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Q) If V is the speed of a moving vehicle, I is the radius of the curve, g is the acceleration due to gravity, W is the width of the carriage way, the super elevation is

A: WV/gr

B: W^2V/gr

C: WV/gr^2

D: WV^2/gr

Q) Reinforcement in cement concrete slab of road pavements is placed:

A: In the form of welded most mash

B: Longitudinally

C: Transversally

D: Longitudinally and transversally

Q) Minimum thickness of a layer of fine sand required to cut off the capillary rise of water completely should be:

A: 40 cm

B: 52 cm

C: 64 cm

D: 76 cm

Q) The suitable gradient within which an engineer must endeavour to design the road is called:

A: Limiting gradient

B: Ruling gradient

C: Average gradient

D: Exceptional gradient

Q) The ranging of the line between two stations across the raised ground is called:

A: Direct ranging

B: Indirect ranging

C: Random line ranging

D: None of these

Q) The correct sequencing of setting up a plane table at a working station is:

A: Levelling, centering, orienting

B: Centering, orienting, levelling

C: Orienting, levelling, centering

D: Levelling, orienting, centering

Q) Which of the following scale is the largest one?

A: 1 cm = 50 m

B: 1 : 42000

C: RF = 1/300000

D: 1cm = 50 km

Q) The length of a chain is measured from:

A: Centre of one handle to centre of other handle

B: Outside of one handle to outside of other handle

C: Outside of one handle to inside of other handle

D: Inside of one handle to inside of other handle

Q) The horizontal angle between the true meridian and magnetic meridian is called:

A: Azimuth

B: Declination

C: Local attraction

D: Magnetic bearing

Q) A series of closely spaced contour lines represent a:

A: Steep slope

B: Gentle slope

C: Uniform slope

C: Plane surface

Q) If the intercept on a vertical staff is observed as 0.75 m from a tacheometer, the horizontal distance between the tacheometer and staff station is:

A: 7.5 m

B: 25 m

C: 50 m

D: 75 m

Q) If the fore bearing of a line is $36^0\,15'$, its back bearing will be:

A: $36^0\,15'$

B: $126^0\,15'$

C: $143^0\,15'$

D: $216^0\,15'$

Q) The theodolite is an instrument used for measuring very accurately:

A: Horizontal angles only

B: Vertical angles only

C: Horizontal and vertical angles

D: Linear measurement

Q) The horizontal distance between any two consecutive contours is called:

A: Vertical equivalent

B: Horizontal equivalent

C: Contour interval

D: Contour gradient

Q) The maximum frictional force which comes into play when a body just beginning to slide over the surface of another body is known as:

A: Static friction

B: Dynamic friction

C: Limiting friction

D: Coefficient of friction

Q) Two balls of equal mass and of perfectly elastic material are lying on the floor. One of the balls with velocity v is made to strike the second ball. Both the balls after impact will move with a velocity:

A: v

B: v/2

C: v/4

D: v/8

Q) The angular velocity (in radians/ second) of a body rotating at N RPM is:

A: $\pi N/60$

B: $\pi N/180$

C: $2\ \pi N/60$

D: $2\ \pi N/180$

Q) The velocity ratio of a differential pulley block with D ad d as diameter of larger and smaller pulley is:

A: D/(D-d)

B: D/(D + d)

C: 2D/(D – d)

D: 2D(D + d)

Q) A rubber ball is dropped from a height of 2 meters, If there is no loss of velocity after rebounding, the ball will rise to a height of:

A: 1 meter

B: 2 meters

C: 3 meters

D: 4 meters

Q) The law of motion involved in recoil of a gun is:

A: Newton’s first law of motion

B: Newton’s second law of motion

C: Newton’s third law of motion

D: None of these

Q) The moment of inertia of circular section about it's diameter (d) is:

A: $\Pi d^3/16$

B: $\Pi d^3/32$

C: $\Pi d^4/32$

D: $\Pi d^4/64$

Q) Two forces are acting at angle of 120^0. The bigger force is 40 newton and the resultant is perpendicular to the smaller force. The smaller force is:

A: 20 N

B: 40 N

C: 80 N

D: None of these

Q) The acceleration of a particle moving with simple harmonic motion, at any instant is given by:

A: ω. Y

B: ω^2. y

C: ω^2. /y

D: ω^3. y

Where ω is the angular velocity of the particle in rad/sec and y is the displacement of the particle from mean position.

Q) The moment of inertia of a rectangular section, 3cm wide and 4 cm deep, about the X-X axis is:

A: 9 cm^4

B: 12 cm^4

C: 16 cm^4

D: 20 cm^4

Q) The water content of soil is defined as the ratio of:

A: Volume of water to volume of given soil

B: Volume of water to volume of voids in soil

C: Weight of water to weight of air in voids

D: Weight of water to weight of solids of given mass of soil

Q) The minimum size of grains of silt is about:

A: .0002 mm

B: .002 mm

C: .02 mm

D: 0.2 mm

Q) Gravel and sand are:

A: Cohesive coarse grained soil

B: Cohesive fine grained soil

C: Non-cohesive coarse grained soil

D: Non-cohesive fine grained soil

Q) The ratio of settlement at any time ‘t’
To the final settlement, is known as:
A: Coefficient of consolidation
B: Degree of consolidation
C: Consolidation index
D: Consolidation of undisturbed soil

Q) According to Terzaghi, the net ultimate bearing capacity of clay is given by:

A: c N_q

B: c N Υ

C: c N_c

D: 1.3 c N_c

Q) If w is the water content and Υ is the unit weight of soil mass, then the unit weight of dry soil (Υ_d) is equal to:

A: $(w/\Upsilon)+1$

B: $(\Upsilon /w)+1$

C: $\Upsilon(1+w)$

D: $(1+w)\ \Upsilon$

Q) The relationship between void ratio€ and porosity ratio (n) is:

A: n = (1+e)/(1-e)

B: e = (1+n)/(1-e)

C: n = e/(1 – e)

D: e = n(1+e)

Q) A soil has bulk density of 2.30 g/cm^3 and water content 15 parcent, the dry density of the sample is:

A: 1.0 g/cm^2

B: 1.5 g/cm^2

C: 2.0g/cm^2

D: 2.5 g/cm^2

Q) The plasticity index is the numerical difference between

A: Liquid limit and plastic limit

B: Plastic limit and shrinkage limit

C: Liquid limit and shrinkage limit

D: None of these

Q) Mechanical stabilization of soil is done with the help of:

A: Cement

B: Lime

C: Bitumen

D: Proper grading

Q) A load ‘W’ is moving from left to right supported on a simply supported beam of span ‘L’. The maximum bending moment at 0.4 L from the left support is:

A: A: 0.16 WL

B: 0.20 WL

C: 0.24 WL

D: 0.25 WL

Q) In moment distribution method, the sum of distribution factors of all the members meeting at any joint is always:

A: A: Zero

B: Less than 1

C: 1

D: Greater than 1

Q) When a uniformly distributed load, longer than the span of the girder moves from left to right, then maximum bending moment a mid section occurs when the uniformly distributed load occupies:

A: Less than the left half span

B: Whole of the left half span

C: More than the left span

D: Whole span

Q) Degree of static indeterminacy of a rigid-jointed plane frame having 15 members, 3 reaction components and 14 joints is:

A: 2

B: 3

C: 6

D: 8

Q) Two bars of different material and same size are subjected to the same tensile force. If the bars have unit elongation in the ratio of 2:5, then the ratio of the modulus of elasticity of the two materials will be

A: 2:5

B: 5:2

C: 4:3

D: 3:4

Q) The shear force diagram for a cantilever beam of length l and carrying a gradually varying load from zero at the free end and W per unit length at the fixed end is a:

A: Horizontal straight lime

B: Vertical straight lime

C: Inclined lime

D: Parabolic curve

Q) A simply supported beam carries a varying load from zero at one end and Ꞷ at the other end. If the length of beam is α, the maximum bending moment is:

A: Ꞷα/27

B: $Ꞷα^2/27$

C: $Ꞷ^2α/\sqrt{27}$

D: $Ꞷ^2α/9\sqrt{3}$

Q) The equivalent length of a column of length L. Having one end fixed and the other end free is:

A: 2L

B: L

C: L/2

D: L/ $\sqrt{2}$

Q) The single rolling load of 8 kN rolls along a girder of 15 m span. The absolute maximum bending moment will be:

A: 8 kN.m

B: 15 kN.m

C: 30 kN.m

D: 60 kN.m

Q) For a single point load W moving on a symmetrical three hinged parabolic arch of span L, the maximum sagging moment occurs at a distance x from the ends. The value of x is:

A: 0.211 L

B: 0.25 L

C: 0.234 L

D: 0.5 L

Q) If the length of a wall on either side of a lintel opening is at least half of its effective span L, the load W carried by the lintel is equivalent to the weight of brickwork contained in an equilateral triangle, producing a maximum bending moment:

A: WL/2

B: WL/4

C: WL/6

D: WL/8

Q) The length of the lap in a compression member is kept greater than bar diameter x (permissible stress in bar/five times the bond stress) or:

A: 12 bar diameters

B : 18 bar diameters

C : 24 bar diameters

D : 30 bar diameters

Q) If H is the overall height of a retaining wall retaining a surcharge, the width of the base slab usually provided, is:

A: 0.3 H

B: 0.4 H

C: 0.6 H

D: 0.7 H

Q) Workability of concrete is inversely proportional to:

A: The time of transit

B: The water-oement ratio

C: The air in the mix

D: The size of aggregate

Q) If diameter of a reinforcement bar is d, the anchorage value of the hook is:

A: d4

B: 8d

C: 12d

D: 16 d

Q) According to Indian standards the pozzolana content in Portland pozzolana cement is

A: 10% to 25%

B: 25% and 35%

C: 35% to 50%

D: More than 50%

Q) For longitudinal reinforcing bars in a column, the cover should not be less than:

A: 10 mm

B: 20 mm

C: 30 mm

D: 40 mm

Q) For the design at retaining walls, the minimum factor of safely against overturning is taken as:

A: 1.5

B: 2.0

C: 2.5

D: 3.0

Q) For deflection of a simply supported beam to be within permissible limits, the ratio of span to effective depth as per IS 456-1978 should not exceed:

A: 7

B: 20

C: 26

D: 35

Q) The live load to be considered for an inaccessible roof, is:

A: Nil

B: 75 kg/m^2

C: 150 kg/m^2

D: 200 kg/m^2

Q) For rivet diameter up to 24 mm, the diameter of the rivet hole is larger than the diameter of the rivet by:

A: 1.0 mm

B: 1.5 m

C: 2.0 mm

D: 2.5 mm

Q) The effective length of a fillet weld is taken as:

A: The actual length plus twice the size of weld

B: The actual length plus minus twice the size of weld

C: The actual length plus thrice the size of weld

D: The actual length minus thrice the size of weld

Q) The average shear stress for rolled beams is calculated by dividing the shear force at the cross section by the:

A: Gross section of the web

B: Depth of the beam

C: Web thickness

D: Width of flange

Q) The diameter of cold driven rivet range from:

A: 6 to 12 mm

B: 12 to 22 mm

C: 22 to 32 mm

D: 32 to 42 mm

Q) The longitudinal space between the effective length of intermittent butt welds is taken not more than:

A: Four times the thickness of the thicker part jointed

B: Four times the thickness of the thinner part joined

C: Sixteen times the thickness of the thicker part jointed

D: Sixteen times the thickness of the thinner part jointed

Q) Maximum permissible slenderness ratio of a member carrying loads resulting from wind is:

A: 180

B: 250

C: 300

D: 350

Q) Allowable working stress for rolled steel beam sections compression members may be assumed as:

A: 60 N/mm^2

B: 800 N/mm^2

C: 100 N/mm^2

D: 120 N/mm^2

Q) The net cross sectional area of a tension member is equal to:

A: Gross sectional area

B: Gross sectional area minus the maximum deduction for rivet holes

C: Gross cross sectional area plus the maximum deduction for rivet holes

D: Two times the gross sectional area

Q) The stress in the wall of a thin cylinder subjected to internal pressure is:

A: Hoop tension

B: Shear

C: Hoop compression

D: Torsional shear

Q) Stiffeners are used in plate girders to:

A: Reduce the compressive stress

B: Reduce shear stress

C: Take bearing stress

D: Avoid buckling of web plate

Q)When a body is subjected to two equal and opposite forces, acting tangentially across the resisting section, as a result of which, the body tends to shear off across the section, the stress and strain induced is:

A: Tensile stress, tensile strain

B: Compressive stress, compressive strain

C: Shear stress, tensile strain

D: Shear stress, shear strain

Q) Hook’s law holds good up to:

A: Yield point

B: Elastic limit

C: Plastic limit

D: Breaking point

Q) The poisson’s ratio steel varies from:

A: 0.23 to 0.27

B: 0.25 to 0.33

C: 0.31 to 0.34

D: 0.32 to 0.42

Q) In a simply supported beam, carrying a uniformly distributed load w per unit length, the point of contraflexure:

A: Lies in the centre of the beam

B: Lies in the end of the beam

C: Depends on the length of the beam

D: Does not exist

Q) A rectangular beam A has length l, width b and depth d. Another beam B has the same length and width but depth is 2d. The elastic strength of beam B will be:

A: Same

B: Double

C: Four times

D: Six times

Q) The radius of Mohr's circle for two equal unlike principal stresses of magnitude p is:

A: p

B: p/2

C: Zero

D: None of these

Q) Rate of change in bending moment is equal to:

A: Shear force

B: Deflection

C: Slope

D: Rate of loading

Q) The maximum compressive stress at the top of a beam is 1.600 kg/cm^2 and the corresponding tensile stress at the bottom of the beam is 400 kg/cm^2 if the depth of the beam is 100 cm. The neutral axis from the top is at

A: 2 cm

B: 4 cm

C: 6 cm

D: 8 cm

Q) If the depth of a simply supported beam carrying an isolated load at its centre, is doubled. The deflection of the beam at its centre will be changed by a factor of

A: 2

B: 1/2

C: 8

D: 1/8

Q) For a giver-atenal young's modulus is 200 GN^{-2} and modulus of rigidity is 80 GN^{-2} The value of poisson's ratio is:

A: 0.15

B: 0.20

C: 0.25

D: 0.40

Q) If the dynamic viscosity of a fluid is 0.5 poise and specific gravity is 0.5 then the kinematic viscosity of that fluid in stokes is

A: 0.25

B: 0.5

C: 0.75

D: 1.0

Q) Centre of buoyancy always

A: Coincide with the centre of gravity

B: Coincide with the centroid of the volume of liquid displaced

C: Remains above the centre of gravity

D: Remans below the centre of gravity

Q) A rectangular block 2 meters long. 1 meter wide and 1 meter deep floats in water the depth of immersion being 0.5 meter if the water weights 10 kN/M^3. Then the weight of the block is

A: 5 kN

B: 10 kN

C: 15 kN

D: 20 kN

Q) The distance from pipe boundary at which the turbulent shear stress is one-third the wel shear stress' is:

A: 1/3 r

B: 1/2 r

C: 2/3 r

D: 3/4 r

Where r is radius of the pipe.

Q) In series-pipe problems:

A: The head loss is same through pipe

B: The discharge is same through each pipe

C: A trial solution is not necessary

D: The discharge through each pipe is added to obtain discharge

Q) The best hydraulic channel cross section is the one which has a:

A: Minimum roughness coefficient

B: Least cost

C: Maximum area for a given flow

D: Minimum wetted perimeter

Q) For maximum discharge in a circular channel section, the ratio of depth of flow to that of the diameter of the channel is:

A: 0.95

B: 0.81

C: 0.50

D: 0.30

Q) If the conjugate depths before and after the jump are 0.5 m and 2,5 m respectively, then the loss of energy in the hydraulic jump will be:

A: 0.8 m

B: 1.6 m

C: 3.2 m

D: 6.4 m

Q) Hydraulic pressure on a dam depends upon its:

A: Length

B: Depth

C: Shape

D: shape and depth

Q) Manometers are used to measure:

A: Pressure in water channels pipes etc

B: Difference in pressure at two points

C: Atmospheric pressure

D: Very low pressure

Q)

Q) S-hydrograph is used to obtain hydrograph of

A: Shorter duration from longer duration

B: Longer duration shorter duration

C: Both (A) and (B)

D: None of these

Q) A major resistive force in a dam is:

A: Water pressure

B: Self weight of dam

C: Wave pressure

D: Uplift pressure

Q) Aqueduct or super passage type of works are used when:

A: High flood drainage discharge is small

B: High fluid

Q)

Q)

Q) Seepage through embankment in an earthen dam is controlled by:

A: Drain trenches

B: Drainage filters

C: Relief wells

D: Provision of downstream beams

Q) Which of the following is leasl silted for an earthen dam?

A: Ogee spillway

B: Chute spillway

C: Side channel spillway

D: Shaft spillway

Q) The main function of a divide wall is to :

A: Control the silt entry into the canal

B: Prevent river floods from entering into the canal

C: Separate the under slulces from weir proper

D: Provide smooth flow at sufficiently low velocity

Q) A divide wall is provided:

A: Parallel to the axis of weir and up stream of it

B: At right angles to the axis of weir

C: Parallel to the axis of weir and downstream of it

D: At an inclination to the axis of weir

Q) For water bound macadam roads in localities of heavy rainfall, the recommended value of camber is:

A: 1 in 30

B: 1 in 36

C: 1 in 48

D: 1 in 60

Q) If the slopping distance is 60 minutes, then the minimum slopping sigh distance for two lane, two way traffic is

A: 160 m

B: 120 m

C: 30 m

D: 60 m

Q) If the average centre spacing of vehicles is 20 meters, then the basic capacity of traffic lane at a speed of 60 kmph is:

A: 2,600 vehicles per day

B: 2,000 vehicles per hour

C: 2,500 vehicles per hour

D: 1,000 vehicles per hour

Q) The background colour of informatory sign board is

A: Red

B: Yellow

C: Green

D: White

Q) The ductility value of bitumen for suitability in road construction should not be less than:

A: 50 cm

B: 60 cm

C: 40 cm

D: 30 cm