

Telangana State Council 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 11th Aug 2021 Shift 2
Subject Name :	Civil Engineering
Creation Date :	2021-08-11 16:42:19
Duration :	120
Total Marks :	120
Display Marks:	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

Civil Engineering

Group Number :	1
Group Id :	12984021
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No

Edit Attended Group? : No
Break time : 0
Group Marks : 120
Is this Group for Examiner? : No

Mathematics

Section Id : 12984036
Section Number : 1
Section type : Online
Mandatory or Optional : Mandatory
Number of Questions : 10
Number of Questions to be attempted : 10
Section Marks : 10
Enable Mark as Answered Mark for Review and Clear Response : Yes
Sub-Section Number : 1
Sub-Section Id : 12984036
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 1298402401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The number of solutions of the system of equations
 $x + y + z - 2 = 0$, $x + 2y - 2z - 3 = 0$ and $x - y - z = 0$ is

Options :

1. ✓ 1

2. ✗ 2

3. ✗ 0

4. ✖ Infinitely many

Question Number : 2 Question Id : 1298402402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow 0} \frac{\sinh x - \sin x}{x^2} =$$

Options :

1. ✖ ∞

2. ✔ 0

3. ✖ $-\infty$

4. ✖ 1

Question Number : 3 Question Id : 1298402403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

$$\int_0^1 \int_0^1 \sin(x+y) \, dx \, dy = a \sin 1 + b \sin 2, \text{ where } (a, b) =$$

Options :

1. ✖ $(-2, 1)$

2. ✖ $(2, 1)$

3. ✔ $(2, -1)$

4. ✖ $(-2, -1)$

Question Number : 4 Question Id : 1298402404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The particular integral of $y'' + 3y' = x^2 + 3x$ is $k(6x^3 + 21x^2 - 14x)$, where $k =$

Options :

1. ✖ $\frac{1}{18}$

2. ✖ $\frac{1}{36}$

3. ✔ $\frac{1}{54}$

4. ✖ $\frac{1}{81}$

Question Number : 5 Question Id : 1298402405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question

Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The roots of auxiliary equation of $y^{(4)} + y = \sin x$ are (in terms of $\alpha = e^{i\pi/4}$)

Options :

1. ✖ $\alpha, \alpha^2, \alpha^3, \alpha^4$

2. ✔ $\alpha, \alpha^3, \alpha^5, \alpha^7$

3. ✖ $\alpha, \alpha^2, \alpha^4, \alpha^6$

4. ✖ $\alpha, \alpha^3, \alpha^6, \alpha^9$

Question Number : 6 Question Id : 1298402406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question

Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Residue of $\operatorname{cosec}^3 z$ at $z = 0$ is

Options :

1. ✖ 1

2. ✔ $\frac{1}{2}$

3. ✖ $\frac{1}{3}$

4. ✖ $\frac{1}{4}$

Question Number : 7 Question Id : 1298402407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a random variable has Poisson distribution such that $P(2) = P(3)$, then the mean of the distribution is

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 3

4. ✖ 4

Question Number : 8 Question Id : 1298402408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $f(x) = ax^3 + bx^2 + cx + d$, then $\Delta^4(f(x)) =$

Options :

1. ✖ 3!a

2. ✖ 3!

3. ✖ a

4. ✔ 0

Question Number : 9 Question Id : 1298402409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For the data

x	2	4	6	8
f(x)	3	5	6	7

The value of $\int_2^8 f(x) dx$ by the Trapezoidal rule is

Options :

1. ✔ 32

2. ✖ 25

3. ✖ 18

4. ✖ 16

Question Number : 10 Question Id : 1298402410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $u = \sin^{-1} \left(\frac{x + y + z}{x^4 + y^4 + z^4} \right)$, then $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + z \frac{\partial u}{\partial z} = k \tan u$, where $k =$

Options :

1. ✖ -4

2. ✔ -3

3. ✖ 3

4. ✖ 4

Civil Engineering

Section Id :	12984037
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110

Section Marks : 110
Enable Mark as Answered Mark for Review and Clear Response : Yes
Sub-Section Number : 1
Sub-Section Id : 12984037
Question Shuffling Allowed : Yes

Question Number : 11 Question Id : 1298402411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The strain energy stored due to bending of rectangular cantilever beam of span 'L' meters, due to the concentrated load 'P' applied at the free end is (EI Constant)

Options :

1. ✖ $\frac{PL}{3EI}$

2. ✔ $\frac{P^2 L^3}{6EI}$

3. ✖ $\frac{P^2 L^2}{EI}$

4. ✖ $\frac{P^2 L^3}{23EI}$

Question Number : 12 Question Id : 1298402412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A sample of water from a surface stream is analyzed for the common ions:
 $\text{Ca}^{2+} = 98 \text{ mg/l}$; $\text{Cl}^- = 89 \text{ mg/l}$; $\text{HCO}_3^- = 305 \text{ mg/l}$; $\text{Mg}^{2+} = 22 \text{ mg/l}$; $\text{Na}^+ = 71 \text{ mg/l}$;
 $\text{SO}_4^{2-} = 240 \text{ mg/l}$. Determine the alkalinity of water as CaCO_3 .

Options :

1. ✖ 305 mg/l
2. ✔ 250 mg/l
3. ✖ 500 mg/l
4. ✖ 205 mg/l

Question Number : 13 Question Id : 1298402413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

As per Indian Railways, Cant deficiency recommended for Broad Gauge track is

Options :

1. ✔ 75 mm
2. ✖ 50 mm

3. ✖ 40 mm

4. ✖ 65 mm

Question Number : 14 Question Id : 1298402414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For under-reamed piles up to 0.3 m diameter, the maximum vertical spacing between two under-reams, of diameter D_u , as per IS: 2911 (Part III) - 1980 is

Options :

1. ✖ $1.25 D_u$

2. ✔ $1.5 D_u$

3. ✖ $2 D_u$

4. ✖ $2.5 D_u$

Question Number : 15 Question Id : 1298402415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A hydrograph is a plot of

Options :

1. ✖ Rainfall intensity against time

2. ✖ Cumulative rainfall against time
3. ✔ Stream discharge against time
4. ✖ Cumulative runoff against time

Question Number : 16 Question Id : 1298402416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Match the given water properties in group I to the given titrants in Group II

Group I	Group II
P. Dissolved oxygen	1. N/40 $\text{Na}_2\text{S}_2\text{O}_3$
Q. Chloride	2. N/50 H_2SO_4
R. Alkalinity	3. N/50 EDTA
S. Hardness	4. N/71 AgNO_3

Options :

1. ✖ P-1, Q-2, R-3, S-4
2. ✖ P-2, Q-1, R-4, S-3
3. ✖ P-3, Q-4, R-1, S-2
4. ✔ P-1, Q-4, R-2, S-3

Question Number : 17 Question Id : 1298402417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In plastic analysis, the shape factor for the diamond section is

Options :

1. ✖ 1.50
2. ✔ 2.0
3. ✖ 1.7
4. ✖ 2.34

Question Number : 18 Question Id : 1298402418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The most expensive component of solid waste handling is

Options :

1. ✖ Storage
2. ✔ Collection
3. ✖ Treatment
4. ✖ Separation

Question Number : 19 Question Id : 1298402419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In a uniform open channel flow

Options :

1. ✖ The total energy remains constant along the channel
The total energy line either rises or falls along the channel depending on the
2. ✖ state of flow
3. ✖ The specific energy decreases along the channel
4. ✔ The line representing the total energy is parallel to the bed of the channel

Question Number : 20 Question Id : 1298402420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Windrose diagram is used for the purpose of

Options :

1. ✖ Estimating runway capacity
2. ✖ Runway pavement design
3. ✖ Determining Runway length

4. ✓ Fixing Runway Orientation

Question Number : 21 Question Id : 1298402421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The value of compression index will in general be _____ times that of recompression index

Options :

1. ✗ 2

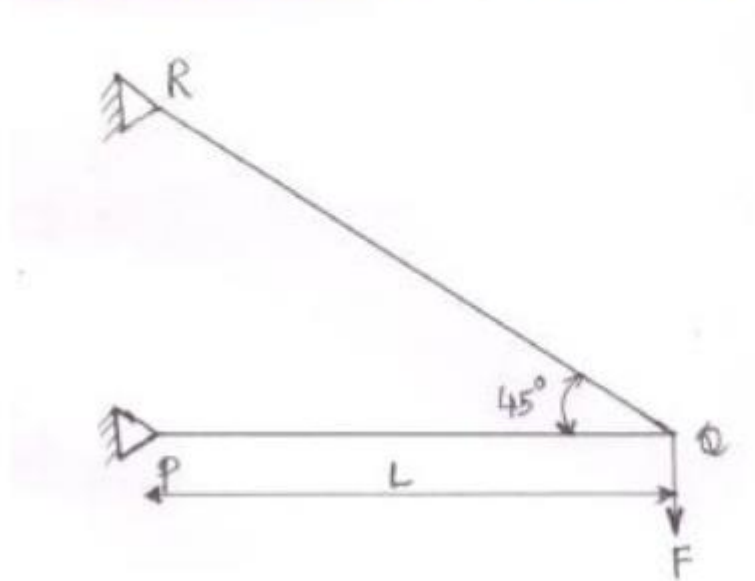
2. ✓ 5

3. ✗ 10

4. ✗ 16

Question Number : 22 Question Id : 1298402422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The force in the member PQ of the truss PQR shown below is



Options :

1. ✓ F (Compression)
2. ✗ $F/\sqrt{2}$ (Compression)
3. ✗ F (tension)
4. ✗ 0

Question Number : 23 Question Id : 1298402423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In critical path method, the critical path is

Options :

1. ✘ A path that operates from the starting node to the end node
2. ✘ Mixture of all paths.
3. ✔ The longest path
4. ✘ The shortest path

Question Number : 24 Question Id : 1298402424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The mean unconfined compressive strength of a purely cohesive soil was found to be 50 kN/m^2 . The ultimate bearing capacity of a strip footing calculated by Terzaghi's concept (bearing capacity factor $N_c = 5.7$) will be

Options :

1. ✘ 185.25 kN/m^2
2. ✘ 390.5 kN/m^2
3. ✘ 285 kN/m^2
4. ✔ 142.5 kN/m^2

Question Number : 25 Question Id : 1298402425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a liquid has greater cohesion than adhesion, then the liquid in the capillary tube will

Options :

1. ✖ Rise with concave surface upward
2. ✖ Rise with convex surface upward
3. ✖ Depress with concave surface upward
4. ✔ Depress with convex surface upward

Question Number : 26 Question Id : 1298402426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Stopped time plus the time lost due to acceleration and deceleration at a signalized intersection is called as

Options :

1. ✖ Stopped delay
2. ✖ Control delay

3. ✓ Approach delay

4. ✗ Cumulative delay

Question Number : 27 Question Id : 1298402427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The point in the cross section of a beam through which if load acts there will not be any twisting of the section but there will be only bending is known as

Options :

1. ✗ Centre of gravity

2. ✗ Moment centre

3. ✓ Shear centre

4. ✗ Elastic centre

Question Number : 28 Question Id : 1298402428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The device, which can be used to control gaseous as well as particulate pollutants, in the industrial emissions, is known as

Options :

1. ✓ Spray tower
2. ✗ Fabric filter
3. ✗ Cyclone collector
4. ✗ Electrostatic precipitator

Question Number : 29 Question Id : 1298402429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An incompressible, steady, 2D velocity field is given by

$$\vec{V} = (u, v) = (0.5 + 0.8x)\hat{i} + (1.5 - 0.8y)\hat{j}$$

where lengths are in m, time in s, and velocities in m/s. Calculate the volumetric strain rate.

Options :

1. ✓ Zero
2. ✗ Unity
3. ✗ Infinite

4. ✖ 0.50

Question Number : 30 Question Id : 1298402430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The minimum value of peak hour factor for a 5 minute volume traffic volume counts is

Options :

- 1. ✖ $1/2$
- 2. ✖ $1/4$
- 3. ✖ $1/6$
- 4. ✔ $1/12$

Question Number : 31 Question Id : 1298402431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For a perfect plane truss, the relationship between the number of members (m) and joints (j) is

Options :

- 1. ✖ $m = 2 - 3j$

2. ✖ $m = 3j - 6$

3. ✔ $m = 2j - 3$

4. ✖ $m = 3j - 3$

Question Number : 32 Question Id : 1298402432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Consider the following unit processes commonly used in water treatment; rapid mixing (RM), flocculation (F), primary sedimentation (PS), secondary sedimentation (SS), chlorination (C) and rapid sand filtration (RSF). The order of these unit processes (first to last) in a conventional water treatment plant is

Options :

1. ✖ PS-RSF-F-RM-SS-C

2. ✖ PS-F-RM-RSF-SS-C

3. ✖ PS-F-SS-RSF-RM-C

4. ✔ PS-RM-F-SS-RSF-C

Question Number : 33 Question Id : 1298402433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The design parameter for flocculation is given by a dimensionless number 'Gt', where 'G' is the velocity gradient and 't' is the detention time. Values of 'Gt' ranging from 10^4 to 10^5 are commonly used, with 't' ranging from 10 to 30 min. The most preferred combination of G and t to produce smaller and denser flocs is

Options :

1. ✖ Smaller G values with short t
2. ✖ Large G values with long t
3. ✔ Large G values with short t
4. ✖ Smaller G values with long t

Question Number : 34 Question Id : 1298402434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Thiessen polygons were constructed for a watershed, and the area of influence of each rain gauge station was estimated. Later, it was realized that one of the rain gauges, established at the midpoint of the line joining 2 stations were not used in developing the Thiessen polygon. If the missed rain gauge was also considered for developing the Thiessen polygon

Options :

1. ✖ The area of influence of the rain gauges will not change
2. ✔ The area of influence of the rain gauges will change
3. ✖ The rain gauge network will have to be redesigned
4. ✖ Can't say since sufficient information is not available

Question Number : 35 Question Id : 1298402435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a dimensionless number

Options :

1. ✖ Manning's coefficient n
2. ✔ Pipe friction factor f
3. ✖ Chezy coefficient C
4. ✖ Hazen-William coefficient CH

Question Number : 36 Question Id : 1298402436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An area beyond the runway to decelerate an aircraft in case of an aborted takeoff is

Options :

1. ✖ Clearway
2. ✖ Taxiway
3. ✔ Stopway
4. ✖ Bypass

Question Number : 37 Question Id : 1298402437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A three hinged circular arch of radius R carries a uniformly distributed load of ' w ' per unit run over the entire span. The horizontal thrust is

Options :

1. ✖ wR
2. ✔ $wR/2$
3. ✖ $4wR/(3\pi)$
4. ✖ $2wR/(3\pi)$

Question Number : 38 Question Id : 1298402438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A coastal city produces municipal solid waste (MSW) with high moisture content, high organic materials, low calorific value and low inorganic materials. The most effective and sustainable option for MSW management in that city is

Options :

1. ✓ Composting
2. ✗ Dumping in sea
3. ✗ Incineration
4. ✗ Landfill

Question Number : 39 Question Id : 1298402439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

By providing sufficient edge distance, which of the following failure of riveted joint can be avoided?

Options :

1. ✗ Tension failure of the plate
2. ✗ Shear failure of the rivet

3. ✓ Shear failure of the plate

4. ✗ Crushing failure of the rivet

Question Number : 40 Question Id : 1298402440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Seasoning of timber is done to

Options :

1. ✗ Make it water proof

2. ✗ Paint its surface

3. ✗ Increase its temperature

4. ✓ Remove water

Question Number : 41 Question Id : 1298402441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The following sources of information is used by GIS

Options :

1. ✓ Spatial Information

2. ✘ Non-spatial information
3. ✘ Position information
4. ✘ Global information

Question Number : 42 Question Id : 1298402442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The dimensions of the Chezy's coefficient C are

Options :

1. ✘ $L^2 T^{-1}$
2. ✘ $L T^{-1/2}$
3. ✘ $M^0 L^0 T^0$
4. ✔ $L^{1/2} T^{-1}$

Question Number : 43 Question Id : 1298402443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A soil sample tested in a triaxial test failed when the major and minor principal stresses were 100 kN/m^2 and 40 kN/m^2 respectively and the pore pressure measured at failure was 10 kN/m^2 . What is the effective principal stress ratio at failure is

Options :

1. ✓ 3
2. ✗ 3.5
3. ✗ 4
4. ✗ 4.5

Question Number : 44 Question Id : 1298402444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Excess of alumina in brick earth makes the brick

Options :

1. ✗ Impermeable
2. ✗ Brittle and weak
3. ✗ To lose cohesion

4. ✓ To crack and warp on drying

Question Number : 45 Question Id : 1298402445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Centre of Buoyancy always

Options :

1. ✗ Coincides with the centre of gravity
2. ✓ Coincides with the centroid of the volume of fluid displaced
3. ✗ Remains above the centre of gravity.
4. ✗ Remains below the centre of gravity

Question Number : 46 Question Id : 1298402446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For structural steel, the relative magnitude of three moduli of elasticity E, C and K is given by (E= modulus of elasticity, C= shear modulus, K= bulk modulus)

Options :

1. ✗ $E > C > K$

2. ✖ $K > C > E$

3. ✔ $C < K < E$

4. ✖ $C > E > K$

Question Number : 47 Question Id : 1298402447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The effective length of a fillet weld should not be less than

Options :

1. ✖ Two times the weld size

2. ✔ Four times the weld size

3. ✖ Six times the weld size

4. ✖ Weld size

Question Number : 48 Question Id : 1298402448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In CPM method, the critical path lies along the activities having a total float which
is

Options :

1. ✖ Positive
2. ✖ Negative
3. ✔ Zero
4. ✖ Same

Question Number : 49 Question Id : 1298402449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following statement is true'

Options :

1. ✖ Potential evapotranspiration is always greater than actual evapotranspiration
2. ✖ Potential evapotranspiration is equal to actual evapotranspiration when soil is dry
3. ✖ Potential evapotranspiration is either less than or equal to actual evapotranspiration
4. ✔ Actual evapotranspiration is either less than or equal to potential evapotranspiration for a well-watered plant

Question Number : 50 Question Id : 1298402450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The property of a material by virtue of which it can be beaten or rolled into plates
Is called

Options :

1. ✓ Malleability
2. ✗ Ductility
3. ✗ Plasticity
4. ✗ Elasticity

Question Number : 51 Question Id : 1298402451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If a 5% solution of sewage sample is incubated for 5 days at 20⁰ C and the dissolved oxygen depletion is 6.5 mg/l, then the BOD of the sewage would be

Options :

1. ✗ 32.5 mg/l
2. ✗ 325 mg/l

3. ✓ 130 mg/l

4. ✗ 20 mg/l

Question Number : 52 Question Id : 1298402452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The fixed support in the real beam is taken as _____ support in conjugate beam

Options :

1. ✓ Free

2. ✗ Hinge

3. ✗ Roller

4. ✗ Fixed

Question Number : 53 Question Id : 1298402453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In consolidated undrained triaxial compression test, the soil specimen is consolidated during the application of

Options :

1. ✘ Deviator stress
2. ✘ Major principal stress
3. ✔ Minor principal stress
4. ✘ Failure

Question Number : 54 Question Id : 1298402454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Total Kjeldahl nitrogen is a measure of

Options :

1. ✘ Total organic nitrogen
2. ✔ Total organic and ammonia nitrogen
3. ✘ Total inorganic and ammonia nitrogen
4. ✘ Total ammonia nitrogen

Question Number : 55 Question Id : 1298402455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If principal stresses in a two dimensional stresses system are -10 MPa and 20 MPa, the maximum shear stress at that point in MPa is

Options :

1. ✘ 10
2. ✔ 15
3. ✘ 20
4. ✘ 30

Question Number : 56 Question Id : 1298402456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The stretcher bond in brick masonry can be used only when the thickness of wall is

Options :

1. ✔ 90 mm
2. ✘ 180 mm
3. ✘ 190 mm

4. ✖ 280 mm

Question Number : 57 Question Id : 1298402457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

As per the Greenshield's model of flow-density relation, maximum flow is observed at

Options :

1. ✖ Half of critical density
2. ✖ Jam density
3. ✖ Free flow conditions
4. ✔ Half of Jam density

Question Number : 58 Question Id : 1298402458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Stream lines and path lines always coincide in case of

Options :

1. ✔ Steady and uniform flow
2. ✖ Laminar and non-uniform flow

3. ✖ Non-uniform and steady flow

4. ✖ Turbulent flow

Question Number : 59 Question Id : 1298402459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The phenomenon observed on a horizontal curve where the rear wheels follow a path of shorter radius than the front wheels is better known as

Options :

1. ✖ Extra widening

2. ✖ Super elevation

3. ✔ Off tracking

4. ✖ Transition

Question Number : 60 Question Id : 1298402460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If three members meet at a point and the stiffness of the members are $k_1 = EI$, $k_2 = 2EI$, $k_3 = 1.5EI$, the distribution factor for member 1 is

Options :

1. ✖ $1/3$
2. ✖ $1/3.5$
3. ✔ $1/4.5$
4. ✖ $1/4$

Question Number : 61 Question Id : 1298402461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The range of adhesion factor α as per IS: 2911 (Part-1) – 2010 for bored piles in clay

Options :

1. ✖ 0.3 - 0.5
2. ✖ 0.5 - 0.7
3. ✔ 0.3 - 1.0
4. ✖ 0.5 - 1.0

Question Number : 62 Question Id : 1298402462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The difference between the maximum time available and the actual time needed to perform an activity is known as _____

Options :

1. ✘ Free float
2. ✘ Independent float
3. ✔ Total float
4. ✘ Half float

Question Number : 63 Question Id : 1298402463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The nominal shear strength of the fillet weld is

Options :

1. ✘ $f_y/\sqrt{3}\gamma_{mw}$
2. ✔ $f_u/\sqrt{3}$
3. ✘ $f_y/\sqrt{3}$

4. ✖ $f_u/\sqrt{3}\gamma_{mw}$

Question Number : 64 Question Id : 1298402464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Important design factor for settling basins

Options :

1. ✖ Detention time
2. ✖ Horizontal velocity
3. ✔ Surface overflow rate
4. ✖ Weir overflow rate

Question Number : 65 Question Id : 1298402465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Soundness test of cement is done to determine its

Options :

1. ✖ Durability in sea water
2. ✔ Free lime content

3. ✖ Iron oxide content

4. ✖ Alumina content

Question Number : 66 Question Id : 1298402466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In disinfection, which of the following forms of chlorine is most effective in killing the pathogenic bacteria?

Options :

1. ✖ Cl

2. ✖ OCl

3. ✖ NH₂Cl

4. ✔ HOCl

Question Number : 67 Question Id : 1298402467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum tension reinforcement (in mm²) of Fe 500 steel in a 250 mm wide beam of 400 mm effective depth is

Options :

1. ✖ 150

2. ✓ 170

3. ✗ 180

4. ✗ 120

Question Number : 68 Question Id : 1298402468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Among the various sewage treatment methods, for the same discharge, the largest area is needed for

Options :

1. ✓ Oxidation pond

2. ✗ Oxidation ditch

3. ✗ Anaerobic pond

4. ✗ Trickling Filter

Question Number : 69 Question Id : 1298402469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A typical overtaking zone comprises of

Options :

1. ✖ 2 to 4 times overtaking distance
2. ✔ 3 to 5 times overtaking distance
3. ✖ 2 to 4 times intermediate sight distance
4. ✖ 3 to 5 times intermediate sight distance

Question Number : 70 Question Id : 1298402470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A 300 mm square bearing plate settles by 20 mm in a plate load test on a cohesive soil when the intensity of loading is 0.25 N/mm^2 . The settlement of a prototype shallow footing 1.2 m square under the same intensity of loading is

Options :

1. ✖ 40 mm
2. ✖ 50 mm
3. ✖ 70 mm
4. ✔ 80 mm

Question Number : 71 Question Id : 1298402471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The critical flow condition in a channel is given by

Options :

1. ✖ $QT^2/gA^2=1$

2. ✖ $Q^2T^2/gA^2=1$

3. ✔ $Q^2T/gA^3=1$

4. ✖ $QT/gA^3=1$

Question Number : 72 Question Id : 1298402472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following Bogue's compound is responsible for 'flash set'

Options :



4. ✖ C4AF

Question Number : 73 Question Id : 1298402473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A saturated clay with a double drainage under a structure will take 9 years to reach 90% of consolidation. What would be the time required to have 90% consolidation if it is single drained

Options :

1. ✖ 24 years

2. ✔ 36 years

3. ✖ 40 years

4. ✖ 50 years

Question Number : 74 Question Id : 1298402474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A pre-stressed concrete beam is loaded with two point loads. If profile of cable is laid based on load balancing concept, the shape of cable profile is

Options :

1. ✖ Parabolic

- 2. ✖ Triangular
- 3. ✔ Trapezoidal
- 4. ✖ Circular

Question Number : 75 Question Id : 1298402475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What will be the resultant decibel level when two sources makes noise of equal decibels

Options :

- 1. ✖ Decibel level will be same
- 2. ✖ Decibel level will decrease by 3 decibels
- 3. ✔ Decibel level will increase by 3 decibels

Decibel level will be the sum of decibels of the two sources

- 4. ✖

Question Number : 76 Question Id : 1298402476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a laboratory compaction test on soils, what is the effect of increasing compactive effort on the values of MDD and OMC respectively

Options :

1. ✘ Increase, Increase
2. ✘ Decrease, Decrease
3. ✘ Decrease, Increase
4. ✔ Increase, Decrease

Question Number : 77 Question Id : 1298402477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Bulking sludge refers to having

Options :

1. ✘ $F/M = \text{zero}$
2. ✔ $F/M < 0.3/d$
3. ✘ $0.3/d < F/M < 0.6/d$
4. ✘ $F/M > 0.6/d$

Question Number : 78 Question Id : 1298402478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In highway sections, design capacity refers to

Options :

1. ✖ Basic Capacity
2. ✔ Practical Capacity
3. ✖ Possible capacity
4. ✖ Peak Capacity

Question Number : 79 Question Id : 1298402479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is
Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The area ratio of a good soil sampler should be less than

Options :

1. ✔ 20 % for stiff soils, 10% for soft clays.
2. ✖ 10 % for stiff soils, 20% for soft clays.
3. ✖ 10 % for both stiff soils and soft clays.

4. ✖ 20 % for both stiff soils and soft clays.

Question Number : 80 Question Id : 1298402480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For full anchorage, the stirrups should extend by a length of _____ times the diameter of bar when bent at 135°

Options :

1. ✖ 4

2. ✖ 8

3. ✖ 12

4. ✔ 6

Question Number : 81 Question Id : 1298402481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The depth-area curve plotted for a storm is useful in

Options :

1. ✖ Converting the areal average rainfall to the rainfall at the storm centre.

2. ✔ Converting the rainfall at the storm centre to the areal average rainfall.

Obtaining the areal average rainfall of a basin from the rainfall measurements made at several raingauges in the basin.

3. ✖

Constructing rainfall intensity-duration-frequency relationship for a drainage basin

4. ✖

Question Number : 82 Question Id : 1298402482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is not a purpose of a transition curve?

Options :

1. ✖ To provide gradual introduction of extra-widening

2. ✖ To enable safer turning capability

3. ✔ To provide proper sight distance

4. ✖ To increase comfort of passengers

Question Number : 83 Question Id : 1298402483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Westergaard's formula for vertical stress gives greater value of stress than that by Boussinesq's formula when R/Z exceeds

Options :

1. ✖ 2.5
2. ✖ 3.5
3. ✔ 1.5
4. ✖ 4.0

Question Number : 84 Question Id : 1298402484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A steel bar of length 5 m is uniformly heated from 30°C to 90°C . If $E=200$ GPa, coefficient of thermal expansion is 12×10^{-6} , the temperature stress developed in the bar is

Options :

1. ✔ 144 MPa
2. ✖ 200 MPa
3. ✖ 189 MPa
4. ✖ 169 MPa

Question Number : 85 Question Id : 1298402485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dispersion of pollutants in atmosphere is maximum when

Options :

1. ✘ Maximum mixing depth is equal to zero
2. ✘ Environmental lapse rate is less than adiabatic lapse rate
3. ✘ Environmental lapse rate is equal to adiabatic lapse rate
4. ✔ Environmental lapse rate is greater than adiabatic lapse rate

Question Number : 86 Question Id : 1298402486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The shortest possible time in which an activity can be achieved under ideal circumstances is known as _____

Options :

1. ✘ Pessimistic time estimate
2. ✔ Optimistic time estimate

3. ✖ Expected time estimate
4. ✖ The most likely time estimate

Question Number : 87 Question Id : 1298402487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If p is the increment of pressure on a NC saturated clayey soil, what is the pore pressure developed in the soil mass at time equal to zero, as per Terzaghi's theory

Options :

1. ✖ Zero
2. ✔ Equal to p
3. ✖ Greater than p
4. ✖ Lesser than p

Question Number : 88 Question Id : 1298402488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

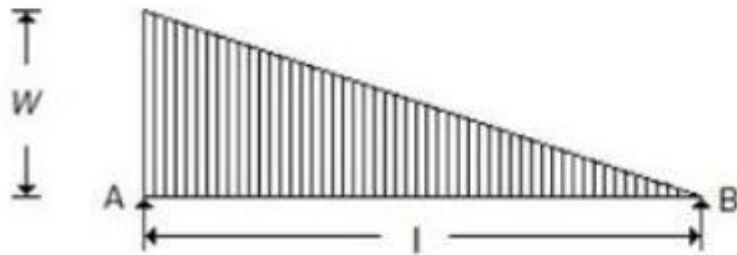
Which of the following streams does not have any base-flow contribution?

Options :

1. ✘ Perennial Stream
2. ✘ Intermittent Stream
3. ✔ Ephemeral Stream
4. ✘ Meandering Stream

Question Number : 89 Question Id : 1298402489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

A simply supported beam with a gradually varying load from zero at 'B' and 'W' per unit length at 'A' is shown in the below figure. The shear force at 'B' is equal to



Options :

1. ✔ $Wl/6$

2. ✖ $W1/3$

3. ✖ $W1$

4. ✖ $2W1/3$

Question Number : 90 Question Id : 1298402490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The major photochemical oxidant is

Options :

1. ✖ Hydrogen peroxide

2. ✔ Ozone

3. ✖ Nitrogen oxides

4. ✖ Peroxy acetyl nitrate (PAN)

Question Number : 91 Question Id : 1298402491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Ratio of number of bays occupied in a time duration to the total space available is called as

Options :

1. ✘ Parking Load
2. ✔ Parking Index
3. ✘ Parking Turnover
4. ✘ Parking Load

Question Number : 92 Question Id : 1298402492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a constant head permeameter with a cross sectional area of 10 cm^2 , the amount of water collected in 1 minute time was 600 cc, when the flow was taking place under a hydraulic gradient of 0.5. The permeability of soil is

Options :

1. ✘ 0.002 cm/s
2. ✘ 0.02 cm/s
3. ✘ 0.2 cm/s
4. ✔ 2 cm/s

Question Number : 93 Question Id : 1298402493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A pre-stressed concrete beam of length 20 m has an initial stress of 1000 MPa.

During tensioning the jack slips by 2 mm. If $E_s = 200$ GPa, the loss of stress due to slip is

Options :

1. ✖ 1%
2. ✔ 2%
3. ✖ 10%
4. ✖ 15%

Question Number : 94 Question Id : 1298402494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The height of any object on the road surface in the design of vertical alignment is considered as

Options :

1. ✖ 1.2 m

- 2. ✖ 0.5 m
- 3. ✖ 2.5 m
- 4. ✔ 0.15 m

Question Number : 95 Question Id : 1298402495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Coefficient of contraction is the ratio of

Options :

- 1. ✖ Actual velocity of jet at vena contracta to the theoretical velocity
- 2. ✖ Loss of head in the orifice to the head of water available at the exit of the orifice
- 3. ✖ Actual discharge through an orifice to the theoretical discharge
- 4. ✔ Area of jet at vena contracta to the area of orifice

Question Number : 96 Question Id : 1298402496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The load carrying capacity of an individual friction pile is 160 kN. What is the total carrying capacity of a group of 9 such piles with group efficiency factor of 0.85?

Options :

1. ✗ 1440 kN
2. ✓ 1224 kN
3. ✗ 1640 kN.
4. ✗ 900 kN

Question Number : 97 Question Id : 1298402497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the recirculation ratio in a high rate trickling filter is unity, then the recirculation factor is

Options :

1. ✗ Zero
2. ✗ less than 1
3. ✗ 1

4. ✓ more than 1

Question Number : 98 Question Id : 1298402498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In pipe flow the critical Reynolds number is about

Options :

1. ✗ 640

2. ✗ 5×10^5

3. ✓ 2000

4. ✗ 64000

Question Number : 99 Question Id : 1298402499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Hydraulic jump occurs when the

Options :

1. ✗ Channel bed is smooth,

2. ✓ Flow changes from supercritical to subcritical,

3. ✖ Flow changes from subcritical to super critical

4. ✖ Slope of bed changes from steep to mild slope

Question Number : 100 Question Id : 1298402500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of maximum shear stress developed in a rectangular beam and a circular beam of the same cross-sectional area is

Options :

1. ✖ $\frac{2}{3}$

2. ✖ $\frac{3}{4}$

3. ✖ 1

4. ✔ $\frac{9}{8}$

Question Number : 101 Question Id : 1298402501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

As per the National Ambient Air Quality Standards (NAAQS), the permissible 24 hour standard for PM_{2.5} is

Options :

1. ✖ 60 g/m^3
2. ✖ 60 mg/m^3
3. ✔ $60 \text{ }\mu\text{g/m}^3$
4. ✖ 60 ng/m^3

Question Number : 102 Question Id : 1298402502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

If $\alpha = 45 + (\phi/2)$, the coefficients of active and passive earth pressure as per Rankine's theory are

Options :

1. ✖ $\tan^2\alpha, \cot^2\alpha$
2. ✔ $\cot^2\alpha, \tan^2\alpha$
3. ✖ $0, \cot^2\alpha$
4. ✖ $\tan^2\alpha, 0$

Question Number : 103 Question Id : 1298402503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Time mean speed and space mean speeds are equal when

Options :

1. ✓ All the vehicles are moving with same speed
2. ✗ No vehicle is present in the traffic stream
3. ✗ Traffic density is more than the critical density
4. ✗ Flow is reaching free flow conditions

Question Number : 104 Question Id : 1298402504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The critical depth is the flow depth at which

Options :

1. ✗ The discharge is minimum for a fixed potential energy
2. ✗ The discharge is maximum for a fixed kinetic energy
3. ✗ The discharge is minimum for a fixed specific energy

4. ✓ The discharge is maximum for a fixed specific energy

Question Number : 105 Question Id : 1298402505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The purpose of the dowel bars is to

Options :

- 1. ✗ Withstand temperature stresses
- 2. ✗ Stiffening of slabs
- 3. ✓ Transfer loads between slabs
- 4. ✗ Bonding of slab to sub grade

Question Number : 106 Question Id : 1298402506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If an element of a stressed body is in state of pure shear with a magnitude of 80 MPa, the magnitude of maximum principal stress (in MPa) at that location is

Options :

- 1. ✓ 80

2. ✖ 113.14

3. ✖ 120

4. ✖ 0

Question Number : 107 Question Id : 1298402507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Daily variations of temperature changes across the thickness of the rigid pavement slab result in

Options :

1. ✖ Frictional stresses

2. ✔ Warping stresses

3. ✖ Subgrade reaction

4. ✖ Load stress

Question Number : 108 Question Id : 1298402508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The nature of flow for a discharge of $2.5 \text{ m}^3/\text{s}$ through a rectangular open channel of bottom width 1 m and depth 5 m is

Options :

1. ✗ Critical
2. ✗ Supercritical
3. ✓ Subcritical
4. ✗ Depends upon the nature of fluid

Question Number : 109 Question Id : 1298402509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Maximum permissible settlement for isolated foundation on sand as stipulated by I.S code is

Options :

1. ✓ 50 mm
2. ✗ 75 mm
3. ✗ 40 mm.

4. ✖ 20 mm

Question Number : 110 Question Id : 1298402510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Solid waste generated from an industry contains only two components, as shown in the table below

Component	Composition (%weight)	Density (kg/m ³)
Paper	c_1	ρ_1
Cardboard	c_2	ρ_2

Assuming $(c_1+c_2) = 100$, the composite density of the solid waste (ρ) is given by

Options :

1. ✖ $100 \left(\frac{\rho_1}{c_1} + \frac{\rho_2}{c_2} \right)$

2. ✔ $\frac{100}{\frac{c_1}{\rho_1} + \frac{c_2}{\rho_2}}$

3. ✖ $100 (c_1\rho_1 + c_2\rho_2)$

4. ✖ $100 \left(\frac{\rho_1\rho_2}{c_1\rho_1 + c_2\rho_2} \right)$

Question Number : 111 Question Id : 1298402511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The maximum sound level beyond which it is regarded as pollutant:

Options :

1. ✘ 20 dB
2. ✘ 40 dB
3. ✘ 45 dB
4. ✔ 80 dB

Question Number : 112 Question Id : 1298402512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Due to downward flow of water, the effective stress

Options :

1. ✔ Increases
2. ✘ Decreases
3. ✘ Does not change

4. ✖ Becomes zero

Question Number : 113 Question Id : 1298402513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Bitumen suspended in a finely divided condition in an aqueous medium and stabilized by suitable material is called as

Options :

1. ✔ Bitumen Emulsion
2. ✖ Cutback bitumen
3. ✖ Modified bitumen
4. ✖ Bitumen primers

Question Number : 114 Question Id : 1298402514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In GPS, a lower PDOP value refers to

Options :

1. ✖ Less accurate positioning

2. ✖ Can't say on accuracy
3. ✔ More accurate positioning
4. ✖ Positioning is not possible

Question Number : 115 Question Id : 1298402515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The term alternate depths is used in open channel flow to denote the depths

Options :

1. ✖ Having the same kinetic energy for a given discharge
2. ✖ Having the same specific force for a given discharge
3. ✔ Having the same specific energy for a given discharge
4. ✖ Having the same total energy for a given discharge

Question Number : 116 Question Id : 1298402516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In curve setting, central position of curve can be set by

Options :

1. ✖ Tangent
2. ✖ Chord
3. ✔ Apex
4. ✖ Secant

Question Number : 117 Question Id : 1298402517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The flow mass curve is a plot of

Options :

1. ✔ Accumulated flow against time
2. ✖ Discharge against time in chronological order
3. ✖ The base flow against the percentage of times the flow is exceeded

The stream discharge against the percentage of times the flow is equalled or exceeded.

4. ✖

Question Number : 118 Question Id : 1298402518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If p_p is the passive earth pressure and σ_z is the vertical stress at a point in backfill, the major and minor principal stresses at that point in passive state as per Rankine's theory are, respectively.

Options :

1. ✖ $0, p_p$

2. ✖ σ_z, p_p

3. ✖ $p_p, 0$

4. ✔ p_p, σ_z

Question Number : 119 Question Id : 1298402519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

As per the Indian standard soil classification system, a sample of silty clay with liquid limit of 40% and plasticity index of 28% is classified as

Options :

1. ✖ CH

2. ✔ CI

3. ✖ CL

4. ✖ CL-ML

Question Number : 120 Question Id : 1298402520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In Trigonometric levelling, one of the following conditions is not valid.

Options :

1. ✖ Base of object is accessible
2. ✖ Base of object is inaccessible
3. ✔ Base of object is at accurate position
4. ✖ Base of object is inaccessible, station is not in vertical plane