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. ✖ $\sigma_s/\sigma_c = ½$

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. ✔ $^1/_2$

3. ✖ 2

4. ✖ $^3/_4$

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 $6X10^{-7} m/s$ and a void ratio of 0.5. Its seepage velocity is

Options :

1. ✔ $18x10^{-7}$ m/s

2. ✖ $12x10^{-7}$ m/s

3. ✖ $6x10^{-7}$ m/s

4. ✖ $3x10^{-7}$ 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 :

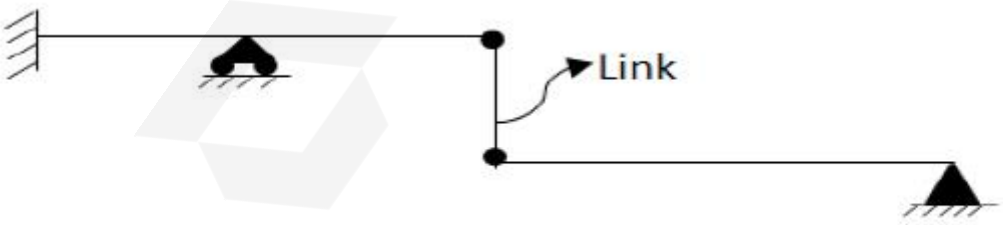
1. ✖ $d = \frac{3WL}{2bp}$

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 :

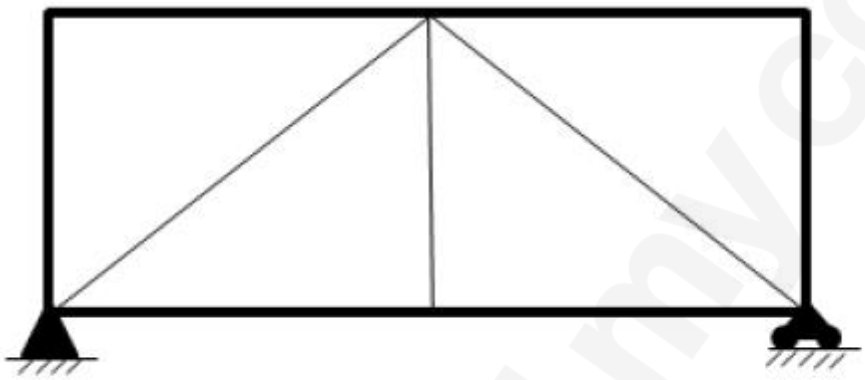
1. ✖ 4

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

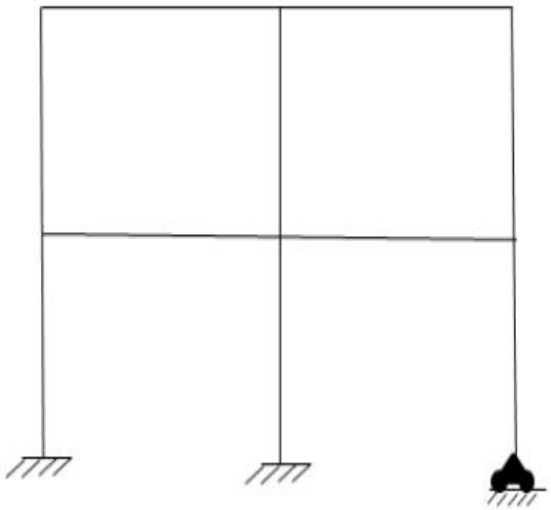
2. ✖ 2

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

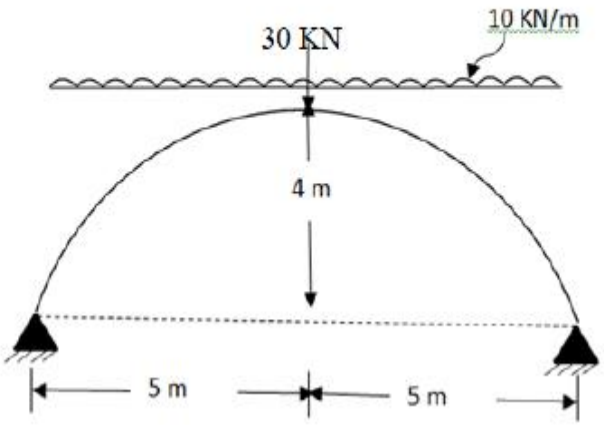
2. ✔ 20 kN/m^3

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

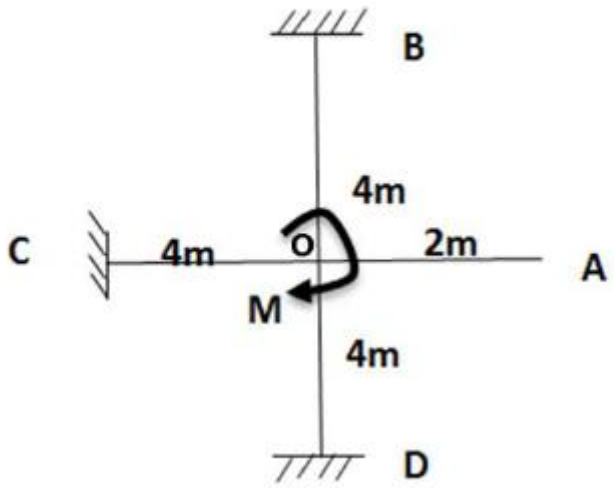
3. ✖ 75

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. ✖ $\frac{M}{2}$

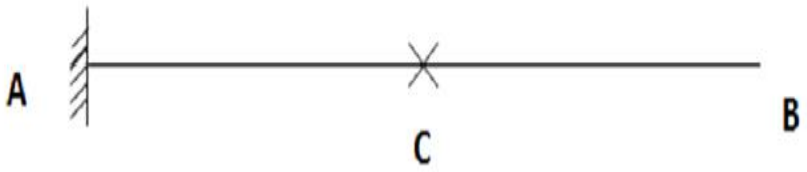
2. ✖ $\frac{M}{3}$

3. ✔ $\frac{M}{6}$

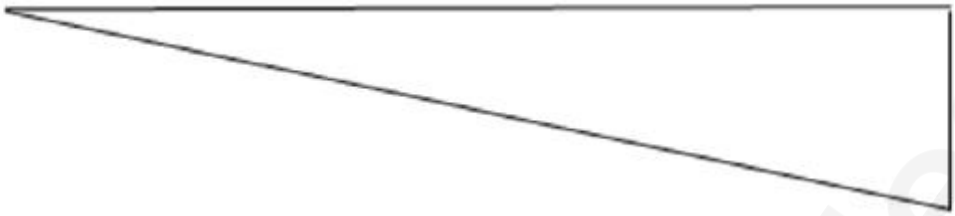
4. ✖ $\frac{M}{8}$

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 a unit load is between C and B as shown in figure.



Options :

1. ✖


2. ✔


3. ✖


4. ✖


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 subjecting 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. ✖ 45^0

2. ✖ 60^0

3. ✖ 75^0

4. ✔ 90^0

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 x 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

Question Number : 29 Question Id : 3330085669 Display Question Number : Yes Is Question

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 statement s regarding coefficient of consolidation C_v is correct

Options :

1. ✔ $C_v \ \alpha \ k$

2. ✖ $C_v \ \alpha \ \frac{1}{k}$

3. ✖ $C_v \ \alpha \ m_v$

4. ✖ $C_v \ \alpha \ a_v$

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. ✖ $\frac{tan\, i}{tan\emptyset}$

2. ✔ $\frac{tan\, \emptyset}{tan\, i}$

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. ✖ D_{60}

3. ✖ D_{50}

4. ✔ D_{10}

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. ✔

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 34^0 is _____

Options :

1. ✖ 62^0

2. ✖ 56^0

3. ✔ 28^0

4. ✖ 39^0

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_o) 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 m^3/s. The discharge to be maintained in the model test is

Options :

1. ✔ 0.01 m^3/s

2. ✖ $0.10\ m^3/s$

3. ✖ $100\ m^3/s$

4. ✖ $10\ m^3/s$

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. ✖ $444\ m^3/s$

2. ✖ $5.5\ m^3/s$

3. ✖ $4.4\ m^3/s$

4. ✔ $44\ m^3/s$

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 $g = 10\ m/s^2$.

Options :

1. ✖ $10^{2/3}$ m

2. ✖ 10^{0} m

3. ✖ 10^{3} m

4. ✔ $10^{1/3}$ 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. ✖ $\frac{\text{kg}-s^2}{m^2}$

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 45^0 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 m^3/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 [illegible] 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 :

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

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. ✖ $SRT.X/QS_o$

2. ✔ QS_o/ VX

3. ✖ $S_oX/ Q.SRT$

4. ✖ $SRT. S_o/ VX$

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. ✔

$\theta / 360^0$

2. ✖ $\pi D / 360^0$

3. ✖ $\pi D\ \theta / 360^0$

4. ✖ $360^0 / \pi D$

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, 27^0C

2. ✖ 7days, 25^0C

3. ✔ 5days, 20^0C

4. ✖ 5days, 15^0C

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

4. ✖ Pneumoconiosis

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. ✖ 85^{th}

2. ✖ 50^{th}

3. ✔ 98^{th}

4. ✖ 80^{th}

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/cm^2

2. ✔ 45 kg/cm^2

3. ✖ 50 kg/cm^2

4. ✖ 35 kg/cm^2

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 :

Negative

1. ✔

Positive

2. ✖

Neutral

3. ✖

Both Negative and Positive as the case may be

4. ✖

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 :

Sag

1. ✖

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 tends to infinity as

Options :

1. ✔ as $t \to 1$

2. ✖ as $t \to 2$

3. ✖ as $t \to 0.5$

4. ✖ as $t \to \infty$

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