It requires borders and field channel.

Correct Answer: It is best suitable for very light soil.

QID: 46 –

Calculate the permanent wilting point if the depth of water in the root zone at the permanent wilting point per meter depth of soil is 0.4 m, the dry density of the soil is 16kN/m³.

Options:

- 1) 0.025
- 2) 0.245
- 3) 0.4
- 4) 0.64

Correct Answer: 0.245

QID: 47 - Which of the following is correct statement for the cross slope of the shoulder?

Options:

- 1) It is 1% flatter than the cross slope of pavement.
- 2) It's minimum value is 2%.
- 3) It is 0.5% steeper than the cross slope of the pavement
- 4) Its value is equal to the cross slope of pavement

Correct Answer: It is 0.5% steeper than the cross slope of the pavement

QID: 48 - Calculate the safe stopping sight distance for a design speed of 60 km/h for two way traffic on a single lane road. The reaction time of driver is 2.5 sec.

Options:

- 1) 82.21
- 2) 136.23
- 3) 164.42
- 4) 674.24

Correct Answer: 164.42

QID: 49 - What is the theoretical oxygen demand (mg/l) of a glucose solution of concentration 500 mg/l?

Options:

- 1) 250.33
- 2) 380.65
- 3) 533.33
- 4) 650.21

Correct Answer: 533.33

QID: 50 - Which one of the following emission is the primary reason for the depletion of the ozone layer?

Options:

1)

CO₂

2)

CFCs

3)

CO

4)

NO₂

Correct Answer:

CFCs

QID: 51 - According to the Unwin's formula, if t is the thickness of the plate in mm, the nominal diameter of the rivet is

Options:

- 1) d=1.91 t
- 2) d=1.91 t²
- 3) d=1.91 √t
- 4) None of these

Correct Answer: d=1.91 √t

QID: 52 - Effective length of a column effectively held in position at both ends and restrained in direction at one end is

Options:

- 1) L
- 2) 0.67 L
- 3) 0.85 L
- 4) 1.5 L

Correct Answer: 0.85 L

QID: 53 - The most economical section for a column is

Options:

- 1) rectangular

- 2) solid round
- 3) flat strip
- 4) tubular section

Correct Answer: tubular section

QID: 54 - If the unsupported length of a stanchion is 4 meters and least radius of gyration of its cross-section is 5, the slenderness ratio of the stanchion is

Options:

- 1) 60
- 2) 70
- 3) 80
- 4) 90

Correct Answer: 80

QID: 55 - A column splice is used to increase

Options:

- 1) length of the column
- 2) strength of the column
- 3) cross-sectional area of the column
- 4) None of these

Correct Answer: length of the column

QID: 56 - A structural member subjected to tensile force in a direction parallel to its longitudinal axis, is generally known as

Options:

- 1) a tie
- 2) a tie member
- 3) a tension member
- 4) All option are correct

Correct Answer: All option are correct

QID: 57 - A major beam in a building structure is known as

Options:

- 1) a girder
- 2) a floor beam
- 3) a main beam
- 4) All option are correct

Correct Answer: All option are correct

QID: 58 - In rolled steel beams, shear force is mostly resisted by

Options:

- 1) web only
- 2) flanges only
- 3) web and flanges together
- 4) None of these

Correct Answer: web only

QID: 59 - For a cantilever beam of length L built-in at the support and restrained against torsion at the free end, the effective projecting length 'l' is

Options:

- 1) $l = 0.7L$
- 2) $l = 0.75L$
- 3) $l = 0.85L$
- 4) None of these

Correct Answer: $l = 0.75L$

QID: 60 - Pick up the correct statement from the following:

Options:

- 1) The steel beams placed in plain cement concrete are known as reinforced beams
- 2) The filler joists are generally continuous over three supports only
- 3) Continuous fillers are connected to main beams by means of cleat angles
- 4) Continuous fillers are supported by main steel beams

Correct Answer: Continuous fillers are supported by main steel beams

QID: 61 - Concrete mainly consists of

Options:

- 1) cement
- 2) aggregates
- 3) admixture
- 4) All option are correct

Correct Answer: All option are correct

QID: 62 - A concrete using an air entrained cement

Options:

- 1) has strength less than 10% to 15%
- 2) has more resistance to weathering
- 3) is more plastic and workable
- 4) is free from segregation and bleeding

Correct Answer: is more plastic and workable

QID: 63 - of keeping concrete wet to enable it to attain full strength is known as:-

Options:

- 1) curing
- 2) wetting
- 3) drenching
- 4) quenching

Correct Answer: curing

QID: 64 - Segregation is responsible for

Options:

- 1) honey-combed concrete
- 2) porous layers in concrete
- 3) surface scaling in concrete
- 4) All option are correct

Correct Answer: All option are correct

QID: 65 - W_p and W_f are the weights of a cylinder containing partially compacted and fully compacted concrete. If the compaction factor (W_p/W_f) is 0.95, the workability of concrete is

Options:

- 1) extremely low
- 2) very low
- 3) low
- 4) high

Correct Answer: high

QID: 66 - The process of hardening the concrete by keeping its surface moist is known

Options:

- 1) placing
- 2) wetting
- 3) curing
- 4) compacting

Correct Answer: curing

QID: 67 - Pick up the correct statement from the following

Options:

- 1) There should not be any loss of cement from the charged drum of the mixer
- 2) Cement should be mixed for at least one minute
- 3) 10% of water is placed in the rotating drum before adding dry material
- 4) All option are correct

Correct Answer: All option are correct

Correct Answer: All option are correct

QID: 68 - The final operation of finishing floors is known as

Options:

- 1) floating
- 2) finishing
- 3) troweling
- 4) All option are correct

Correct Answer: troweling

QID: 69 - Expansion joints are provided if the length of concrete structures exceeds

Options:

- 1) 10 m
- 2) 15 m
- 3) 25 m
- 4) 45 m

Correct Answer: 45 m

QID: 70 - A flaky aggregate is said to be elongated if its length is

Options:

- 1) equal to the mean size
- 2) twice the mean size
- 3) thrice the mean size
- 4) four times the mean size

Correct Answer: twice the mean size

QID: 71 - For the construction of cement concrete floor, the maximum permissible size of aggregates is

Options:

- 1) 4 mm
- 2) 6 mm
- 3) 8 mm
- 4) 10 mm

Correct Answer: 10 mm

QID: 72 - Sand requiring a high water cement ratio, belongs to

Options:

- 1) Zone I
- 2) Zone II
- 3) Zone III
- 4) Zone IV

Correct Answer: Zone I

QID: 73 - The maximum amount of dust which may be permitted in aggregates is

Options:

- 1) 5% of the total aggregates for low workability with a coarse grading
- 2) 10% of the total aggregates for low workability with a fine grading
- 3) 20% of the total aggregates for a mix having high workability with fine grading
- 4) All option are correct

Correct Answer: All option are correct

QID: 74 - The cement becomes useless if its absorbed moisture content exceeds

Options:

- 1) 0.01
- 2) 0.02
- 3) 0.03
- 4) 0.05

Correct Answer: 0.05

QID: 75 - For concreting the surface of the runways, roads and pavements, the aggregate impact value shall not exceed by weight

Options:

- 1) 0.2
- 2) 0.25
- 3) 0.3
- 4) 0.45

Correct Answer: 0.3

QID: 76 - Pick up the correct statement from the following

Options:

- 1) Density of normal concrete is about 2400 kg per cubic metre
- 2) Density of light weight concrete is about 1900 kg per cubic metre
- 3) Density of heavy concrete is about 3580 kg per cubic metre
- 4) All option are correct

Correct Answer: All option are correct

QID: 77 - A sample of cement is said to be sound when it does not contain free

Options:

- 1) lime
- 2) silica
- 3) iron oxide
- 4) alumina

Correct Answer: lime

QID: 78 - Consider the following statements regarding aggregates:

1. Dry aggregates absorb water from the mixing water and thus affect the workability

2. Aggregates containing surface moisture contribute extra
3. The free moisture content in fine aggregate results in reduction of volume
4. The free moisture content in coarse aggregate results in bulking of volume.

Of these statements:

Options:

- 1) Statements 1 and 2 are correct
- 2) Statements 2 and 3 are correct
- 3) Statements 3 and 4 are correct
- 4) Statements 1 and 4 are correct

Correct Answer: Statements 1 and 2 are correct

QID: 79 - If the permissible compressive and tensile stresses in a single reinforced beam are 50 kg/cm^2 and 1400 kg/cm^2 respectively and the modular ratio is 18, the percentage are A_t of the steel required for an economic section, is

Options:

- 1) 0.496%
- 2) 0.596%
- 3) 0.696%
- 4) None of these

Correct Answer: 0.696%

QID: 80 - The maximum shear stress (q_{\max}) in a rectangular beam is

Options:

- 1) 1.25 times the average
- 2) 1.50 times the average
- 3) 1.75 times the average
- 4) 2.0 times the average

Correct Answer: 1.50 times the average

QID: 81 - For M 150 mix concrete, according to I.S. specifications, local bond stress is

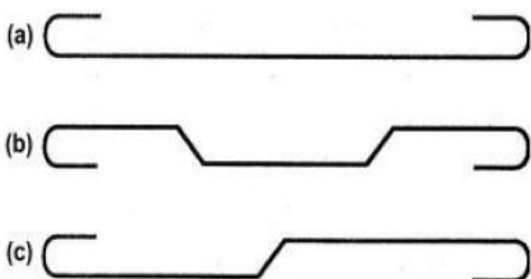
Options:

- 1) 5 kg/cm^2
- 2) 10 kg/cm^2
- 3) 15 kg/cm^2
- 4) 20 kg/cm^2

Correct Answer: 10 kg/cm^2

QID: 82 –

The properly bent up and hooked bars for resisting diagonal tension in beams is shown in which of the following figures ?



Options:

- 1) (a)
- 2) (b)
- 3) (c)
- 4) None of these

Correct Answer: (b)

QID : 83 - An intermediate T-beam reinforced with two layers of tensile steel with clear cover 13 cm encasted with the floor of a hall 12 meters by 7 meters, is spaced at 3 meters from adjoining beams and if the width of the beam is 20 cm, the breadth of the flange is

Options:

- 1) 300 cm
- 2) 233 cm
- 3) 176 cm
- 4) 236 cm

Correct Answer: 176 cm

QID: 84 - Long and short spans of a two way slab are l_y and l_x and load on the slab acting on strips parallel to l_x and l_y be w_x and w_y respectively. According to Rankine Grashoff theory

Options:

- 1) $W_x/W_y = l_y/l_x$
- 2) $W_x/W_y = (l_y/l_x)^2$
- 3) $W_x/W_y = (l_y/l_x)^3$
- 4) $W_x/W_y = (l_y/l_x)^4$

Correct Answer: $W_x/W_y = (l_y/l_x)^4$

QID: 85 - If the diameter of the main reinforcement in a slab is 16 mm, the concrete cover to main bars is

Options:

- 1) 12 mm
- 2) 13 mm
- 3) 14 mm
- 4) 16 mm

Correct Answer: 16 mm

QID: 86 - Top bars are extended to the projecting parts of the combined footing of two columns L distance apart for a distance of

Options:

- 1) 0.1 L from the outer edge of the column
- 2) 0.1 L from the center edge of column
- 3) half the distance of projection
- 4) one-fourth the distance of projection

Correct Answer: 0.1 L from the center edge of column

QID: 87 - A pile of length L carrying a uniformly distributed load W per meter length is suspended at two points, the maximum B.M. at the center of the pile or at the points of suspension is

Options:

- 1) $WL/8$
- 2) $WL^2/24$

- 3) $WL^2/47$
4) $WL^2/26$

Correct Answer: $WL^2/47$

QID: 88 - If W is the weight of a retaining wall and P is the horizontal earth pressure, the factor of safety against sliding is

Options:

- 1) 1
2) 1.25
3) 1.5
4) 2

Correct Answer: 1.5

QID: 89 - The deflection of a uniform circular bar of diameter d and length l, which extends by an amount e under a tensile pull W, when it carries the same load at its mid-span is

Options:

- 1) $el/2d$
2) $(e^2 l)/(3d^2)$
3) $(el^2)/(3d^2)$
4) $\sqrt{e}/(3d^2)$

Correct Answer: $(el^2)/(3d^2)$

QID: 90 - The maximum deflection due to a uniformly distributed load w/unit length over entire span of a cantilever of length l and of flexural rigidity EI, is

Options:

- 1) $WL^3/3EI$
2) $WL^4/3EI$
3) $WL^4/8EI$
4) $WL^4/12EI$

Correct Answer: $WL^4/8EI$

QID: 91 - If the normal stresses due to longitudinal and transverse loads on a bar are σ_1 and σ_2 respectively, the tangential component of the stress on an inclined plane through θ° , the longitudinal load is

Options:

- 1) $\sigma_1 \sin \theta + \sigma_2 \cos \theta$
2) $\sigma_1 \sin^2 \theta + \sigma_2 \cos^2 \theta$
3) $(\sigma_1 - \sigma_2)(\sin 2\theta)/2$
4) $(\sigma_1 + \sigma_2)(\sin 2\theta)/2$

Correct Answer: $(\sigma_1 - \sigma_2)(\sin 2\theta)/2$

QID: 92 - The moment of inertia of a triangular section (height h, base b) about its base is

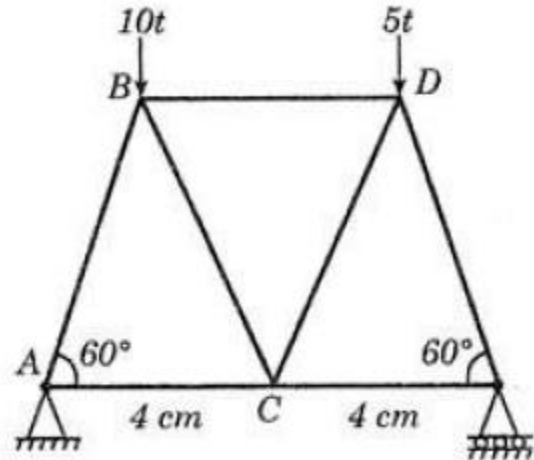
Options:

- 1) $(bh^2)/12$
2) $(b^2h)/12$
3) $(bh^3)/12$
4) $(b^3h)/12$

Correct Answer: $(bh^3)/12$

QID: 93 –

In the truss shown below, the force in the member AC is



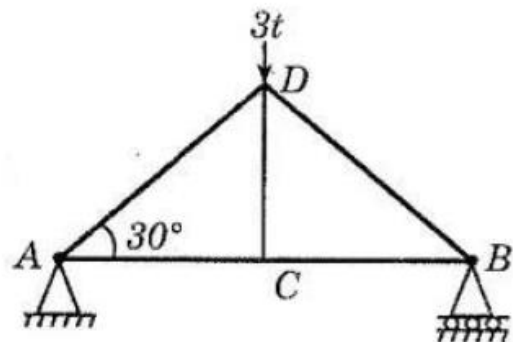
Options:

- 1) 6.25 t compressive
2) 8.75 t tensile
3) $\{8.75/\sqrt{3}\}$ t tensile
4) $\{8.75/\sqrt{3}\}$ t compressive

Correct Answer: $\{8.75/\sqrt{3}\}$ t compressive

QID: 94 –

The force in the BC of the truss shown in the figure below is



Options:

- 1) 3.0 t compression
2) 3.0 t tension
3) $(3\sqrt{3})/2$ t tension
4) $(3\sqrt{3})/2$ t compression

Correct Answer: $(3\sqrt{3})/2$ t tension

QID: 95 - If a solid shaft (diameter 20 cm, length 400 cm, $N = 0.8 \times 10^5 \text{ N/mm}^2$) when subjected to a twisting moment, produces maximum shear stress of 50 N/mm^2 , the angle of twist in radians is

Options:

- 1) 0.001
2) 0.002
3) 0.0025
4) 0.004

Correct Answer: 0.0025

QID: 96 - The load on a spring per unit deflection is called

Options:

- 1) stiffness
- 2) proof resilience
- 3) proof stress
- 4) proof load

Correct Answer: stiffness

QID: 97 - In case of a simply supported rectangular beam of span L and loaded with a central load W , the length of elasto-plastic zone of the plastic hinge is

Options:

- 1) $L/2$
- 2) $L/3$
- 3) $L/4$
- 4) $L/5$

Correct Answer: $L/3$

QID: 98 - There are two hinged semicircular arches A, B and C of radii 5 m, 7.5 m, and 10 m respectively and each carries a concentrated load W at their crowns.

The horizontal thrust at their supports will be in the ratio of

Options:

- 1) $1 : 1\frac{1}{2} : 2$
- 2) $2 : 1\frac{1}{2} : 1$
- 3) $1 : 1 : 2$
- 4) None of these

Correct Answer: $1 : 1 : 2$

QID: 99 - For determining the support reactions at A and B of a three-hinged arch, points B and C are joined and produced to intersect the load line at D and a line parallel to the load line through A at D'. Distances AD, DD' and AD' when measured were 4 cm, 3 cm and 5 cm respectively. The angle between the reactions at A and B is

Options:

- 1) 30°
- 2) 45°
- 3) 60°
- 4) 90°

Correct Answer: 90°

QID: 100 - The equivalent length of a column of length L having one end fixed at the other end free is

Options:

- 1) $2L$
- 2) L
- 3) $L/2$
- 4) $L/\sqrt{2}$

Correct Answer: $2L$