Telangana State Council Higher Education

Notations :

I.Options shown m green color and with icon are correct.

2.0ptions shown in red color and with icon are incorrect.

Question Paper Name :	Civil Engineering I Ith Aug 2021 Shift 2
Subject Name :	Civil Engineering
Creation Date :	2021-08-11 I 6.42..1
Duration :	120
Total Marks :	120
Display Marks:	Yes
Calculator :	None
Magnifying Glass Required? :	
Ruler Required? : No Eraser Required? : No	
Scratch Pad Required? :	
Rough Sketch/Notepad Required? :	
Protractor Required? :	No
Show Watermark on Console? : Yes Highlighter :	
Auto Save on Console? :	Yes

Civil Engineering

Group Number :	1
Group Id :	12984021
Group Maximum Duration :	
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	
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 : O

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

Options :

✖ 2

✖ 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 $\dfrac{\sinh x}{x^2}$ $-\sin x$

Options :

3. ✖ $-\infty$

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

$\displaystyle \int_1^1 \int f \sin(X+Y)\, dx\, dy = a \sin 1 + b \sin 2$, 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 : O

The panicular integral of Y' +3!   +3xis k(6x +21x — 14x), wherek=

Options :

$\dfrac{1}{18}$

$\dfrac{1}{36}$

$\dfrac{1}{54}$

$\dfrac{1}{81}$

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 : O

(4) i The roots of auxiliary equation

of y +y= sin x are (in tenns of $cc = e^{/4}$)

Options :

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

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

$\alpha, \alpha^2, \alpha^4, \alpha^6$

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 : O

Residue of cosec z at z = 0 is

Options :

1

$\dfrac{1}{2}$

$\dfrac{1}{3}$

✖ $\dfrac{1}{4}$

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

Options :

2. 8 2

3.4 3

Iff(x) =ax +bx +cx+d, then A (f(x)) =

Options :

1. ✖ 3!a

3!

a

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	
f(x)	3	5	6	7

The value of $\int\limits_{2}^{8} f(x)\,dx$ by the Trapezoidal rule is

Options :

32

25

18

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

wherek= $-\left(\dfrac{x+y+z}{x^4+y^4+z^4}\right)$, 1 $\underline{\text{Du}}$ $\underline{\text{Du}}$ $\underline{\text{Du}}$ If u=smthen tan u,

öx öy öz

Options :

—4

2. ✔ −3

3

4

Civil Engineering

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 (El Constant)

Options :

$\dfrac{PL}{3E1}$

p2L3

6E1

2.

p2L2

El p2L3

23E1

A sample of water from a sulface stream is analyzed for the common ions: ca^{2+} = 98 mg/l•, cr = 89 mg/l•, HC03- = 305 11@1; Mg^{2+} = 22 mg/l•, Na+= 71 111<1; $^{2-}$ = 240 mg/l. Detennine the alkalinity of water as CaC03.
S04

Options :75   2

50   12
40   40

305 mg/l

250 mg/l

500 mg/l

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 :

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 : O

For under-reamed piles up to 0.3 m diameter, the maximum venical spacing between two under-reams, of diameter Du, as per IS: 2911 (Pan Ill) - 1980 is

Options :

1.25 Du

1.5 Du

3. ✖ $2 D_u$

2.5 Du

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 : O A hydrograph is a plot of

Options :

Rainfall intensity against time

✖ Cumulative rainfall against time

Stream discharge against time

✖ 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 : O

Match the given water propenies in group I to the given titrants in Group Il

Group I	Group Il
P. Dissolved oxygen	1. N/40 Na2S203
Q. Chloride	2. N/50 H2S04
R. Alkalinity	3. N/50 EDTA
S. Hardness	4. N/71 AgN03

Options :

✖ P-1, Q-2, R-3, S-4

P-2, Q-1, R-4, S-3

P-3, Q-4, R-1, S-2

P-1, Q-4, R-2, S-3

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

Options :

1.50

2.0

3. ✖ 1.7

4. 2.34

The most expensive component of solid waste handling is

Options :

Stomge

2. •e' Collection

Treatment

✖ Separation

In a unifonn 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

   ✖ The specific energy decreases along the channel

   The line representing the total energy is parallel to the bed of the channel

Windrose diagram is used for the purpose of

Options :

✖ Estimating ntnway capacity

✖ Runway pavement design

✖ Detennining Runway length

4..2 Fixing Runway Orientation

The value of compression index will in general be_____times that of recompression
Index

Options :

1 8 2

2.4 5

3. * 10

The force in the member PQ of the tmss PQR shown below is
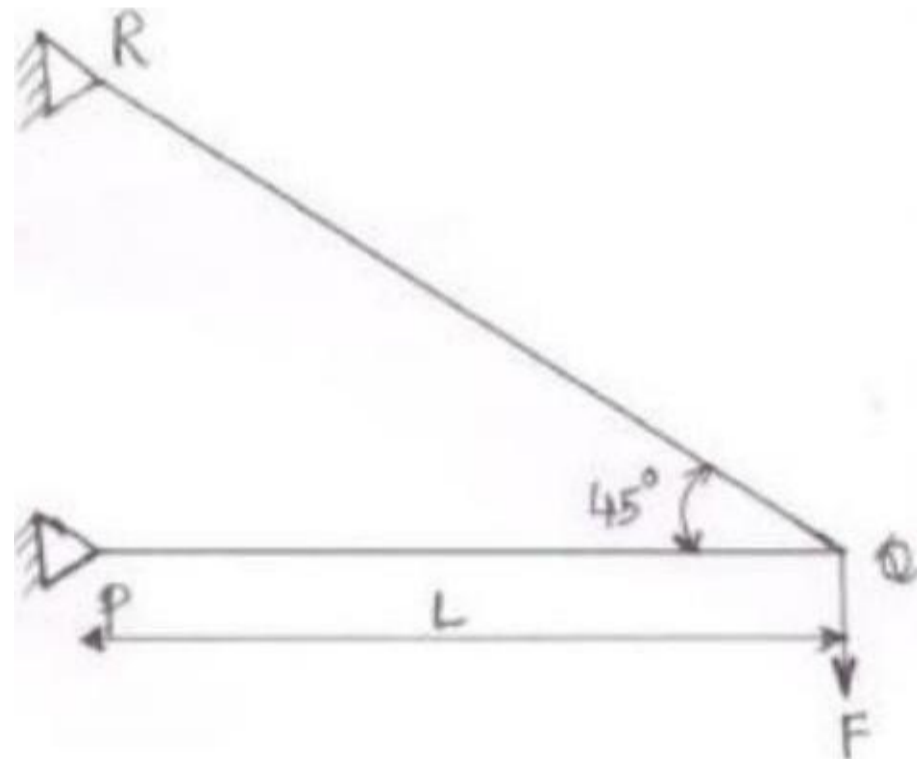
Options :

F (Compression)

F/V2 (Compression)

F (tension)

0

In critical path method, the critical path is

Options :

A path that operates from the starting node to the end node

Mixture of all paths. The

longest path

The shortest path

The mean unconfined compressive strength of a purely cohesive soil was found to be 50 kN/m[1] The ultimate beafing capacity of a strip footing calculated by Terzaghi's concept (bearing capacity factor NC 5.7) will be

Options :

185.25 kN/m^2

390.5 104/1112

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 : O

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

Options :

✖ Rise with concave surface upward ✖

Rise with convex sulface upward

✖ Depress with concave surface upward

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

_____

[1] 285 kN/m

142.5 kN/m^2

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

Options :

✖ Stopped delay

Control delay
Approach delay

✖ Cumulative delay

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 :

✖ Centre of gravity

Moment centre

Shear centre

Elastic centre

The device, which can be used to control gaseous as well as paniculate pollutants,

in the industlial emissions, is known as

Options :

1..4 pray tower

Fabric filter

Cyclone collector

Electrostatic precipitator

An incompressible, steady, 2D velocity field is given by $\vec{v}$ $=(0.5 + 0.8x)\,i + (1.5 — 0.8y)j$ where lengths are in m, me in s, and velocities in m/s. Calculate the volumetlic strain rate.

Options :

Zero

Unity

Infinite

0.50

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

Options :

1/2

2. * 1/4

3. * 1/6

1/12

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

Options :

m = 2-3j

m=3J-6

m=2J 3

✖ m=3j-3

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

Options :

PS-RSF-F-RM-SS-C

PS-F-PM-RSF-SS-C

PS-F-SS-RSF-RM-C

PS-RM-F-SS-RSF-C

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 104 to 105 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 :

Smaller G values with shon t

Large G values with long t

Large G values with short t

Smaller G values with long t

Thiessen polygons were consüucted 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 :

The area of influence of the rain gauges will not change
✖

The area of influence of the rain gauges will change

The rain gauge network will have to be redesigned

Can't say since sufficient infonnation is not available

Correct Marks : 1 Wrong Marks : 0 Which of the following is not a dimensionless number

Options :

✖ Manning's coefficient n

✔ Pipe fliction factor f

3. Chezy coefficient C

Hazen-William coefficient CH

Correct Marks : 1 Wrong Marks : 0

An area beyond the lunway to decelerate an aircraft in case of an ab01ted takeoff is

Options :

1. Cleanvay

✖ Taxiway

   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 cames a unifonnly distributed load of 'w' per unit run over the entire span. The horizontal thrust is

Options :

2. wR/2

3 4wR/(3 r)

   2wR/(3 r)

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 : O

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

Options :

Composting

✖ Dumping in sea

Incineration

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 :

Tension failure of the plate

Shear failure of the rivet
Shear failure of the plate

Crushing failure of the rivet

Seasoning of timber is done to

Options :

Make it water proof

Paint its sulface

Increase its

temperature

Remove water

The following sources of infonnation is used by GIS

Options :

1. Spatial Infonnation

   ✖ Non-spatial infonnation

   Position infonnation

   Global information

The dimensions of the Chezy's coefficient C are

Options :

1. ✖ $L^2 T_{-1}$

2. ✖ $L T^{-1/2}$

ooo

3   MLT

4. ✔ $L^{1/2} T^{-1}$

A soil sample tested in a tliaxial test failed when the major and minor pmcipal stresses were 100 kNm and 40 IN 111 respectively and the pore pressure measured at failure was 10 kN/m^2. IMIat is the effective principal stress ratio at failure is

Options :

2. * 3.5

4

4.5

Excess of alumina in brick earth makes the blick

Options :

Impenneable

Blittle and weak

To lose cohesion

To crack and wall) on dlYing

Options :

Coincides with the centre of gravity

Coincides with the centroid of the volume of fluid displaced

✖ Remains above the centre of gravity

Remains below the centre of gravity

For structural steel, the relative magnitude of three modulii 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. ✖ $C > E > K$

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

Options :

Two times the weld size

Four times the weld size

Six times the weld size

Weld size

Correct Marks : 1 Wrong Marks : O

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

Options :

Positive

2. Negative

Zero

Same

liliich of the following statement is tme'

Options :

Potential evapotranspiration is always greater than actual evapotranspiration

✖ Potential evapotranspiration is equal to actual evapotranspiration when soil is dry

Potential evapotranspiration is either less than or equal to actual ✖ evapotranspiration

Actual evapotranspiration is either less than or equal to potential evapotranspiration for a well-watered plant

Correct Marks : 1 Wrong Marks : O

The propeny of a material by viltue of which it can be beaten or rolled into plates

Is called

Options :

1. 9 Malleability

   ✖ Ductility

3. ✖Plasticity

   ✖ Elasticity

Correct Marks : 1 Wrong Marks : O

If a 5% solution of sewage sample is incubated for 5 days at $20^0 C$ and the dissolved

oxygen depletion is 6.5 mg/l, then the BOD of the sewage would be

Options :

I   32.5 mg/1

   ✖ 325 mg/l

3.4 130 mg/l

4 20 mg/l

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

Options :

Free

✖ Hinge

Roller

Fixed

In consolidated undrained maxial compression test, the soil specimen is consolidated dilling the application of

Options :

Deviator stress

2. Major prmcipal stress Minor

   principal stress

Failure

Total Kjeldahl nitrogen is a measure of

Options :

✖ Total organic nitrogen

Total organic and ammonia nitrogen

Total inorganic and ammonia nitrogen

4. Total ammonia nitrogen

If plincipal stresses in a two dimensional stresses system are -10 MPa and 20

MPa, the maximum shear stress at that point in MPa is

Options :

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 : O

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

Options :

90 mm

180 mm

190 mm

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 : O

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

Options :

Half of critical density

Jam density

Free flow conditions

Half of Jam density

Stream lines and path lines always coincide in case of

Options :

1. ✔ Steady and uniform flow

Laminar and non-unifonn flow

Non-unifonn and steady flow

Turbulent flow

The phenomenon observed on a horizontal culve where the rear wheels follow a

path of sh01ter radius than the front wheels is better known as

Options :

✖ Extra widening

✖ Super elevation

Off tracking

Transition

If three members meet at a point and the stiffness of the members are kl = El, k2 = 2EI, = 1.5EI, the distribution factor for member 1 is

Options :

1/3

1/3.5

1/4.5

1/4

The longe of adhesion factor oc as per IS: 2911 (Pan-I) — 2010 for bored piles in clay

Options :

0.3 - 0 5

0.5 - 0 7

0.3 - 1 0

0.5 - 1 0

The difference between the maximum time available and the actual time needed to

perform an activity is known as

_____

Options :

Free float

Independent float

Total float

Half float

The nominal shear strength of the fillet weld is

Options :

fy/N/SYmw

fu/A/S

3 fy/&fi

4. ✖ $fu/\sqrt{3}\gamma_{mw}$

Impoltant design factor for settling basins

Options :

Detention time

Horizontal velocity

Surface overflow rate

Weir overflow rate

Soundness test of cement is done to determine its

Options :

✖ Durability in sea water

Free lime content

Iron oxide content

Alumina content

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

Options :

OCI

✖ NH2C1

HOCI

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

Options :

150

2.4 170

180

120

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

Options :

Oxidation pond

Oxidation ditch

✖ Anaerobic pond

Trickling Filter

A typical oveltaking zone comprises of

Options :

✖ 2 to 4 times overtaking distance

3 to 5 times overtaking distance

2 to 4 times intermediate sight distance

3 to 5 times intennediate sight distance

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 . The settlement of a prototype shallow footing 1.2 m square under the same intensity of loading is

Options :

40 mm

50 mm

70 mm

80 mm

The critical flow condition in a channel is given by

Options :

$QT^2\ 4^2=1$

Q2T2/gA2=1

$Q^2T\ gA^3=1$

QT/gA3=1

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

Options :

C3S

2. * C2S

3. e C3A

C4AF

A saturated clay with a double drainage under a stmcture will take 9 years to reach 90% of consolidation.   would be the time required to have 900 0 consolidation if it is single drained

Options :

✖ 24 years

2.   •4 36 years

3.   40 years

50 years

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 :

Parabolic

✖ Triangular

Trapezoidal

Circular

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

Options :

Decibel level will be same

Decibel level will decrease by 3 decibels

✔ Decibel level will increase by 3 decibels

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

In a laboratory compaction test on soils, what is the effect of increasing compactive
eff01t on the values of MDD and OMC respectively

Options :

Increase, Increase

✖ Decrease, Decrease

Decrease, Increase

Increase, Decrease

Bulking sludge refers to having

Options :

FAI = zero

F/M< 0.3/d

0.3/(1 < FM < 0.6/d

F/M> 0.6/d

In highway sections, design capacity refers to

Options :

✖ Basic Capacity

Practical Capacity

Possible capacity

Peak Capacity

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

Options :

20 % for stiff soils, 10% for soft clays.

2. 10 % for stiff soils, 20% for soft clays.

10 % for both stiff soils and soft clays.

20 % for both stiff soils and soft clays.

For full anchorage, the stinups should extend by a length of_____times the diameter of bar when bent at 135 ^{0}

Options :

4

8

4.4 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 :

Convening the areal average rainfall to the rainfall at the stonn centre.

Converting the rainfall at the stonn 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.

Constructing rainfall intensity-duration-frequency relationship for a drainage

basin

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 ctuve?

Options :

To provide gradual introduction of extra-widening

✖ To enable safer tuming capability

To provide proper sight distance

To increase comf01t of passengers

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

Options :

1. * 2.5

3.5

4.0

A steel bar of length 5 m is unifonnly heated from 30^0C to 90^0C. If E=200 GPa, coefficient of thennal expansion is 12 x the temperature stress developed in the bar is

Options :

144 MPa

200 MPa

189 MPa

169 MPa

The dispersion of pollutants in atmosphere is maximum when

Options :

Maximum mixing depth is equal to zero

Environmental lapse rate is less than adiabatic lapse rate

Environmental lapse rate is equal to adiabatic lapse rate

Environmental lapse rate is greater than adiabatic lapse rate

The sh01test possible time in which an activity can be achieved under ideal circumstances is Imown as _____

Options :

Pessimistic time estimate

2. Optimistic time estimate

Expected time estimate

The most likely time estimate

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 theolY

Options :

Zero

Equal to p

Greater than p

Lesser than p

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

Options :

Perennial Stream

Intennittent Stream

Ephemeral Stream

Meandering Stream

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
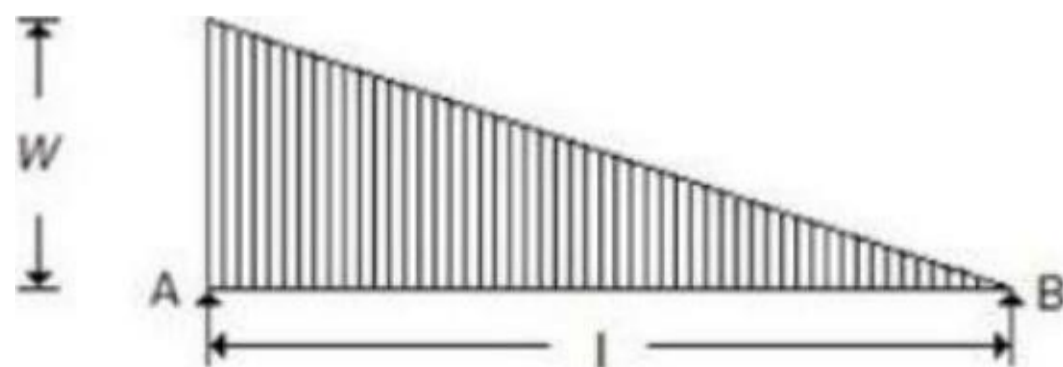
Options :

1. ✔ W1/6

WI/3

3. ✘ W1

2WV3

The major photochemical oxidant is

Options :

1. Hydrogen peroxide Ozone

✘ Nitrogen oxides

✘ Peroxy acetyl nitrate (PAN)

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

called as

Options :

✘ Parking Load

Parking Index

Parking Tumover

✖ Parking Load

In a constant head penneameter with a cross sectional area of 10 cm , 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 penneability of soil is

Options :

0.002 cm/s

0.02 cm/s

0.2 cm/s

2 cm/s

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 Es = 200 GPa, the loss of stress due to slip is

Options :

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 venical alignment is

considered as

Options :

1.2 m

0.5 m

2.5 m

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 : O

Coefficient of contraction is the ratio of

Options :

Actual velocity ofjet at vena contracta to the theoretical velocity

Loss of head in the orifice to the head of water available at the exit of the orifice

Actual discharge through an 01ifice to the theoretical discharge

Area ofjet at vena contracta to the area of 01ifice

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 : O

The load canying capacity of an individual friction pile is 160 kN. Illiat is the total

canying capacity of a group of 9 such piles with group efficiency factor of

0.85?

Options :

1440 kN

1224 kN

1640 kN.

900 kN

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

Options :

Zero

less than I

more than 1

In pipe flow the critical Reynolds number is about

Options :

640

5×105

2000

64000

Hydraulic jump occurs when the

Options :

Channel bed is smooth,

Flow changes from supercritical to subclitical,

Flow changes from subcritical to super cfitical

Slope of bed changes from steep to mild slope

The ratio of maximum shear stress developed in a rectangular beam and a circular

beam of the same cross-sectional area is

Options :

2/3

3/4

1

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 pennissible

24 hour standard for PM2.5 is

Options :

60 g/m^3

60 mg/111^3

3.4 60 ltg/m3

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 : O

If   45+(9/2), the coefficients of active and passive ealth pressure as per

Rankine's theory are

Options :

Tan^{2}cc, Cot^2 0c

$\text{Cot}^2 0c, \text{Tan}^2 cc$

3     $0, \text{Cot}^2 0c.$

$\text{Tan}^2 0c, O$

Time mean speed and space mean speeds are equal when

Options :

All the vehicles are moving with same speed

✖ No vehicle is present in the traffic stream

✖ Traffic density is more than the critical density

✖ Flow is reaching free flow conditions

The clitical depth is the flow depth at which

Options :

The discharge is minimum for a fixed potential energy

The discharge is maximum for a fixed kinetic energy

The discharge is mmimum for a fixed specific energy

The discharge is maximum for a fixed specific energy

The pupose of the dowel bars is to

Options :

Withstand temperature stresses

Stiffening of slabs

Transfer loads between slabs

Bonding of slab to sub grade

If an element of a stressed body is in state of pure shear with a magnitude of 80

MPa, the magnitude of maximum plincipal stress (in MPa) at that location is

Options :

80

113.14

3. * 120

0

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

Options :

Flictional   stresses

Wall)ing stresses

Subgrade reaction

Load stress

The nature of flow for a discharge of 2.5 m /s through a rectangular open channel of bottom width I m and depth 5 m is

Options :

Critical

Supercritical

Subcritical

Depends upon the nature of fluid

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

Options :

50 mm

75 mm

40 mm.

20 mm

Solid waste generated from an indust1Y contains only two components, as shown
in the table below

Component	Composition (%wei2ht)	Density (k2/m3)
Paper		
Cardboard		

Assuming (Cl+C2) = 100, the composite density of the solid waste (p) is given by

Options :

$100\ e +$

$\dfrac{100}{\frac{c_1}{\rho_1}+\frac{c_2}{\rho_2}}$

2. ✔

$100\ (CIPI + C2P2)$

$100\ (\dfrac{\rho_1\rho_2}{c.p.+czpz})$

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 : O

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

Options :

20 dB

40 dB

45 dB

80dB

Due to downward flow of water, the effective stress

Options :

Increases

Decreases

✖ Does not change

Becomes zero

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

Options :

Bitumen Emulsion

Cutback bitumen

Modified bitumen

Bitumen pmners

In GPS, a lower PDOP value refers to

Options :

✖ Less accurate positioning

✖ Can't say on accuracy

More accurate positioning

✖ Positioning is not possible

The tenn altemate depths is used in open channel flow to denote the depths

Options :

✖ Having the same kinetic energy for a given discharge

Having the same specific force for a given discharge

Having the same specific energy for a given discharge

Having the same total energy for a given discharge

In cuve setting, central position of culve can be set by

Options :

Tangent

Chord

Apex

Secant

The flow mass curve is a plot of

Options :

Accumulated flow against time

❋ Discharge against time in chronological order

❋ 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.

If pp is the passive ealth pressure and 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 theow are, respectively.

Options :

1. ✖ $0, p_p.$

3. ✖ $p_p, 0$

4. ✔ p_p, σ_z

As per the Indian standard soil classification system, a sample of silty clay with liquid limit of 400 0 and plasticity index of 28% is classified as

Options :

CH

CL

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 Trigonometlic levelling, one of the following conditions is not valid.

Options :

Base of object is accessible

✖ Base of object is inaccessible

Base of object is at accurate position

Base of object is inaccessible, station is not in vertical plane