

Andhra Pradesh State Council of Higher Education

Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

Question Paper Name :	Civil Engineering 30th May 2024 Shift 1
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Civil Engineering

Section Id :	33300848
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	120
Section Marks :	120
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 3330085641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The elongation of a conical bar of length L under the action of its own weight is _____ that of a prismatic bar of the same length.

Options :

1. ✘ One half
2. ✔ One third
3. ✘ One fourth

4. ✘ Equal to

Question Number : 2 Question Id : 3330085642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A steel cylinder of diameter 100 mm and a copper tube of an outer diameter 200 mm are compressed between the plates of a press. If the ratio of their moduli (steel to copper) is 15/8, what is the ratio of their stresses in steel (σ_s) and copper (σ_c)?

Options :

1. ✔ $\sigma_s/\sigma_c = 15/8$

2. ✘ $\sigma_s/\sigma_c = 8/15$

3. ✘ $\sigma_s/\sigma_c = 1/2$

4. ✘ $\sigma_s/\sigma_c = 2$

Question Number : 3 Question Id : 3330085643 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In _____ bending, the direction of the neutral axis will not be perpendicular to the plane of bending.

Options :

1. ✘ Upward

- 2. ✘ Downward
- 3. ✘ Symmetrical
- 4. ✔ Unsymmetrical

Question Number : 4 Question Id : 3330085644 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the thin cylindrical shell having diameter D and subjected to internal pressure ' p ', the ratio of longitudinal pressure to hoop stress is equal to

Options :

- 1. ✘ 1
- 2. ✔ $\frac{1}{2}$
- 3. ✘ 2
- 4. ✘ $\frac{3}{4}$

Question Number : 5 Question Id : 3330085645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum shear stress in a Mohr's stress circle is equal to

Options :

1. ✓ Radius of the Mohr's circle
2. ✗ Diameter of the Mohr's circle
3. ✗ Square root of the Maximum shear stress
4. ✗ Square of the Maximum shear stress

Question Number : 6 Question Id : 3330085646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A soil has a discharge velocity of $6 \times 10^{-7} \text{ m/s}$ and a void ratio of 0.5. Its seepage velocity is

Options :

1. ✓ $18 \times 10^{-7} \text{ m/s}$
2. ✗ $12 \times 10^{-7} \text{ m/s}$
3. ✗ $6 \times 10^{-7} \text{ m/s}$
4. ✗ $3 \times 10^{-7} \text{ m/s}$

Question Number : 7 Question Id : 3330085647 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an element of a stressed body is under the state of pure shear of 60 N/mm^2 , the magnitude of maximum principal stress at that location is

Options :

1. ✘ 30 N/mm^2
2. ✔ 60 N/mm^2
3. ✘ 90 N/mm^2
4. ✘ 120 N/mm^2

Question Number : 8 Question Id : 3330085648 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The error in discharge due to error in the measurement of head over a triangular notch is given by:

Options :

1. ✘ $\frac{\partial Q}{Q} = \frac{1 dH}{2 H}$
2. ✘ $\frac{\partial Q}{Q} = \frac{3 dH}{2 H}$

3. ✓ $\frac{\partial Q}{Q} = \frac{5 dH}{2 H}$

4. ✗ $\frac{\partial Q}{Q} = \frac{7 dH}{2 H}$

Question Number : 9 Question Id : 3330085649 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The torque that produces a twist of one radian in a shaft of unit length is called

Options :

1. ✗ Shear Modulus

2. ✗ Torsion

3. ✗ Torsional stress

4. ✓ Torsional rigidity

Question Number : 10 Question Id : 3330085650 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simply supported beam of span L and constant width b carries a point load W at mid span. The depth of the beam required at the mid span to make the beam of the uniform strength for maximum extreme fibre stress p

Options :

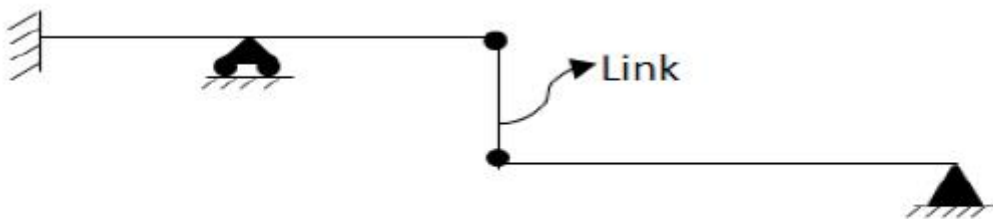
1. ✘ $d = \frac{3WL}{2bp}$

2. ✔ $d = \sqrt{\frac{3WL}{2bp}}$

3. ✘ $d^2 = \frac{3WL}{2bp}$

4. ✘ $d = \frac{3WL}{2bp^2}$

Question Number : 11 Question Id : 3330085651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0



What is the degree of redundancy for the given beam?

Options :

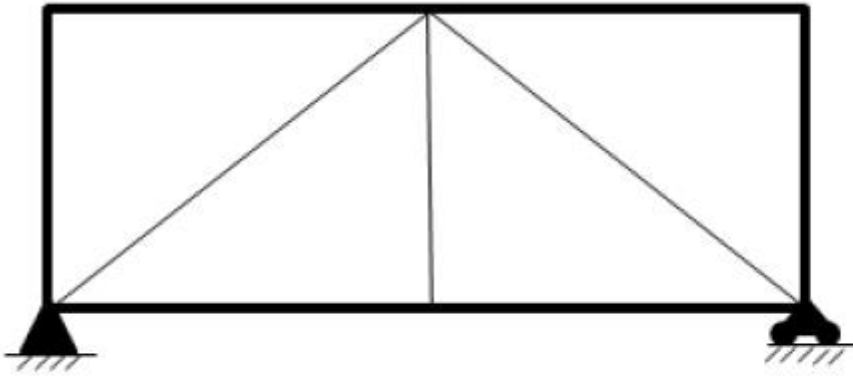
1. ✘ 4

2. ✘ 3

3. ✘ 2

4. ✔ 1

Question Number : 12 Question Id : 3330085652 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0



What is the degree of static indeterminacy for the given truss?

Options :

1. ✘ 1

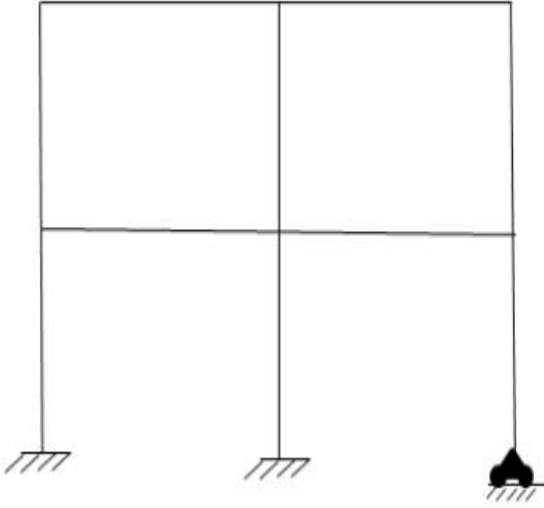
2. ✘ 2

3. ✔ 0

4. ✘ 4

Question Number : 13 Question Id : 3330085653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the Kinematic Indeterminacy for the given frame without axial deformation?



Options :

- 1. ✘ 8
- 2. ✔ 20
- 3. ✘ 12
- 4. ✘ 14

Question Number : 14 Question Id : 3330085654 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simply supported beam of span 4 m subjected to two-point loads of 60 kN and 40 kN at a distance of 1 m from either supports respectively. An equivalent beam of same span subjected to 50 kN load at the mid span which produces a vertical deflection of 40 mm and 60 mm at distance of 1 m from either supports. Determine the deflection under the load of 50 kN.

Options :

1. ✘ 104

2. ✔ 96

3. ✘ 48

4. ✘ 50

Question Number : 15 Question Id : 3330085655 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A saturated soil mass has a total density 22 kN/m^3 and a water content of 10%. what is the dry density of the soil are

Options :

1. ✘ 12 kN/m^3

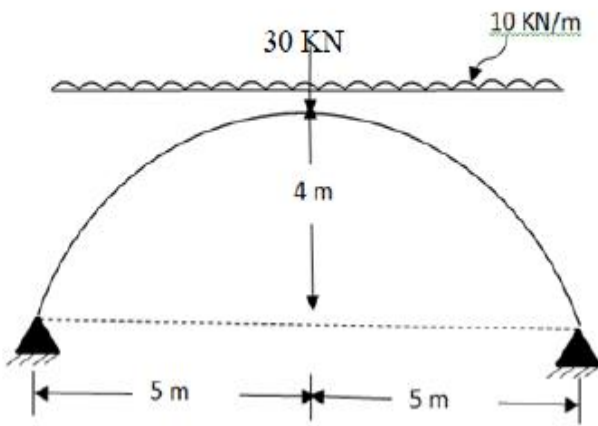
2. ✔ 20 kN/m^3

3. ✘ 22 kN/m^3

4. ✘ 24 kN/m^3

Question Number : 16 Question Id : 3330085656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the horizontal thrust at the ends of the arch as shown in the figure?



Options :

1. ✘ 25

2. ✔ 50

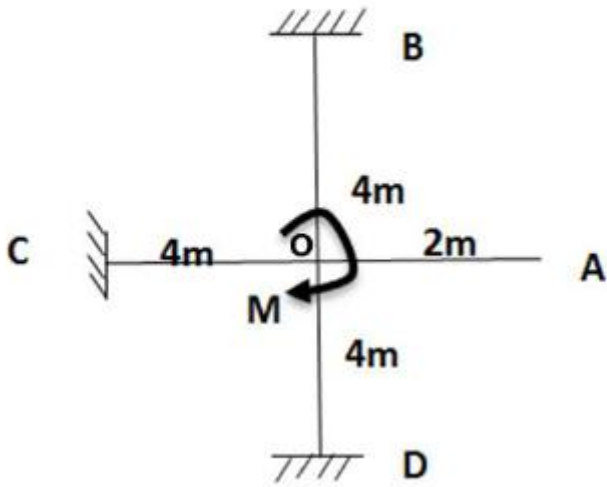
3. ✘ 75

4. ✘ 100

Question Number : 17 Question Id : 3330085657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

What is the moment at the joint C shown in the figure below



Options :

1. ✘ $\frac{M}{2}$

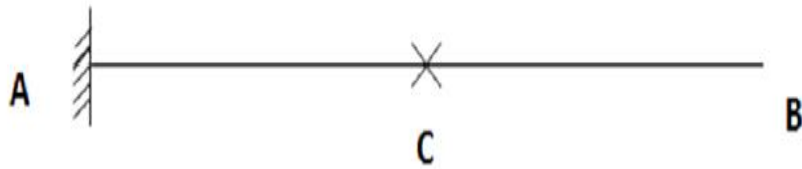
2. ✘ $\frac{M}{3}$

3. ✔ $\frac{M}{6}$

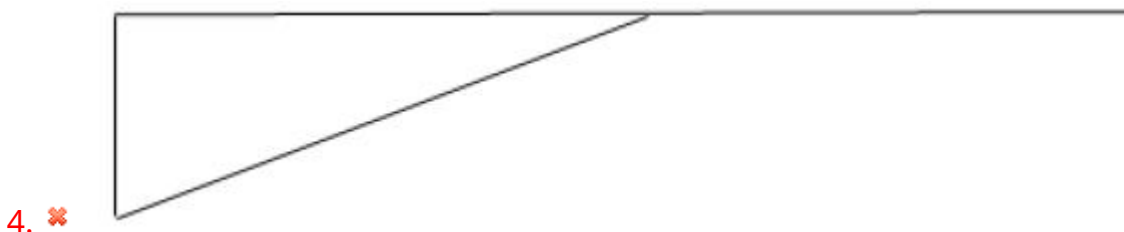
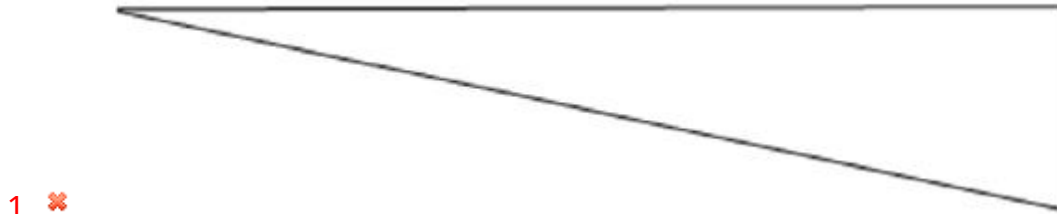
4. ✘ $\frac{M}{8}$

Question Number : 18 Question Id : 3330085658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the shape of the ILD for bending moment at point 'C' of a cantilever beam when the unit load is between C and B as shown in figure.



Options :



Question Number : 19 Question Id : 3330085659 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A beam of span “ l ” and is fixed at it’s both ends. If that beam is subjected to a concentrated load at middle of the span, then what is the fixed end moment at the left end?

Options :

1. ✘ $\frac{Wl}{2}$

2. ✔ $\frac{Wl}{8}$

3. ✘ $\frac{Wl}{4}$

4. ✘ $\frac{Wl}{12}$

Question Number : 20 Question Id : 3330085660 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider a beam which is fixed at end A and simply supported at end B of span $2l$. If the support B settles by an amount δ , then what is the fixed end moment (FEM) developed at end A.

Options :

1. ✘ $\frac{6EI\delta}{L^2}$

2. ✘ $\frac{3EI\delta}{L^2}$

3. ✘ $\frac{6EL\delta}{4L^2}$

4. ✔ $\frac{3EI\delta}{4L^2}$

Question Number : 21 Question Id : 3330085661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Normally, the tensile strength of concrete is about..... of its compressive strength.

Options :

1. ✔ 10 to 12%

2. ✘ 15 to 20%

3. ✘ 20 to 25%

4. ✘ 25 to 30%

Question Number : 22 Question Id : 3330085662 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a simply supported reinforced concrete beam, the reinforcement is placed

Options :

1. ✓ Below the neutral axis
2. ✗ Above the neutral axis
3. ✗ At the neutral axis
4. ✗ Equally distributed

Question Number : 23 Question Id : 3330085663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The section in which concrete is not fully stressed to its maximum permissible value while stress in steel reaches its maximum value, is called

Options :

1. ✓ Under reinforced section
2. ✗ Critical section
3. ✗ Over reinforced section
4. ✗ Balanced section

Question Number : 24 Question Id : 3330085664 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a beam, the transverse reinforcement is provided at _____ to the span of the slab

Options :

1. ✘ 45°

2. ✘ 60°

3. ✘ 75°

4. ✔ 90°

Question Number : 25 Question Id : 3330085665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The minimum size of the reinforcement bar in RCC column is

Options :

1. ✘ 8 mm

2. ✘ 6 mm

3.

✓ 12 mm

4. ✘ 10 mm

Question Number : 26 Question Id : 3330085666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maximum reinforcement in an RCC beam of dimension $b \times d$ shall not exceed to

Options :

1. ✘ 0.06 bd

2. ✓ 0.04 bd

3. ✘ 0.02 bd

4. ✘ 0.08 bd

Question Number : 27 Question Id : 3330085667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Lateral ties in RC columns are provided to resist

Options :

1. ✘

Bending moment

2. ✘ Shear
3. ✔ Buckling of longitudinal steel bars
4. ✘ Both bending moment and shear

Question Number : 28 Question Id : 3330085668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maximum longitudinal reinforcement in columns shall not exceed

Options :

1. ✘ 6% of effective sectional area
2. ✘ 4% of gross sectional area
3. ✔ 6% of gross sectional area
4. ✘ 4% of effective area

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The grade of concrete used for prestressed concrete shall not be less than

Options :

1. ✘ M20

2. ✘ M25

3. ✔ M35

4. ✘ M60

Question Number : 30 Question Id : 3330085670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The profile of the prestressing steel in prestressed concrete member follows

Options :

1. ✘ Axial force diagram

2. ✘ Shear force diagram

3. ✔ Bending moment diagram

4. ✘ Thrust diagram

Question Number : 31 Question Id : 3330085671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following statements regarding coefficient of consolidation C_v is correct

Options :

1. ✔ $C_v \propto k$

2. ✘ $C_v \propto \frac{1}{k}$

3. ✘ $C_v \propto m_v$

4. ✘ $C_v \propto a_v$

Question Number : 32 Question Id : 3330085672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Where do you provide bearing stiffeners?

Options :

1. ✘ At supports
2. ✘ At the points of application of concentrated loads
3. ✔ At supports and at the points of application of concentrated loads
4. ✘ At points of maximum bending moment

Question Number : 33 Question Id : 3330085673 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is reversible?

Options :

1. ✘ Vertical movement due to sinking of supports
2. ✘ Movements due to shrinkage and creep
3. ✘ Movements due to prestressing
4. ✔ Longitudinal movement due to temperature variation

Question Number : 34 Question Id : 3330085674 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Plastic modulus for a circular section of diameter 'd' is

Options :

1. ✘ $d^3/3$

2. ✔ $d^3/6$

3. ✘ $d^3/2$

4. ✘ $2d^3/3$

Question Number : 35 Question Id : 3330085675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cohesionless soil having an angle of shearing resistance of ϕ , is standing at a slope of angle of 'i'.
The factor of safety of the slope is

Options :

1. ✘ $\frac{\tan i}{\tan \phi}$

2. ✔ $\frac{\tan \phi}{\tan i}$

3. ✘ $\tan i - \tan \emptyset$

4. ✘ $\tan \emptyset - \tan i$

Question Number : 36 Question Id : 3330085676 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Plastic analysis must satisfy the following conditions

Options :

1. ✘ Mechanism condition

2. ✘ Mechanism condition and equilibrium condition

3. ✔ Mechanism condition, equilibrium condition and plastic moment condition

4. ✘ Equilibrium condition and plastic moment condition

Question Number : 37 Question Id : 3330085677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the degrees of redundancy for a structure is 'r', the number of plastic hinges required to convert a stable structure into an unstable mechanism is

Options :

1.

✓ $r + 1$

2. ✗ $r + 2$

3. ✗ $r - 1$

4. ✗ $r - 2$

Question Number : 38 Question Id : 3330085678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following component has more influence on the mechanical properties of steel?

Options :

1. ✗ Sulphur

2. ✗ Manganese

3. ✗ Silicon

4. ✓ Carbon

Question Number : 39 Question Id : 3330085679 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Negative skin friction in a soil is considered when the pile is constructed through a

Options :

1. ✘ Dense course sand
2. ✘ Dense fine sand
3. ✔ Fill material
4. ✘ Over consolidated stiff clay

Question Number : 40 Question Id : 3330085680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per IS-875, where access is not provided except for maintenance, live load on roofs, while designing a truss, in respect of its plan area is adopted as

Options :

1. ✘ 100 N/sq.m
2. ✘ 400 N/sq.m
3. ✔ 750 N/sq.m

4. ✘ 1500 N/sq.m

Question Number : 41 Question Id : 3330085681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a clay has an air content of 38%, its degree of saturation is _____

Options :

1. ✘ 38%

2. ✘ 72%

3. ✔ 62%

4. ✘ 28%

Question Number : 42 Question Id : 3330085682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Effective size of a soil is _____

Options :

1. ✘ D_{30}

2. ✘ D₆₀

3. ✘ D₅₀

4. ✔ D₁₀

Question Number : 43 Question Id : 3330085683 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Toughness Index gives a measure of Shear Strength of soil at _____

Options :

1. ✘ Liquid Limit

2. ✔ Plastic Limit

3. ✘ Shrinkage Limit

4. ✘ Dry State

Question Number : 44 Question Id : 3330085684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a clay deposit undergoes an ultimate consolidation settlement of 45mm under single drainage condition, the ultimate consolidation settlement of the same clay deposit under double drainage condition will be _____

Options :

1. ✘ 90mm

2. ✘ 22.5mm

3. ✔ 45mm

4. ✘ 55mm

Question Number : 45 Question Id : 3330085685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The shear test conducted for evaluation of shear strength of soft clay is _____

Options :

1. ✘ UCC test

2. ✘ Direct Shear Test

3. ✘ Tri-axial Test

4. ✔

Vane Shear Test

Question Number : 46 Question Id : 3330085686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Name the roller best suitable for compaction of Cohesionless soils

Options :

1. ✘ Sheep Foot Roller
2. ✘ Grid Roller
3. ✔ Vibratory Roller
4. ✘ Smooth Steel Roller

Question Number : 47 Question Id : 3330085687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At Shrinkage Limit, the soil is _____

Options :

1. ✔ Fully Saturated
2. ✘

Partially Saturated

3. ✘ Dry

4. ✘ 50% saturated

Question Number : 48 Question Id : 3330085688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Inclination of failure plane with horizontal in passive case behind a Retaining wall with smooth vertical with sand Backfill having angle of shearing resistance of 34° is _____

Options :

1. ✘ 62°

2. ✘ 56°

3. ✔ 28°

4. ✘ 39°

Question Number : 49 Question Id : 3330085689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When retaining wall moves away from the backfill, the pressure exerted on the wall is known as

Options :

1. ✘ Passive earth pressure
2. ✘ Swelling pressure
3. ✘ Pore pressure
4. ✔ Active earth pressure

Question Number : 50 Question Id : 3330085690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If Corrected Value of Standard Penetration Resistance for overburden (N_0) in a saturated Silty sand deposit is 23, then the corrected value of N after applying Dilatancy correction is _____

Options :

1. ✔ 19
2. ✘ 27
3. ✘ 23
4. ✘

Question Number : 51 Question Id : 3330085691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A horizontal water jet with a velocity of 10 m/s and cross-sectional area of 10mm^2 strikes a flat plate held normal to the flow direction. The density of water is 1000kg/m^3 . The total force on the plate due to the jet is

Options :

1. ✘ 100 N

2. ✘ 10 N

3. ✔ 1N

4. ✘ 0.1N

Question Number : 52 Question Id : 3330085692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 1:100 scale model of spillway is to be tested in the laboratory. The discharge in the prototype is $1000\text{ m}^3/\text{s}$. The discharge to be maintained in the model test is

Options :

1. ✔ $0.01\text{ m}^3/\text{s}$

2. ✘ $0.10 \text{ m}^3/\text{s}$

3. ✘ $100 \text{ m}^3/\text{s}$

4. ✘ $10 \text{ m}^3/\text{s}$

Question Number : 53 Question Id : 3330085693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find the rate of flow for a rectangular channel 4m wide and a uniform flow depth of 2.0m. The channel is having bed slope as 1 in 100. The Chezy's constant C is 55

Options :

1. ✘ $444 \text{ m}^3/\text{s}$

2. ✘ $5.5 \text{ m}^3/\text{s}$

3. ✘ $4.4 \text{ m}^3/\text{s}$

4. ✔ $44 \text{ m}^3/\text{s}$

Question Number : 54 Question Id : 3330085694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A body floating in a water is in a stable state of equilibrium if its

Options :

1. ✘ Centre of gravity is below its centre of buoyancy
2. ✔ Metacentre lies above its centre of gravity
3. ✘ Metacentre coincides with its centre of gravity
4. ✘ Metacentre lies below its centre of gravity

Question Number : 55 Question Id : 3330085695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The Froude number of flow in a rectangular channel is 0.8. If the depth of flow is 2.5 m, the critical depth is _____. Take $g = 10 \text{ m/s}^2$.

Options :

1. ✘ $10^{2/3} \text{ m}$
2. ✘ 10^0 m
3. ✘ 10^3 m

4. ✓ $10^{1/3} \text{ m}$

Question Number : 56 Question Id : 3330085696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The unit of dynamic viscosity of a fluid

Options :

1. ✗ $\frac{m^2}{s}$

2. ✗ $\frac{Pa - s}{m^2}$

3. ✓ $\frac{N - s}{m^2}$

4. ✗ $\frac{kg - s^2}{m^2}$

Question Number : 57 Question Id : 3330085697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The material that exhibits the different properties in different directions is said to be

Options :

1. ✗ Homogeneous

2. ✓ Anisotropic

3. ✗ Viscoelastic

4. ✗ Isotropic

Question Number : 58 Question Id : 3330085698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reading of differential manometer of a Venturimeter, placed at 45° to the horizontal is 14 cm. If the Venturimeter is turned to horizontal position, the manometer reading will be

Options :

1. ✗ Zero m

2. ✗ $\frac{14}{\sqrt{2}}$ cm

3. ✗ $14\sqrt{2}$ cm

4. ✓ 14 cm

Question Number : 59 Question Id : 3330085699 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

X-component of velocity in a 2-D incompressible flow is given by $u=y^2 + 4xy$. If Y-component of the velocity v equal to zero at $y=0$, then the expression for v is given by

Options :

1. ✘ $2y^2$

2. ✔ $-2y^2$

3. ✘ $4y$

4. ✘ $2xy$

Question Number : 60 Question Id : 3330085700 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A hydraulic turbine has a discharge of $5 \text{ m}^3/\text{s}$, when operating under a head of 60 m with a speed of 500 revolutions per minute. If it is to operate under a head of 15 m, for the same discharge, the rotational speed in revolutions per minute will approximately be

Options :

1. ✘ 2000

2. ✘ 125

3. ✘ 500

4. ✓ 250

Question Number : 61 Question Id : 3330085701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Isohyetal method gives accurate mean areal depth of rainfall

Options :

1. ✘ In a plain country
2. ✘ In a gently sloping basin
3. ✓ In an undulating country
4. ✘ When the precipitation includes snow-melt

Question Number : 62 Question Id : 3330085702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a dam, longitudinal joints are provided with

Options :

1. ✘ U type seals

2. ✓ Z type seals

3. ✗ M type seals

4. ✗ V type seals

Question Number : 63 Question Id : 3330085703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Depth-Area-Duration curves of precipitation drawn as a

Options :

1. ✓ Minimizing envelopes through the appropriate data points

2. ✗ Maximizing envelopes through the appropriate data points

3. ✗ Best fit mean curves through the appropriate data points

4. ✗ Best fit mean straight lines through the appropriate data points

Question Number : 64 Question Id : 3330085704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water present in an artesian aquifer is usually

Options :

1. ✘ At sub-atmospheric pressure
2. ✘ At atmospheric pressure
3. ✘ At 0.5 times of the atmospheric pressure
4. ✔ Above atmospheric pressure

Question Number : 65 Question Id : 3330085705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hydrograph is a plot of

Options :

1. ✘ Rainfall intensity against time
2. ✔ Discharge against time
3. ✘ Cumulative rainfall against time
4. ✘ Cumulative runoff at time

Question Number : 66 Question Id : 3330085706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pick up the incorrect crop and its harvesting time relation

Options :

1. ✘ Potato-February
2. ✔ Tobacco-December
3. ✘ Gram - March to April
4. ✘ Rice-October to November

Question Number : 67 Question Id : 3330085707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The optimum depth of kor-watering for rice crop is

Options :

1. ✔ 19cm
2. ✘ 29cm
3. ✘ 59cm

4. ✖ 89cm

Question Number : 68 Question Id : 3330085708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a super passage

Options :

1. ✖ Drainage is carried below the canal and F.S.L of the canal is lower than the underside of drain
2. ✔ Drainage is carried over the canal and F.S.L of the canal is lower than the underside of drain
3. ✖ Drainage is carried below the canal and F.S.L of the canal is above the underside of drain
4. ✖ Drainage and canal at same level

Question Number : 69 Question Id : 3330085709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A turbine develops 2512 kW at 240 rpm. The approximate torque in the shaft is

Options :

1. ✖ 400 kN.m

2. ✘ 3335 kN.m

3. ✘ 1000 kN.m

4. ✔ 100 kN.m

Question Number : 70 Question Id : 3330085710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The discharge from weirs without end contractions are measured by

Options :

1. ✘ Manning's formula

2. ✘ Chezy's formula

3. ✔ Bazin's formula

4. ✘ Khosla's theory

Question Number : 71 Question Id : 3330085711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As a general rule the rate of water required per capita per day may be considered minimum for domestic and non-domestic needs for communities with population 20000 to 100,000 together with full flushing system is _____

Options :

1. ✘ 40 to 70 lphd
2. ✘ 70 to 100 lphd
3. ✔ 100 to 150 lphd
4. ✘ 150 to 200 lphd

Question Number : 72 Question Id : 3330085712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The stokes equation giving the terminal settling velocity of a discrete spherical particle is applicable for particle size range of

Options :

1. ✔ 0.2 mm to 0.0002mm
2. ✘ more than 0.2mm
3. ✘ less than 0.0002 mm
4. ✘

✘ any particle size

Question Number : 73 Question Id : 3330085713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which is the effective pH range for aluminum sulfate as coagulant in water treatment?

Options :

1. ✘ 8.5 and above
2. ✘ 3.5 to 6.5 and above 8.5
3. ✘ 4 to 7 and above 9
4. ✔ 6.5 to 8.0

Question Number : 74 Question Id : 3330085714 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following processes / mechanism (most appropriate) are thought to occur in the filtration process used in the water treatment?

Options :

Ionic layer compression, Mechanical straining, adsorption and charge neutralization, interparticle bridging

1. ✘

2.

Mechanical straining, sedimentation and adsorption, biological metabolism and electrolytic changes



Mechanical straining, Ionic layer compression, adsorption, and charge neutralization, electrolytic changes

3. ✘

Sedimentation and adsorption, charge neutralization, interparticle bridging and electrolytic changes

4. ✘

Question Number : 75 Question Id : 3330085715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the pH of the chlorinated water is upto 5.5, the predominant constituent in the free available chlorine is _____

Options :

1. ✓ HOCL

2. ✘ OCL⁻

3. ✘ both HOCL and OCL⁻ but predominantly OCL⁻

4. ✘ both HOCL and OCL⁻ in almost equal proportions

Question Number : 76 Question Id : 3330085716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The most appropriate chemical required for the removal of hardness in water due to the presence of calcium sulphate or chloride is _____

Options :

1. ✘ Lime

2. ✘ Lime and soda ash

3. ✔ Soda ash

4. ✘ NaCl

Question Number : 77 Question Id : 3330085717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

In general, the minimum value of the ratio of BOD to COD for biodegradability of wastewater without acclimatization will be

Options :

1. ✘ 0.2

2. ✘ 0.3

3. ✘ 0.4

4.

0.6



Question Number : 78 Question Id : 3330085718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Food to Microorganisms ratio used in the activated sludge process is given by ____, Where V is the volume of the reactor, S_0 is the influent substrate concentration, SRT is the solids retention time, X is the MLSS and Q is the rate of inflow of sewage

Options :

1. ✘ $SRT \cdot X / Q S_0$

2. ✔ $Q S_0 / V X$

3. ✘ $S_0 X / Q \cdot SRT$

4. ✘ $SRT \cdot S_0 / V X$

Question Number : 79 Question Id : 3330085719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The proportional perimeter of circular sewer section when the sewage is running partially full is ____

Options :

1. ✔

$$\theta / 360^{\circ}$$

2. ✘ $\pi D / 360^{\circ}$

3. ✘ $\pi D \theta / 360^{\circ}$

4. ✘ $360^{\circ} / \pi D$

Question Number : 80 Question Id : 3330085720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The incubation period and the temperature used normally for the BOD is estimated in the laboratory are _____ and _____

Options :

1. ✘ 5days, 27°C

2. ✘ 7days, 25°C

3. ✔ 5days, 20°C

4. ✘ 5days, 15°C

Question Number : 81 Question Id : 3330085721 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Land sea breeze and Sea land breeze occur on

Options :

1. ✘ Macro meteorological scale

2. ✔ Meso meteorological scale

3. ✘ Micro meteorological scale

4. ✘ Not on Meteorological scale

Question Number : 82 Question Id : 3330085722 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Impacts of Air Pollution on plants are

Options :

1. ✔ Chlorosis and Necrosis

2. ✘ Asthma

3. ✘ Bronchitis

Pneumoconiosis

4. ✘

Question Number : 83 Question Id : 3330085723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When two plates are placed end to end and are jointed by cover plates, the joint is known as

Options :

1. ✘ Lap joint

2. ✘ Butt joint

3. ✘ Chain riveted lap joint

4. ✔ Double cover butt joint

Question Number : 84 Question Id : 3330085724 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hierarchy of options for Integrated Municipal Solid Waste Management are

Options :

1. ✔ Reduction – Recycling – Recovery – Disposal

2. ✘ Disposal – Reduction – Recovery – Recycling

3. ✘ Disposal – Recovery – Recycling – Reduction

4. ✘ Reduction – Disposal – Recycling – Recovery

Question Number : 85 Question Id : 3330085725 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a factor affecting Municipal Solid Waste generation rate

Options :

1. ✘ Collection frequency

2. ✘ Characteristics of populace

3. ✘ Legislation

4. ✔ Mode of Transport

Question Number : 86 Question Id : 3330085726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Municipal Solid Waste generation rate in India is

Options :

1. ✓ 0.2 to 0.6 kg/capita/day
2. ✗ 1.2 to 1.6 kg/capita/day
3. ✗ 2.2 to 2.6 kg/capita/day
4. ✗ 5.2 to 5.6 kg/capita/day

Question Number : 87 Question Id : 3330085727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Permissible limits of Noise for day time and night time for residential areas in India are

Options :

1. ✓ 55 dB and 45 dB
2. ✗ 75 dB and 70 dB
3. ✗ 65 dB and 55 dB
4. ✗ 50 dB and 40 dB

Question Number : 88 Question Id : 3330085728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Noise levels can be measured by an instrument called

Options :

1. ✘ Anemometer
2. ✔ Sound level meter
3. ✘ High volume air sampler
4. ✘ Wind vane

Question Number : 89 Question Id : 3330085729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Auditory effect of Noise is

Options :

1. ✘ Hypertension
2. ✘ Annoyance
3. ✔ Hearing impairment

4. ✘ Headache

Question Number : 90 Question Id : 3330085730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Noise Pollution can be controlled by the following personal protective equipment

Options :

1. ✘ Barriers

2. ✔ Ear plugs and ear muffs

3. ✘ Green belt

4. ✘ Enclosures

Question Number : 91 Question Id : 3330085731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Locations where traffic on minor road is controlled by stop or give way sign when the minor road crosses a major road, are known as

Options :

1. ✘ Rotary intersection

2. ✖ Uncontrolled intersection

3. ✔ Priority intersection

4. ✖ Unsignalized intersection

Question Number : 92 Question Id : 3330085732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For highway alignment, the ideal transition curve is _____

Options :

1. ✖ Cubic parabola

2. ✔ Spiral

3. ✖ Lemniscate

4. ✖ Parabola

Question Number : 93 Question Id : 3330085733 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The camber provided to Cement Concrete roads in heavy rainfall areas is

Options :

1. ✘ 3.0%

2. ✘ 1.7 %

3. ✔ 2.0%

4. ✘ 2.5%

Question Number : 94 Question Id : 3330085734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For mixed traffic conditions, super elevation is designed for _____ % of design speed

Options :

1. ✘ 100

2. ✘ 50

3. ✘ 65

4. ✔ 75

Question Number : 95 Question Id : 3330085735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The 'design gradient' is

Options :

1. ✘ Limiting gradient
2. ✔ Ruling gradient
3. ✘ Minimum gradient
4. ✘ Exceptional gradient

Question Number : 96 Question Id : 3330085736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The design speed of road is _____ percentile speed

Options :

1. ✘ 85th
2. ✘ 50th

3. ✓ 98th

4. ✘ 80th

Question Number : 97 Question Id : 3330085737 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

‘Narrow Bridge ‘ sign is _____ sign

Options :

1. ✓ Warning

2. ✘ Informatory sign

3. ✘ Regulatory

4. ✘ Mandatory

Question Number : 98 Question Id : 3330085738 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At a four-legged intersection, a traffic rotary is more advantageous than a signalized intersection, when the proportion of right- turning traffic exceeds _____

Options :

1. ✘ 40 percent
2. ✔ 30 percent
3. ✘ 50 percent
4. ✘ 20 percent

Question Number : 99 Question Id : 3330085739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Cement concrete pavement slab made of Pavement Quality Concrete should sustain a flexural stress up to

Options :

1. ✘ 40 kg/cm²
2. ✔ 45 kg/cm²
3. ✘ 50 kg/cm²
4. ✘ 35 kg/cm²

Question Number : 100 Question Id : 3330085740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

On roads, with divided carriage way with four lanes each and the number of heavy vehicles is considered along each direction, the lane distribution factor is

Options :

1. ✓ 0.45

2. ✗ 0.40

3. ✗ 0.60

4. ✗ 0.75

Question Number : 101 Question Id : 3330085741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Instrument used to set out a right angle from chain line

Options :

1. ✗ Ranging rod

2. ✗ Plumb bob

3. ✓ Cross -staff

Levelling staff

4. ✘

Question Number : 102 Question Id : 3330085742 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The nature of correction for the sagging of chain is

Options :

1. ✓ Negative
2. ✘ Positive
3. ✘ Neutral
4. ✘ Both Negative and Positive as the case may be

Question Number : 103 Question Id : 3330085743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The vertical angle made by the magnetic needle in a compass with the horizontal is known as ____ of the needle

Options :

1. ✘ Sag

2. ✓ Dip

3. ✘ Declination

4. ✘ Variation

Question Number : 104 Question Id : 3330085744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The staff reading taken on a point of known elevation is known as

Options :

1. ✘ Intermediate sight

2. ✓ Back sight

3. ✘ Fore sight

4. ✘ Turning sight

Question Number : 105 Question Id : 3330085745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rule used to balance a traverse when the linear and angular measurements are equally precise is known as

Options :

1. ✘ Axis correction
2. ✘ Transit
3. ✔ Bowditch
4. ✘ Gale's rule

Question Number : 106 Question Id : 3330085746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following sentences are correct as per the uses of flow-duration curves are concerned?

- (i) determining dependable flow which information is required for planning of water resources and hydropower projects
- (ii) designing a drainage system
- (iii) flood control studies

Options :

1. ✘ (i) only
2. ✔ (i), (ii) and (iii)
3. ✘ (i) and (ii) only

4. ✘ (i) and (iii) only

Question Number : 107 Question Id : 3330085747 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The surveying method which is carried out with bodies of water for the purpose of navigation, water supply and harbor works is called as

Options :

1. ✘ Topographic surveying

2. ✘ City surveying

3. ✘ Cadastral surveying

4. ✔ Hydrographic surveying

Question Number : 108 Question Id : 3330085748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the artificial causes of waterlogging?

Options :

1. ✘ Topography

2.

✓ Defective irrigation practices

3. ✘ Geological features

4. ✘ Rainfall characteristics of an area

Question Number : 109 Question Id : 3330085749 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eigen values of $\begin{bmatrix} 0 & i \\ -i & 0 \end{bmatrix}$ are

Options :

1. ✘ i, i

2. ✘ $i, -i$

3. ✘ $-1, -1$

4. ✓ $-1, 1$

Question Number : 110 Question Id : 3330085750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system of equations $2x + 3y + 5z = 9; 7x + 3y - 2z = 8; 2x + 3y + \lambda z = \mu$ have unique solution -

Options :

1. ✘ For all values of λ
2. ✔ For all values of λ except $\lambda = 5$
3. ✘ Only at $\lambda = 5$
4. ✘ Does not depend on λ

Question Number : 111 Question Id : 3330085751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = x^2 - 153 = 0$ then the iterative formula for Newton Raphson Method is

Options :

1. ✔ $x(n + 1) = 0.5 \left[x(n) + \frac{153}{x(n)} \right]$
2. ✘ $x(n + 1) = 0.5 \left[x(n) - \frac{153}{x(n)} \right]$
3. ✘ $x(n + 1) = \left[x(n) + \frac{153}{x(n)} \right]$
4. ✘

$$x(n+1) = \left[x(n) - \frac{153}{x(n)} \right]$$

Question Number : 112 Question Id : 3330085752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The directional derivative of $f(x, y) = x^2y^3 + xy$ at $(2, 1)$ in the direction of a unit vector which makes an angle of $\frac{\pi}{3}$ with x-axis

Options :

1. ✓ $\frac{5 + 14\sqrt{3}}{2}$

2. ✗ $\frac{5 + 14\sqrt{2}}{2}$

3. ✗ $\frac{10 + \sqrt{3}}{2}$

4. ✗ $\frac{15 + \sqrt{3}}{2}$

Question Number : 113 Question Id : 3330085753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the differential equation $\frac{dx}{dt} = x^2$ with $x(0) = 1$ will tend to infinity as

Options :

1. ✓ as $t \rightarrow 1$
2. ✗ as $t \rightarrow 2$
3. ✗ as $t \rightarrow 0.5$
4. ✗ as $t \rightarrow \infty$

Question Number : 114 Question Id : 3330085754 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The General solution of $z = px + qy - np^{\frac{1}{n}}q^{\frac{1}{n}}$ is

Options :

1. ✗ $z = ax + by$
2. ✗ $z = px + qy + na^n b^n$
3. ✗ $z = ax + by + na^{\frac{1}{n}} b^{\frac{1}{n}}$
4. ✓ $z = ax + by - na^{\frac{1}{n}} b^{\frac{1}{n}}$

Question Number : 115 Question Id : 3330085755 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x)$ is differentiable function in x then it is

Options :

1. ✘ Unbounded
2. ✘ Bounded
3. ✘ Single Valued
4. ✔ Continuous

Question Number : 116 Question Id : 3330085756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(z) = \frac{1}{2} \log_e(x^2 + y^2) + i \tan^{-1}\left(\frac{\alpha x}{y}\right)$ be an analytic function then α is

Options :

1. ✘ 1
2. ✔ -1

3. ✘ 2

4. ✘ -2

Question Number : 117 Question Id : 3330085757 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rank of the matrix $\begin{bmatrix} 1 & 1 & 1 \\ a & a & a \\ a^2 & a^2 & a^2 \end{bmatrix}$ is

Options :

1. ✘ 3

2. ✘ 2

3. ✔ 1

4. ✘ 4

Question Number : 118 Question Id : 3330085758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Mean of the density function is $f(x) = \lambda e^{-\lambda x}, x > 0$

Options :

1. ✓ $\frac{1}{\lambda}$

2. ✗ λ^2

3. ✗ $\frac{1}{\lambda^2}$

4. ✗ 1

Question Number : 119 Question Id : 3330085759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The values of a and b for the function $f(z) = (x^2 + a y^2 - 2 xy) + i (b x^2 - y^2 + 2 xy)$ to be analytic are

Options :

1. ✗ $a = 1, b = -1$

2. ✓ $a = -1, b = 1$

3. ✗ $a = 1, b = 1$

4. ✗ $a = 1, b = 0$

Question Number : 120 Question Id : 3330085760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the function $f(x) = x^2 e^{-x}$, the maximum occurs when x is equal to

Options :

1. ✓ 2

2. ✗ 1

3. ✗ -1

4. ✗ 0