Question Paper Name: Civil Engineering 11th May 2017 Shift 1
Subject Name: Civil Engineering
Duration: 120

Civil Engineering

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 871112241 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The system $2x + y + z = 0$, $x + 3y + 2z = 0$ and $3x + 4y + pz = 0$, has a non-trivial solution then p =

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 2 Question Id : 871112242 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

f is defined on $(0,\infty)$ by $f(x) = \begin{cases} \frac{1}{\sqrt{x}} & \text{if } x \neq 0 \\ 0 & \text{if } x = 1 \end{cases}$.

Denote $I_1 = \int_0^1 f(x)dx$ and $I_2 = \int_0^\infty f(x)dx$ then

Options :

1. both I_1 and I_2 exist
2. I_1 exists but not I_2
3. I_2 exists but not I_1
4. Neither I_1 exists nor I_2 exists

point inside S, with n̂ being the unit normal on S, the value of the integral $\oint_S \vec{r}.\hat{n}\, dS$ is

Options :

1. 3 V
2. 5 V
3. 10 V
4. 15 V

Question Number : 4 Question Id : 871112244 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The set of linearly independent solutions of the differential equation $(D^4 - D^2)\, y = 0$ is

Options :

1. $\{1, x, e^x, e^{-x}\}$
2. $\{1,\ x^2,\ e^x, -e^{-x}\}$
3. $\{-1, -x^2,\ e^x, -e^{-x}\}$
4. $\{-1, -x^2,\ e^x,\ e^{-x}\}$

Question Number : 5 Question Id : 871112245 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $u(x,y) = ax^2 + y^2$ is a solution of the Laplace equation, then $a =$

Options :

1. 1
2. -1
3. 2
4. -2

Question Number : 6 Question Id : 871112246 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\frac{1}{1-z-z^2} = \sum_{n=0}^{\infty} c_n z^n$ then, for $n \geq 2$, $c_n - c_{n-1} - c_{n-2} =$

Options :

1. $3 - n$
2. $3 + n$

Question Number : 7 Question Id : 871112247 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

There are n(> 2) ladies sitting in a row. Two of them are selected at random. What is the probability that those two are not sitting side by side?

Options :

1. $(n-1)(n-2)/n$
2. $n(n-1)/(n-2)$
3. $2/n$
4. $(n-2)/n$

Question Number : 8 Question Id : 871112248 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a random variables X follows the Poisson distribution such $P(X = 0) = P(X = 1)$ then $P(X = 2)$ =

Options :

1. $1/(2e)$
2. $1/e$
3. $2/e$
4. $3/(2e)$

Question Number : 9 Question Id : 871112249 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The least degree of the polynomial that interpolates the data (0, 4), (1, 5), (2, 8) and (3, 13) is

Options :

1. 4
2. 3
3. 2
4. 1

Question Number : 10 Question Id : 871112250 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The second order Runge-Kutta formula is

Options :

3. Runge's Method

4. Milne's Method

Question Number : 11 Question Id : 871112251 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A beam is said to be loaded in pure bending when,

Options :

1. both bending moment and shear force are constants but not zero

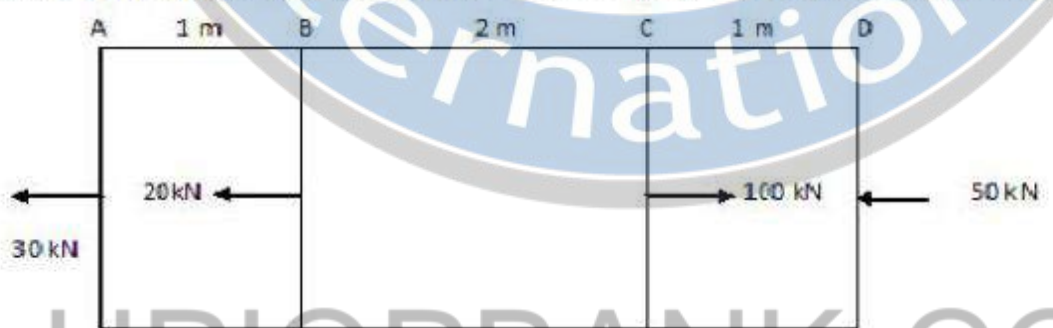
2. only bending moment is constant

3. both bending moment and shear force are changing linearly

4. only bending moment is changing linearly

Question Number : 12 Question Id : 871112252 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A prismatic bar of uniform cross-sectional area of 5 cm^2 is subjected to axial loads as shown in the following figure. Portion BC is subjected to an axial stress of



Options :

1. 4000 N/cm^2 tension

2. 20000 N/cm^2 compression

3. 10000 N/cm^2 tension

4. 6000 N/cm^2 tension

Question Number : 13 Question Id : 871112253 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of moment of inertia of a rectangle to that of a triangle having same base and height about their base is

Options :

3. 3

4. 4

Question Number : 14 Question Id : 871112254 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of moment carrying capacity of a circular beam of diameter D and square beam of side D made of same materials is

Options :

1. $\pi/4$

2. $3\pi/8$

3. $\pi/3$

4. $3\pi/16$

Question Number : 15 Question Id : 871112255 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a bar is subjected to change of temperature and its deformation is prevented, then which of the following stresses is induced?

Options :

1. Thermal stress

2. Shear stress

3. Tensile stress

4. Compressive stress

Question Number : 16 Question Id : 871112256 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Circular beams of uniform strength can be made by varying diameter in such a way that

Options :

1. $\frac{M}{z}$ is constant

2. $\frac{\sigma}{y}$ is constant

3. $\frac{E}{R}$ is constant

Question Number : 17 Question Id : 871112257 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a uniformly distributed load is acting on the beam, the B.M curve will be

Options :

1. varying linearly
2. of constant ordinate
3. varying parabolically
4. varying cubically

Question Number : 18 Question Id : 871112258 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam of span L and flexural rigidity EI, carries a unit point load at its center. The strain energy in the beam due to bending is

Options :

1. $L^3/(48EI)$
2. $L^3/(192EI)$
3. $L^3/(96EI)$
4. $L^3/(16EI)$

Question Number : 19 Question Id : 871112259 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a prismatic member having area of cross-section 'A' is subjected to a tensile load 'P', then the maximum shear stress and its inclination with the direction of load respectively are

Options :

1. P/A and 45°
2. 2P/A and 45°
3. P/(2A) and 45°
4. P/A and 60°

Question Number : 20 Question Id : 871112260 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Maximum strain in concrete at the outermost compression fibre in bending shall be taken as

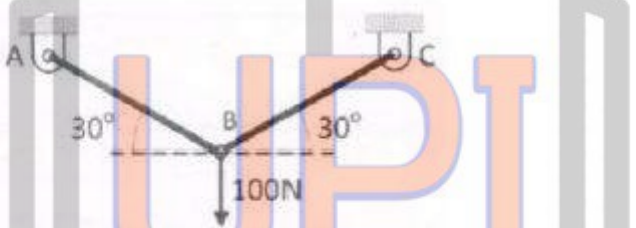
2.

3. 0.00035

4. 0.35

Question Number : 21 Question Id : 871112261 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A two bar truss system shown below supports a vertical load of 100 N. The length of each bar is 1 m with cross sectional area of 200 mm^2 each. The force in the member AB is



Options :

1. 100 N

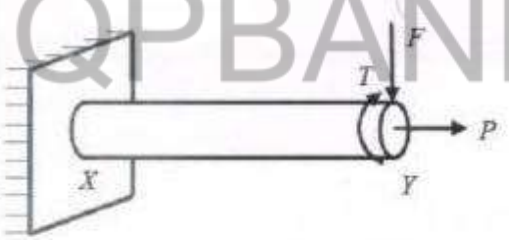
2. 57.7N

3. 173 N

4. Zero

Question Number : 22 Question Id : 871112262 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the circular bar XY fixed at X (shown below) is subjected to axial load of P, transverse load of F and a twisting moment of T. The most critical point from the strength point of view is



Options :

1. a point on the circumference at the location X

2. a point at the centre at location X

3. a point on the circumference at the location Y

4. a point at the centre at location Y

Options :

1. energy stored in a body when strained within elastic limits
2. energy stored in a body when strained upto the breaking of a specimen
3. maximum strain energy which can be stored in a body
4. proof resilience per unit volume of a material

Question Number : 24 Question Id : 871112264 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is subjected to a tensile stress of 1200 MPa on one plane and another tensile stress of 600 MPa on a plane at right angles to the former. It is also subjected to a shear stress of 400 MPa on the same planes. The maximum normal stress is

Options :

1. 400 MPa
2. 500 MPa
3. 900 MPa
4. 1400 MPa

Question Number : 25 Question Id : 871112265 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the maximum lateral sway under wind loads of a tall structure (where H is height of the structure)?

Options :

1. H/500
2. H/300
3. H/200
4. H/800

Question Number : 26 Question Id : 871112266 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The "Plane sections remain plane" assumption in bending theory implies

Options :

1. only strain profile is linear
2. only stress profile is linear

Question Number : 27 Question Id : 871112267 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Minimum clear cover (in mm) to the main steel bars in slab, beam, column and footing respectively are

Options :

1. 10, 15, 20, 25
2. 15, 25, 40, 40
3. 20, 25, 40, 50
4. 20, 35, 40, 75

Question Number : 28 Question Id : 871112268 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a reinforced concrete beam section, the shape of the shear stress diagram

Options :

1. is parabolic over the whole section with maximum value at the neutral axis
2. is parabolic above the neutral axis and rectangular below the neutral axis
3. is linearly varying with the distance from the neutral axis
4. depends on the magnitude of shear reinforcement provided

Question Number : 29 Question Id : 871112269 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the limit state design method of concrete structures, the recommended partial safety factor for concrete according to IS 456: 2000 is

Options :

1. 1.5
2. 1.15
3. 0.67
4. 0.45

Question Number : 30 Question Id : 871112270 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For compressive strength determination, the minimum number of cubes required in a sample is

Options :

1. 2

4. 6

Question Number : 31 Question Id : 871112271 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is a long-term loss of prestress in a prestressed concrete member?

Options :

1. Loss due to friction

2. Loss due to anchorage slip

3. Loss due to relaxation of tendons

4. Loss due to elastic deformation

Question Number : 32 Question Id : 871112272 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a simply supported beam subjected to uniformly distributed load, the best profile of the prestressing cable to achieve load balancing is

Options :

1. Linear profile

2. Cubic profile

3. Parabolic profile

4. Straight profiles

Question Number : 33 Question Id : 871112273 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A straight prestressing cable in a beam introduces

Options :

1. compression only

2. compressive and tensile stresses

3. bending and shear stresses

4. shear and compressive stresses

Question Number : 34 Question Id : 871112274 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Purlins are designed for

3. shear

4. bending

Question Number : 35 Question Id : 871112275 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Truss members have to resist

Options :

1. compressive force only

2. tensile force only

3. shear force only

4. compressive or tensile force

Question Number : 36 Question Id : 871112276 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Built-up sections gave the advantage of more

Options :

1. area

2. moment of inertia

3. weight

4. depth

Question Number : 37 Question Id : 871112277 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Spacing of transfer when span of truss lies in the range of 15 m to 30 m is

Options :

1. 2.0 m to 3.0 m

2. 3.0 m to 4.0 m

3. 4.5 m to 6.0 m

4. 6.0 m to 8.0 m

Question Number : 38 Question Id : 871112278 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Maximum size of fillet weld for a plate of square edge is

Options :

3. thickness of the plate itself

4. 1.5 mm more than the thickness of the plate

Question Number : 39 Question Id : 871112279 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If there is more than one axis of symmetry in a section, shear center lies

Options :

1. on the centroid

2. outside both axes

3. always on the edge of longer dimension

4. always on the edge of shorter dimension

Question Number : 40 Question Id : 871112280 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The slenderness ratio of web of beam sections from diagonals buckling consideration is given by (where d indicates depth and t indicates web thickness)

Options :

1. d/t

2. 1.225 d/t

3. 2.45 d/t

4. 8.50 d/t

Question Number : 41 Question Id : 871112281 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The soil that will have generally maximum void ratio is

Options :

1. Gravel

2. Sand

3. Silt

4. Clay

Question Number : 42 Question Id : 871112282 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The correct sequence of plasticity of minerals in soil in an increasing order is

2. Kaolinite, Silica, Illite, Montmorillonite

3. Silica, Kaolinite, Montmorillonite, Illite

4. Kaolinite, Silica, Montmorillonite, Illite

Question Number : 43 Question Id : 871112283 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A soil has a liquid limit of 60%, plastic limit of 35% and shrinkage limit of 20% and it has a natural moisture content of 50%. The liquidity index of the soil is

Options :

1. 1.5

2. 1.25

3. 0.6

4. 0.4

Question Number : 44 Question Id : 871112284 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The capillary rise in soils

Options :

1. increases the effective stress

2. decreases the effective stress

3. increases the pore water pressure below water table

4. does not influence effective stress

Question Number : 45 Question Id : 871112285 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a saturated soil deposit having a density of 22 kN/m^3, the effective normal stress on a horizontal plane at 5 m depth will be

Options :

1. 22 kN/m^2

2. 50 kN/m^2

3. 60 kN/m^2

4. 110 kN/m^2

Question Number : 46 Question Id : 871112286 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. 60%
2. 30%
3. 70%
4. 50%

Question Number : 47 Question Id : 871112287 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Number of blows required for compacting each layer of soil in compaction test conducted using compaction mould of 2250 cc is

Options :

1. 25
2. 30
3. 35
4. 56

Question Number : 48 Question Id : 871112288 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following field tests is used to evaluate shear strength of saturated clay?

Options :

1. Standard penetration test
2. Plate load test
3. Pressure meter test
4. Vane shear test

Question Number : 49 Question Id : 871112289 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The effect of increased compaction effort on a soil

Options :

1. does not alter OMC and MDD
2. results in decreased OMC and MDD
3. results in decreased OMC and increased MDD
4. results in increased OMC and decreased MDD

N corrected for overburden is

Options :

1. between 0 and 4
2. between 5 and 9
3. between 10 and 14
4. exceeding 15

Question Number : 51 Question Id : 871112291 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is effect of cohesion of a c-Φ backfill on Active and Passive earth pressures?

Options :

1. Increases both active and passive earth pressures
2. Decreases both active and passive earth pressures
3. Increases active earth pressure and decreases passive earth pressure
4. Decreases active earth pressure and increases passive earth pressure

Question Number : 52 Question Id : 871112292 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A concentrated load of 50 kN acts on the surface of ground. The increase in vertical stress directly below the load at a depth of 3 m will be (Take value of Boussinesq influence factor as 0.4775)

Options :

1. 26.53 kN/m^2
2. 265.3 kN/m^2
3. 2.653 kN/m^2
4. 0.2653 kN/m^2

Question Number : 53 Question Id : 871112293 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The factor of safety of an infinite slope in dry cohesionless soil upon submergence

Options :

1. remains same
2. reduced by 50 %

Question Number : 54 Question Id : 871112294 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum bearing capacity of soil under a given footing occurs when the groundwater table location is at

Options :

1. the base of the footing
2. ground level
3. a depth equal to one-half the width of footing
4. a depth equal to width of footing

Question Number : 55 Question Id : 871112295 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For RCC structures, the maximum permissible settlement of raft foundation in plastic clay as per IS 1904:1986 is

Options :

1. 50 mm
2. 60 mm
3. 75 mm
4. 100 mm

Question Number : 56 Question Id : 871112296 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The negative skin friction on a pile develops when

Options :

1. soil around pile is dense sand
2. soil surrounding pile is stiff clay
3. soil surrounding pile settles more than pile
4. the water table rises

Question Number : 57 Question Id : 871112297 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Dynamic pile formulae are useful to calculate the capacity of

Options :

3. Laterally loaded piles

4. Tension piles

Question Number : 58 Question Id : 871112298 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The safe bearing capacity of a square footing in saturated clay as per Terzaghi's theory is approximately equal to

Options :

1. shear strength of clay

2. elastic modulus of clay

3. unconfined compressive strength of clay

4. four times undrained cohesion of clay

Question Number : 59 Question Id : 871112299 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

General shear failure due to excessive foundation loading occurs in sandy soils if

Options :

1. standard penetration resistance, $N < 5$

2. angle of internal friction, $\phi > 36^{o}$

3. void ratio, $e > 0.75$

4. density index, $I_D < 20\%$

Question Number : 60 Question Id : 871112300 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following methods of analysis is used in the evaluation of Taylor's stability number?

Options :

1. Terzaghi Circle Method

2. Swedish Circle Method

3. Friction Circle Method

4. Coulomb's Wedge Theory

Question Number : 61 Question Id : 871112301 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1. always below the Centroid of the submerged plane

2. always at the Centroid of the submerged plane

3. always above the Centroid of the submerged plane

4. anywhere with respect to the Centroid of the submerged plane

Question Number : 62 Question Id : 871112302 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The possible dimensionless group that combines velocity V, body size L, fluid density ρ, and surface tension coefficient, σ is _____.

Options :

1. $L\rho\sigma/V$

2. $\rho\sigma V^2/L$

3. $\sigma LV^2/\rho$

4. $\rho LV^2/\sigma$

Question Number : 63 Question Id : 871112303 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In pipes arranged in series

Options :

1. the head loss must be same in all pipes

2. the velocity must be same in all pipes

3. the flow rates may be different in different pipes

4. the total flow is same flowing through each pipe

Question Number : 64 Question Id : 871112304 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The tangent drawn at any point on a curve, if represents the direction of instantaneous velocity vector at that point, then the curve is

Options :

1. a Path line

2. an Equipotential line

3. a Streamline

Question Number : 65 Question Id : 871112305 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the channel slope changes from mild to steep, the gradually varied flow profiles formed are,

Options :

1. M1 and S1
2. M2 and S2
3. M3 and S2
4. M2 and S3

Question Number : 66 Question Id : 871112306 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A pitot-tube is an instrument for measuring

Options :

1. pressure of fluid flow
2. discharge of fluid flow
3. velocity at a point in a fluid flow
4. total energy of fluid flow at a section

Question Number : 67 Question Id : 871112307 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Froude's number is the ratio of inertia force to

Options :

1. pressure force
2. elastic force
3. gravitational force
4. surface tension force

Question Number : 68 Question Id : 871112308 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body floating in a liquid is said to be in neutral equilibrium, if its metacenter

Options :

1. coincides with its centre of gravity
2. lies above its centre of gravity
3. lies below its centre of gravity

Question Number : 69 Question Id : 871112309 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Triangular notches are preferred to rectangular notches for measuring

Options :

1. large discharges
2. small discharges
3. density of liquids
4. rate of flow of sewage sludge

Question Number : 70 Question Id : 871112310 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At large velocities, the drag force for a flow past a bluff body is likely to

Options :

1. have significant contribution from skin friction drag
2. have significant contribution from pressure drag
3. have equal contribution from skin friction drag and pressure drag
4. be infinity

Question Number : 71 Question Id : 871112311 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The velocity distribution in laminar boundary layer is assumed to follow $\frac{u}{U_0} = \frac{y}{\delta}$. The displacement thickness for this laminar boundary layer is (where U_0 is the ambient velocity, δ is the boundary layer thickness and u is the velocity at y distance away from the boundary)

Options :

1. $\frac{\delta}{2}$
2. $\frac{\delta}{3}$
3. $\frac{2\delta}{3}$
4. $\frac{\delta}{6}$

Question Number : 72 Question Id : 871112312 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1. Density

2. Velocity gradient

3. Kinematic viscosity

4. Dynamic viscosity

Question Number : 73 Question Id : 871112313 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the steady flow of an incompressible fluid, the velocity component in the x-direction is given by $u = ax^2 + by$ and the velocity component in the z-direction is zero. The velocity component in the y-direction can be expressed as (where a and b are constants)

Options :

1. $2ax + f(y)$

2. $-2axy + f(x)$

3. $(1/2)ay + f(y)$

4. $(-1/2)axy + f(x)$

Question Number : 74 Question Id : 871112314 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cross-section of a trapezoidal open channel is said to be hydraulically most efficient if

Options :

1. the roughness coefficient is minimum

2. the section has maximum area for a given flow

3. the section has the least perimeter for a given area

4. the discharge per unit area is maximum

Question Number : 75 Question Id : 871112315 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

To produce a high head by multistage centrifugal pumps, the impellers are connected

Options :

1. in series only

2. in parallel only

3. in opposite direction

Question Number : 76 Question Id : 871112316 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The momentum flux in the direction of flow of a one dimensional steady incompressible fluid flow with mass density, ρ; area of flow, A; sectionally averaged velocity, V and discharge, Q is

Options :

1. ρAV^2
2. ρQV^2
3. ρAV
4. ρVQ^2

Question Number : 77 Question Id : 871112317 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cross drainage work in which High Flood Level of drain is sufficiently below the bed of the canal is called as

Options :

1. Aqueduct
2. Super passage
3. Level crossing
4. Syphon aqueduct

Question Number : 78 Question Id : 871112318 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the dimension of coefficient of transmissibility?

Options :

1. L^3/T
2. L^2/T
3. $L^0 T^{-1}$
4. LT^2

Question Number : 79 Question Id : 871112319 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. Nonlinear Response
2. Inverse Response
3. Principle of continuity
4. Linear Response

Question Number : 80 Question Id : 871112320 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For seepage through an aquifer, the direction of seepage is

Options :

1. parallel to the equipotential lines
2. perpendicular to the stream lines
3. perpendicular to the equipotential lines
4. along the direction of gravity

Question Number : 81 Question Id : 871112321 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As per Lacey's theory, the slit factor is

Options :

1. directly proportional to square root of average particle size
2. directly proportional to average practice size
3. inversely proportional to average particle size
4. not related to average particle size

Question Number : 82 Question Id : 871112322 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

With the decrease in its capacity-inflow ratio with a constant inflow, the sediment trap efficiency of a reservoir

Options :

1. decreases
2. increases
3. remains unchanged

Question Number : 83 Question Id : 871112323 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of water stored in the root zone to the water delivered to the field is known as

Options :

1. water application efficiency
2. water storage efficiency
3. water use efficiency
4. water distribution efficiency

Question Number : 84 Question Id : 871112324 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In case of weirs on permeable foundations, the downstream pile is provided

Options :

1. to reduce the uplift pressure on floor
2. to prevent dynamic forces
3. to increase the vertical creep
4. to provide drainage

Question Number : 85 Question Id : 871112325 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum quantity of water that can be supplied from a reservoir in a specified period of time during a critical dry year is called as

Options :

1. Safe yield
2. Average yield
3. Design yield
4. Dead storage

Question Number : 86 Question Id : 871112326 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The vertical distance between full supply level (F.S.L) and the top of the bank of the canal is known as

Options :

1. Berm width

4. Top width

Question Number : 87 Question Id : 871112327 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The discharge over an ogee weir remains the same as that of

Options :

1. Triangular weir
2. Sharp crested weir
3. Cipolletti weir
4. Drowned weir

Question Number : 88 Question Id : 871112328 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consumptive use can be measured by

Options :

1. Lysimeter
2. Current meter
3. Pitot tube
4. Venturimeter

Question Number : 89 Question Id : 871112329 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A canal carrying a discharge of 20 m^3/s has cultivable command area of 20.000 hectares. The intensity of crop is 80%, and the base period is 120 days. The duty of the water in hectares/meter is

Options :

1. 700
2. 300
3. 900
4. 800

Question Number : 90 Question Id : 871112330 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit hydrograph has

Options :

3. one unit of direct runoff

4. one unit of the time base of direct runoff

Question Number : 91 Question Id : 871112331 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Excess lime added to water in the softening process can be removed by

Options :

1. recarbonation

2. chlorine

3. addition of alum

4. addition of salt solution

Question Number : 92 Question Id : 871112332 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The purpose of sludge thickening is to

Options :

1. increase the moisture content in sludge

2. decrease the moisture content in sludge

3. decrease the solids concentration

4. maintain the solids concentration

Question Number : 93 Question Id : 871112333 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Air binding phenomena in rapid sand filters occur due to

Options :

1. mud ball formation

2. low temperature

3. excessive negative head

4. higher turbidity in the effluent

Question Number : 94 Question Id : 871112334 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1.
2. 30 ppm
3. 10 ppm
4. 40 ppm

Question Number : 95 Question Id : 871112335 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The efficiency of a sedimentation tank does not depend upon

Options :

1. Detention time
2. Depth of the tank
3. Length of the tank
4. Horizontal velocity of water

Question Number : 96 Question Id : 871112336 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Aeration of water is done to remove

Options :

1. turbidity
2. colour
3. odour
4. hardness

Question Number : 97 Question Id : 871112337 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of 'flow through period' to 'detention period' in a sedimentation tank is called

Options :

1. Surface loading
2. Displacement efficiency
3. Theoretical efficiency
4. Settling velocity

Question Number : 98 Question Id : 871112338 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1.

2. to maintain constant level of water

3. for reversal of flow

4. for isolating

Question Number : 99 Question Id : 871112339 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first stage of natural process of sludge digestion is

Options :

1. Acid fermentation

2. Hydrolysis

3. Acetogenesis

4. Methane formation

Question Number : 100 Question Id : 871112340 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A rainfall may be classified as acidic if its pH value is less than or equal to

Options :

1. 5

2. 5.5

3. 6

4. 6.5

Question Number : 101 Question Id : 871112341 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a major pollutant from automobiles?

Options :

1. Carbon monoxide

2. Unburned hydrocarbons

3. Nitrous oxide

4. Sulfur dioxide

Question Number : 102 Question Id : 871112342 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1. Scrubbers
2. Electrostatic precipitator
3. Fabric filters
4. Gravitational setting chambers

Question Number : 103 Question Id : 871112343 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following collector types is highly efficient in removing particulate matter finer than 5 microns in size having density of 2.7 g/cm^3?

Options :

1. Settling chambers
2. Cyclone
3. Bag filter
4. Electrostatic Precipitator

Question Number : 104 Question Id : 871112344 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During temperature inversion in the atmosphere, air pollutant tends to

Options :

1. accumulate above inversion layer
2. accumulate below inversion layer
3. disperse laterally
4. disperse vertically

Question Number : 105 Question Id : 871112345 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One of the best solutions to get rid of non-biodegradable wastes is _____.

Options :

1. burning
2. dumping
3. burying
4. recycling

Options :

1. plastics and wood
2. cardboard and glass
3. leather and tin cans
4. food wastes and garden trimmings

Question Number : 107 Question Id : 871112347 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The disease caused due to air pollutants emitted by cement industry is _____.

Options :

1. Tuberculosis
2. Silicosis
3. Siderosis
4. Asbestosis

Question Number : 108 Question Id : 871112348 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The putrescible portion of the municipal solid wastes is known as

Options :

1. Rubbish
2. Cinder
3. Garbage
4. Debris

Question Number : 109 Question Id : 871112349 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of normal human hearing is

Options :

1. 10 Hz to 80 Hz
2. 40 Hz to 80 Hz
3. 50 Hz to 15000 Hz
4. 15000 Hz and above only

Options :

1. Levels of noise and exposure to noise
2. Area
3. Pitch
4. Frequency

Question Number : 111 Question Id : 871112351 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The safe stopping sight distance for a design speed of 60 km/hr for 2-lane 2-way traffic is _____. Assume coefficient of friction as 0.37 and the driver perception time as 2.5 seconds.

Options :

1. 80 m
2. 160 m
3. 240 m
4. 320 m

Question Number : 112 Question Id : 871112352 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following tests is used to determine the consistency and flow resistance of bitumen?

Options :

1. Ductility test
2. Penetration test
3. Softening point test
4. Viscosity test

Question Number : 113 Question Id : 871112353 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The lane distribution factor for a single carriageway with two-lanes according to IRC : 37-2012 is _____.

Options :

1. 0.75
2. 0.60

Question Number : 114 Question Id : 871112354 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Legal single axle load is

Options :

1. 8.16 tonnes
2. 10.2 tonnes
3. 19.0 tonnes
4. 24.0 tonnes

Question Number : 115 Question Id : 871112355 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Floating car method is used to

Options :

1. estimate traffic density
2. carryout speed and delay study
3. spot speed study
4. estimate traffic volume

Question Number : 116 Question Id : 871112356 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Road signs meant to inform the road users of certain laws, regulations and prohibitions are known as

Options :

1. Regulatory signs
2. Warning signs
3. Informatory signs
4. Pavements signs

Question Number : 117 Question Id : 871112357 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum radius of central island on a rotary is _____ times the radius of entry curves.

Options :

1. 1.33

4. 1.82

Question Number : 118 Question Id : 871112358 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The size of Theodolite is based on

Options :

1. size of vertical circle
2. size of upper plate
3. size of telescope
4. size of lower plate

Question Number : 119 Question Id : 871112359 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

ABCD is a regular parallelogram plot of land whose angle BAD is 60°. If the bearing of the line AB is 30°, the bearing of CD, is

Options :

1. 90°
2. 120°
3. 210°
4. 270°

Question Number : 120 Question Id : 871112360 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principle that the angle between the tangent and the chord is equal to the angle which that chord subtends in the opposite segment is applied in

Options :

1. Two-Theodolite method
2. Tacheometric method
3. Rankine's method
4. Trigonometric method