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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 07th June 2025 Shift 1
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Civil Engineering

Group Number :	1
Group Id :	83189654
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Civil Engineering

Section Id :	83189654
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	120
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Sub-Section Number :	1
Sub-Section Id :	83189654
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 8318966361 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A bar of diameter 30 mm is subjected to a tensile load such that the measured extension on a gauge length of 200 mm is 0.09 mm and change in the diameter is 0.0045 mm. The Poisson's ratio will be_____.

Options :

1. ✖ 0.15

2. ✖ 0.25

3. ✔ 0.33

4. ✖ 0.45

Question Number : 2 Question Id : 8318966362 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

At a point in a steel member, a major principal stress is 200 MPa (tensile) and minor principal stress is compressive. If uniaxial tensile yield stress is 250 MPa, then according to maximum shear stress theory, the magnitude of the minor principal stress (compressive) at which yielding will commence is_____.

Options :

1. ✖ 200 MPa

2. ✖ 100 MPa

3. ✔ 50 MPa

4. ✖ 25 MPa

Question Number : 3 Question Id : 8318966363 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Bending moment (M) and Torque (T) are applied on a solid circular shaft. If maximum bending stress equals to maximum shear stress developed, then M is equal to_____.

Options :

1. ✔ T/2

2. ✖ T

3. ✖ 2T

4. ✖ 4T

Question Number : 4 Question Id : 8318966364 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Two simply supported beams B_1 and B_2 have spans l and $2l$ respectively. Beam B_1 has a cross-section of 1×1 units and B_2 has a cross-section of 2×2 units. These beams are subjected to concentrated loads W each at the centre of their spans. The ratio of the maximum flexural stress in these beams is_____.

Options :

1. ✖ 2

2. ✔ 4

3. ✖ 0.5

4. ✖ 0.25

Question Number : 5 Question Id : 8318966365 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For a circular column having its ends hinged, the slenderness ratio is 160. The *l*/d ratio of the column is_____.

Options :

1. 80 ✖

2. 40 ✔

3. 57 ✖

4. 20 ✖

Question Number : 6 Question Id : 8318966366 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A simply supported beam with rectangular cross-section section is subjected to central concentrated load. If width and depth of the beam are doubled, then the deflection at the centre of the beam will be reduced to_____.

Options :

1. ✖ 50%

2. ✖ 25%

3. ✖ 12.5%

4. ✔ 6.25%

Question Number : 7 Question Id : 8318966367 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A fixed beam AB is subjected to a triangular load varying from zero at end A to 'w' per unit length at end B. The ratio of fixed end moment at B to that at A will be_____.

Options :

1. ✖ 1/2

2. ✖ 1/3

3. ✖ 2/3

4. ✔ 3/2

Question Number : 8 Question Id : 8318966368 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Number of unknowns to be determined in the stiffness method is equal to_____.

Options :

1. ✖ static indeterminacy

2. ✔ kinematic indeterminacy

3. ✖ sum of static and kinematic indeterminacy

4. ✖ Product of static indeterminacy and kinematic indeterminacy

Question Number : 9 Question Id : 8318966369 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If deflection at the free end of a uniformly loaded cantilever beam of length 1 m is equal to 7.5 mm, then slope at the free end is_____.

Options :

1. ✔ 0.01 radians

2. ✖ 0.015 radians

3. ✖ 0.02 radians

4. ✖ 0.001 radians

Question Number : 10 Question Id : 8318966370 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A beam of triangular section has base width 200 mm and height 100 mm. The maximum shear stress in the beam section due to a shear force of 20 kN is_____.

Options :

1. ✖ 1.5 MPa

2. ✖ 1.33 MPa

3. ✔ 2.66 MPa

4. ✖ 3.0 MPa

Question Number : 11 Question Id : 8318966371 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For the section having width b and depth d, the second moment of the area about an axis $d/4$ distance above the bottom of the area is_____.

Options :

1. ✖ $bd^3/48$

2. ✖ $bd^3/12$

3. ✔ $7bd^3/48$

4. ✖ $bd^3/3$

Question Number : 12 Question Id : 8318966372 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The law in which, the system of forces acting on a moving body is in dynamic equilibrium with the inertia force of the body is known as_____.

Options :

1. ✖ Lami's theorem

2. ✖ impulse momentum theorem

3. ✖ work energy principle

4. ✔ D'Alembert's principle

Question Number : 13 Question Id : 8318966373 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A simply supported beam is subjected to a linearly varying load from one end to the other end. The nature of variation of shear force in the beam is_____.

Options :

1. ✔ parabolic

2. ✖ elliptic

3. ✖ third order curve

4. ✖ linear

Question Number : 14 Question Id : 8318966374 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The ratio of elongation of a prismatic bar due to its own weight and that of a conical bar of the same length, is_____.

Options :

1. ✖ 1/2

2. ✔ 3

3. ✖ 1/3

4. ✖ 2

Question Number : 15 Question Id : 8318966375 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A propped cantilever beam of span 4 m is fixed at end A and simply supported at end B. The beam is subjected to a uniformly distributed load of 5 kN/m. Then the reactions at A and B respectively are_____.

Options :

1. ✔ 12.5 kN and 7.5 kN

2. ✖ 5 kN and 15 kN

3. ✖ 7.5 kN and 12.5 kN

4. ✖ 15 kN and 5 kN

Question Number : 16 Question Id : 8318966376 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A section of a shaft of diameter 100 mm is subjected to a moment of 4 kN-m and a torque of 3 kN-m. The ratio of maximum principal stress to minimum principal stress numerically is_____.

Options :

1. ✔ 9

2. ✖ 2

3. ✖ 5/3

4. ✖ 4/3

Question Number : 17 Question Id : 8318966377 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the length of a simply supported beam carrying a concentrated load at the center is doubled, the deflection at the centre will become_____.

Options :

1. ✖ Two times

2. ✖ Four times

3. ✔ Eight times

4. ✖ Sixteen times

Question Number : 18 Question Id : 8318966378 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bearing stiffness are provided in a plate girder to_____.

Options :

1. ✖ reduce the weight of the girder

2. ✖ resist bending moments in the flange

3. ✔ transfer concentrated loads and prevent web buckling

4. ✖ connect the flange plates to the web

Question Number : 19 Question Id : 8318966379 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

M60 structural steel tube has a radius of gyration 20mm. The unbraced length up to which the tube can be used as a compression member is_____.

Options :

1. ✔ 3.6 m

2. ✖ 5.0 m

3. ✖ 6.0 m

4. ✖ 7.2 m

Question Number : 20 Question Id : 8318966380 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The moment required to rotate the near end of a prismatic beam through unit angle, without translation, the far end being fixed, is given by_____.

Options :

1. ✖ EI/L

2. ✖ 2EI/L

3. ✖ 3EI/L

4. ✔ 4EI/L

Question Number : 21 Question Id : 8318966381 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the slope deflection equations, the deformations generated are due to :

i. axial force

ii. shear force

iii. bending moment

Options :

1. ✖ only (i) and (ii)

2. ✔ only (iii)

only (i)

3. ✖

only (i) and (iii)

4. ✖

Question Number : 22 Question Id : 8318966382 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A structure has two degrees of indeterminacy. The number of plastic hinges that would be formed at complete collapse is_____.

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 2

4. ✔ 3

Question Number : 23 Question Id : 8318966383 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Most common method of prestressing used for factory production is_____.

Options :

1. ✔ Long line method

2. ✖ Freyssinet system

3. ✖ Magnel – Blaton system

4. ✖ Lee – McCall system

Question Number : 24 Question Id : 8318966384 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

As per IS: 456 -1978, if 'L' is the short span of slab, what would be the minimum total thickness of slab in order to meet the slab stiffness criteria?

Options :

1. ✔ L/35

2. ✖ L/15

3. ✖ L/45

4. ✖ L/25

Question Number : 25 Question Id : 8318966385 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The modulus of resilience is the_____.

Options :

1. ✖ area under the entire stress-strain curve

2. ✔ area under the stress-strain curve up to yield point

3. ✖ maximum stress multiplied by maximum strain

4. ✖ ratio of stress to strain

Question Number : 26 Question Id : 8318966386 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

How much percentage of average bond stress is increased for reinforced bars subjected to compression?

Options :

1. ✖ 75

2. ✖ 50

3. ✔ 25

4. ✖ 10

Question Number : 27 Question Id : 8318966387 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For a long slender column, failure is most likely to occur due to_____.

Options :

1. ✖ yield stress

2. ✖ shear capacity

3. ✔ lateral-torsional buckling

4. ✖ bearing strength at supports

Question Number : 28 Question Id : 8318966388 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The minimum cover in any pretensioned - prestressed concrete member located in an aggressive environment is_____.

Options :

1. ✖ 20 mm

2. ✖ 25 mm

3. ✔ 30 mm

4. ✖ 40 mm

Question Number : 29 Question Id : 8318966389 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following agent does not enhance the workability of concrete?

Options :

1. ✖ Plasticizer

2. ✔ Silica fume

3. ✖ Air entraining agents

4. ✖ Super plasticizer

Question Number : 30 Question Id : 8318966390 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For a symmetrical I-section beam, the shear stress is maximum at_____.

Options :

1. ✖ top fiber

2. ✖ bottom fiber

neutral axis

3. ✔

at the flange tips

4. ✖

Question Number : 31 Question Id : 8318966391 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

According to IS: 800-2007, the lacing bars in a steel column should resist a transverse shear equal to_____.

Options :

2.5% of the axial load in the member

1. ✔

5% of the axial load in the member

2. ✖

7.5% of the axial load in the member

3. ✖

10% of the axial load in the member

4. ✖

Question Number : 32 Question Id : 8318966392 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In prestressed concrete, the primary purpose of prestressing is to_____.

Options :

1. reduce weight ✖

2. improve aesthetics ✖

3. induce tensile stress ✖

4. counteract tensile stress ✔

Question Number : 33 Question Id : 8318966393 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The slope at the end of a simply supported beam with a central point load is_____.

Options :

1. ✖ zero

2. ✖ maximum at mid-span

3. ✔ non-zero and symmetric at ends

4. ✖ infinite at mid-span

Question Number : 34 Question Id : 8318966394 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the design of a steel tension member, which mode is NOT typically considered?

Options :

1. ✖ Yielding of gross section

2. ✖ Rupture of net section

3. ✖ Block shear failure

4. ✔ Buckling of compression flange

Question Number : 35 Question Id : 8318966395 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The effective length of a column of length L, held in position and restrained in direction at one end and the other end effectively restrained in direction but not held in position, is equal to_____.

Options :

1. ✖ 0.67L

2. ✖ 0.85L

3. ✖ L

4. ✔ 1.2L

Question Number : 36 Question Id : 8318966396 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The ratio of weight of water to weight of dry soil is called_____.

Options :

1. ✖ void ratio

2. ✖ degree of saturation

3. ✔ water content

4. ✖ unit weight of water

Question Number : 37 Question Id : 8318966397 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A fully saturated soil has water content of 20% and specific gravity 2.5, then its porosity is_____.

Options :

1. ✖ 66.66%

2. ✔ 33.33%

3. ✖ 25%

4. ✖ 50%

Question Number : 38 Question Id : 8318966398 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A soil has coefficient of uniformity of 6, particle size corresponding to 60% finer and 30% finer are respectively 0.85 and 0.35. Then the coefficient of curvature of soil is_____.

Options :

1. ✔ 1.017

2. ✖ 2.907

3. ✖ 2.420

4. ✖ 6.000

Question Number : 39 Question Id : 8318966399 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A layer of clay soil has saturated unit weight of 20 kN/m^3. Ground water table is located at ground surface and unit weight of water is 10 kN/m^3. If the over consolidation ratio of soil at 5 m below ground level is 2, what would be the maximum effective stress to which the soil has been subjected in its stress history?

Options :

1. ✖ 200 kPa

2. ✖ 150 kPa

3. ✔ 100 kPa

4. ✖ 50 kPa

Question Number : 40 Question Id : 8318966400 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A cohesionless soil sample has showed an angle of internal friction 30° at failure corresponding to a cell pressure of 100 kPa. The deviator stress at failure is_____.

Options :

1. ✖ 300 kPa

2. ✔ 200 kPa

3. ✖ 100 kPa

4. ✖ 60 kPa

Question Number : 41 Question Id : 8318966401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A point load of 400 kN is acting on the surface of the ground. The vertical stress directly below the load at 2 m depth as per the Boussinesq's theory is_____.

Options :

1. ✖ 4.775 kPa

2. ✔ 47.75 kPa

3. ✖ 477.5 kPa

4. ✖ Infinity

Question Number : 42 Question Id : 8318966402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Due to capillary rise in soil, the effective stress_____.

Options :

1. ✖ decreases

2. ✖ does not change

3. ✔ increases

4. ✖ becomes infinity

Question Number : 43 Question Id : 8318966403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a plate load test, the minimum ratio of widths of pit to plate to be maintained is_____.

Options :

1. ✖ 3

2. ✖ 4

3. ✔ 5

4. ✖ 6

Question Number : 44 Question Id : 8318966404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the actual observed value of standard penetration resistance, N is 21 in a fine sand layer below the water table, then the corrected N value for dilatancy is_____.

Options :

1. ✖ 21

2. ✔ 18

3. ✖ 15

4. ✖ 11

Question Number : 45 Question Id : 8318966405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If γ is the unit weight of soil, D_f is the depth of foundation, and F is the factor of safety, the difference in gross safe bearing capacity and net safe bearing capacity is expressed as_____.

Options :

1. ✔ γD_f

2. ✖ $0.5\gamma D_f$

3. ✖ $(\gamma D_f)/F$

4. ✖ $0.5\ (\gamma D_f)/F$

Question Number : 46 Question Id : 8318966406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If an infinite slope of clay at a depth 5 m has cohesion of 10 kPa and unit weight of 20 kN/m^3, then the stability number corresponding to a critical condition will be_____.

Options :

1. ✖ 0.02

2. ✖ 0.20

3. ✖ 0.01

4. ✔ 0.10

Question Number : 47 Question Id : 8318966407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A retaining wall has a backfill of pure clay whose unconfined compressive strength is 40 kPa and unit weight 20 kN/m^3. The depth of tension crack developed in the backfill is_____.

Options :

1. ✖ 1 m

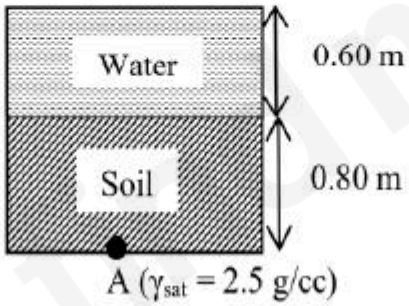
2. ✔ 2 m

3. ✖ 3 m

4. ✖ 4 m

Question Number : 48 Question Id : 8318966408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The ratio of effective stress to total stress at point 'A' given in the figure is _____.



Options :

1. ✔ 0.46

2. ✖ 0.35

3. ✖ 0.52

4. ✖ 0.32

Question Number : 49 Question Id : 8318966409 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the ground water table is exactly at the base of the foundation, the maximum water table reduction factor may be_____.

Options :

1. ✖ 0.25

2. ✔ 0.50

3. ✖ 0.65

4. ✖ 0.75

Question Number : 50 Question Id : 8318966410 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the pile load estimation in very soft clay, the adhesion factor considered is_____.

Options :

1. ✔ 1.0

2. ✖ 0.7

3. ✖ 0.3

4. ✖ zero

Question Number : 51 Question Id : 8318966411 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Magnitude of the component of velocity at point (1,1) for a stream function $\Psi = x^2 - y^2$ is equal to_____.

Options :

1. ✖ 2

2. ✖ 4

3. ✔ $2\sqrt{2}$

4. ✖ $4\sqrt{2}$

Question Number : 52 Question Id : 8318966412 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a 1:100 scale model of a harbour, the time which will correspond to the prototype tidal period of 12 hours will be_____.

Options :

1. ✖ 0.12 hour

2. ✔ 1.2 hours

3. ✖ 12 hours

120 hours

4. ✖

Question Number : 53 Question Id : 8318966413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A wide channel is 1m deep and has a velocity of flow V as 2.13 m/s. If disturbance is caused, an elementary wave can travel upstream with a velocity of_____.

Options :

1. ✔ 1.00 m/s

2. ✖ 2.13 m/s

3. ✖ 3.13 m/s

4. ✖ 5.26 m/s

Question Number : 54 Question Id : 8318966414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The maximum diameter that a capillary tube can have to ensure that a capillary rise of at least 6 mm is achieved when the tube is dipped into a body of liquid with surface tension = 0.08 N/m and density = 900 kg/m^3 is_____.

Options :

1. ✖ 3 mm

2. ✔ 6 mm

3. ✖ 5 mm

4. ✖ 8 mm

Question Number : 55 Question Id : 8318966415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A sphere of 150 mm diameter is held in equilibrium by a vertical air stream of velocity 15 m/s. If density of air is 1.225 kg/m^3 and coefficient of drag is 0.43, weight of sphere is_____.

Options :

1. ✖ 0.78 N

2. ✔ 1.04 N

3. ✖ 1.29 N

4. ✖ 1.56 N

Question Number : 56 Question Id : 8318966416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A 75 mm diameter pipe of 500 m length operates under a head of 60 m at its inlet. If a nozzle is fitted at its outlet, then for most efficient conditions, the velocity of flow from the nozzle (with $C_v = 1$) is_____.

Options :

1. ✖ 19.8 m/s

2. ✔ 28 m/s

3. ✖ 10 m/s

4. ✖ 40 m/s

Question Number : 57 Question Id : 8318966417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If atmospheric pressure head is 9 m, vapour pressure head (maximum) is 1m, failure head is 40 m and cavitation coefficient σ is 0.15, then height at which the turbine can be set above the tailrace level is_____.

Options :

1. ✖ 6 m

2. ✖ 4 m

3. ✖ 3 m

4. ✔ 2 m

Question Number : 58 Question Id : 8318966418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A flat plate of 0.15 m^2 is pulled at 20 cm/s relative to another plate, fixed at a distance of 0.02 cm from it with a fluid having $\mu = 0.0014$ Ns/m^2 separating them. The power required to maintain the motion is_____.

Options :

1. ✖ 0.014 W

2. ✖ 0.021 W

3. ✖ 0.035 W

4. ✔ 0.042 W

Question Number : 59 Question Id : 8318966419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The flow of a liquid at constant rate in a conically tapered pipe is classified as_____.

Options :

1. ✖ steady and uniform

2. ✖ unsteady and uniform

3. ✔ steady and non-uniform

4. ✖ unsteady and non-uniform

Question Number : 60 Question Id : 8318966420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A drainage basin has an area of 210 km^2. The average depth of rainfall received by it during a monsoon period is computed as 65 cm, while the runoff measured at its outlet during the same period is estimated to be 5.68×10^7 m^3. What percentage of rainfall has become runoff?

Options :

1. ✖ 50.5%

2. ✔ 41.62%

3. ✖ 61.42%

4. ✖ 38%

Question Number : 61 Question Id : 8318966421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What should be the diameter of an open well to give a safe yield of 4.8 *l*/s? Assume working head as 3.75 m and sub soil consists of fine sand of C = 0.5 h^{-1}.

Options :

1. ✖ 1.50 m

2. ✖ 2.25 m

3. ✔ 3.04 m

4. ✖ 4.20 m

Question Number : 62 Question Id : 8318966422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

For medium silt whose average grain size is 0.16 mm, Lacey's silt factor is likely to be

Options :

1. ✖ 0.30

2. ✖ 0.45

3. ✔ 0.70

4. ✖ 1.32

Question Number : 63 Question Id : 8318966423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The probability of a 10-year flood to occur at least once in in the next 4 years is_____.

Options :

1. ✖ 25%

2. ✔ 35%

3. ✖ 50%

4. ✖ 65%

Question Number : 64 Question Id : 8318966424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the discharge capacity required at the outlet to irrigate 2200 hectares of sugarcane having a kor depth of 17 cm and kor period of 30 days?

Options :

1. ✖ 102.8 m^3/s

2. ✖ 0.73 m^3/s

3. ✔ 1.44 m^3/s

4. ✖ 0.01 m^3/s

Question Number : 65 Question Id : 8318966425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In an irrigated plot the net irrigation requirement of crop is found to be 14.9 cm, the application efficiency is 80% and water conveyance efficiency is 70%. What is the gross irrigation requirement (GIR)?

Options :

1. ✖ 18.6 cm

2. ✖ 20.5 cm

3. ✖ 23.8 cm

4. ✔ 26.6 cm

Question Number : 66 Question Id : 8318966426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If sensitivity of an irrigation module is 0.5, then what percent variation in outlet discharge will be caused by 50 percent variation in canal water depth?

Options :

1. ✖ 100%

2. ✖ 50%

3. ✔ 25%

4. ✖ 12.5%

Question Number : 67 Question Id : 8318966427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is a method for estimating evaporation from a water surface?

Options :

1. ✖ Darcy's law

2. ✔ Penman method

3. ✖ Rational method

4. ✖ Gumbel's method

Question Number : 68 Question Id : 8318966428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A city supply of 15000 cubic meters of water per day it treated with a chlorine dosage of 0.5 ppm. For the purpose, the requirement of 25% bleaching powder per day would be_____.

Options :

1. ✖ 300 kg

2. ✖ 75 kg

3. ✖ 7.5 kg

4. ✔ 30 kg

Question Number : 69 Question Id : 8318966429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Fresh sludge has moisture content of 99%, after thickening its moisture content is reduced to 96%. The reduction in volume of sludge is_____.

Options :

1. ✖ 5%

2. ✔ 75%

3. ✖ 85%

4. ✖ 97.5%

Question Number : 70 Question Id : 8318966430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

As compared to fresh river water, sea water contains_____.

Options :

1. ✖ 10% more oxygen

2. ✖ 20% more oxygen

3. ✖ 10% less oxygen

4. ✔ 20% less oxygen

Question Number : 71 Question Id : 8318966431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

High COD to BOD ratio of an organic pollutant represents_____.

Options :

1. ✖ high biodegradability of the pollutant

2. ✔ low biodegradability of the pollutant

3. ✖ low total organic content of the pollutant

presence of free oxygen for aerobic decomposition

4. ✖

Question Number : 72 Question Id : 8318966432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The minimum dissolved oxygen required in water to save the aquatic life is_____.

Options :

1. ✖ 1 ppm

2. ✖ 2 ppm

3. ✔ 4 ppm

4. ✖ 8 ppm

Question Number : 73 Question Id : 8318966433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In transition of sewers from smaller diameter sewers to larger diameter sewers, the continuity of sewers is maintained at the_____.

Options :

1. ✖ bottom of the concrete bed of sewers

2. ✔ inverts of the sewer

3. ✖ crowns of the sewers

4. ✖ hydraulic gradients of the sewers

Question Number : 74 Question Id : 8318966434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Acceptable lower limit of bacteria removal through activated sludge process is_____.

Options :

1. ✖ 60%

2. ✖ 70%

3. ✖ 80%

4. ✔ 90%

Question Number : 75 Question Id : 8318966435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The biochemical treatment of sewage effluents is essentially a process of_____.

Options :

1. ✔ oxidation

2. ✖ dehydration

3. ✖ reduction

4. ✖ alkalinization

Question Number : 76 Question Id : 8318966436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A circular primary clarifier processes an average flow of 5005 m^3/day of municipal wastewater. The outflow rate is 35 m^3/m^2d. The diameter of clarifier shall be_____.

Options :

1. ✖ 10.5 m

2. ✖ 11.5 m

3. ✖ 12.5 m

4. ✔ 13.5 m

Question Number : 77 Question Id : 8318966437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Pollutant standards index (PSI) value between 101-199 denotes the air quality as_____.

Options :

1. ✖ good

2. ✖ moderate

3. ✔ unhealthy

4. ✖ hazardous

Question Number : 78 Question Id : 8318966438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Electrostatic precipitator is a device to control_____.

Options :

1. ✖ SO_2 emission

2. ✔ particulate emission

3. ✖ both SO_2 and Particulate emission

4. ✖ precipitation of $Al(OH)_3$ in water coagulation

Question Number : 79 Question Id : 8318966439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Ringelmann's scale is used to_____.

Options :

1. ✖ Measure CO

2. ✖ Measure SO_2

3. ✔ Grade intensity of smoke

4. ✖ Grade automobile exhaust gas

Question Number : 80 Question Id : 8318966440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following pollutants or pairs of pollutants is formed due to photochemical reactions?

Options :

1. ✖ CO alone

2. ✔ O_3 and PAN

3. ✖ PAN and NH_3

4. ✖ NH_3 and CO

Question Number : 81 Question Id : 8318966441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The permissible time limit of 120 dB noise is_____.

Options :

1. ✔ 30 seconds

2. ✖ 2 minutes

3. ✖ 1 minute

4. ✖ 30 minutes

Question Number : 82 Question Id : 8318966442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the total percentage of nitrogen gas present in the air?

Options :

1. ✖ 87

2. ✔ 78

3. ✖ 21

4. ✖ 12

Question Number : 83 Question Id : 8318966443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following particles cause water to appear cloudy and hazy?

Options :

1. ✔ Total suspended solids

2. ✖ Pollen grains

3. ✖ Hydrilla

4. ✖ Cotton

Question Number : 84 Question Id : 8318966444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

As per the reports of Central Pollution Control Board of India, the generation of solid waste in large cities per capita per day is_____.

Options :

1. ✖ 0.7 kg

2. ✖ 0.6 kg

3. ✔ 0.5 kg

4. ✖ 0.4 kg

Question Number : 85 Question Id : 8318966445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

By which of the following processes, the organic material present in the solid waste is decomposed?

Options :

1. ✖ By oxidation

2. ✖ By the soil particles

3. ✖ By the flow of water

4. ✔ By the action of microorganisms

Question Number : 86 Question Id : 8318966446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

As per the IRC recommendations, the coefficient of friction to be preferred between the road surface and vehicle tyre for a speed of vehicle about 50 kmph is_____.

Options :

1. ✔ 0.37

2. ✖ 0.36

3. ✖ 0.35

4. ✖ 0.34

Question Number : 87 Question Id : 8318966447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The minimum distance required for a vehicle to overtake a vehicle without interfering with a vehicle coming in the opposite direction at a design speed of about 80 kmph is_____.

Options :

1. ✖ 340 m

2. ✔ 470 m

3. ✖ 570 m

4. ✖ 640 m

Question Number : 88 Question Id : 8318966448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In a flexible pavement, the minimum thickness of base material should be kept as_____.

Options :

1. ✖ 20 cm

2. ✖ 15 cm

3. ✔ 10 cm

4. ✖ 5 cm

Question Number : 89 Question Id : 8318966449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The limit of aggregate crushing value for dense mix carpet in flexible pavements is_____.

Options :

1. ✖ 50

2. ✖ 40

3. ✔ 30

4. ✖ 25

Question Number : 90 Question Id : 8318966450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Marshall stability determines_____.

Options :

1. ✖ ductility

2. ✔ flexibility

3. ✖ utility

4. ✖ grade of bitumen

Question Number : 91 Question Id : 8318966451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Maximum size of aggregate in base course is_____.

Options :

1. ✖ 25 mm

2. ✔ 50 mm

3. ✖ 40 mm

4. ✖ 30 mm

Question Number : 92 Question Id : 8318966452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the minimum grade of concrete in CC pavement?

Options :

1. ✖ M20

2. ✖ M30

3. ✔ M40

4. ✖ M50

Question Number : 93 Question Id : 8318966453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The braking efficiency for a vehicle moving with a speed of 18 kmph, having a lag distance of 14 m and coefficient of longitudinal friction of 0.36 is_____.

Options :

1. ✔ 25.28%

2. ✖ 25.4%

3. ✖ 25.6%

4. ✖ 25.8%

Question Number : 94 Question Id : 8318966454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The standard load used in the estimation of subgrade CBR corresponding to 5 mm standard penetration is_____.

Options :

1. ✖ 1375 kg

2. ✖ 1355 kg

3. ✔ 2055 kg

2050 kg

4. ✖

Question Number : 95 Question Id : 8318966455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The distance travelled by a moving vehicle during perception and brake reaction time is known as_____.

Options :

sight distance

1. ✖

stopping distance

2. ✖

lag distance

3. ✔

perception distance

4. ✖

Question Number : 96 Question Id : 8318966456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The ratio of contact pressure to the tyre pressure is known as_____.

Options :

1. ✔ rigidity factor

2. ✖ flexibility factor

3. ✖ load factor

4. ✖ sub-grade modulus

Question Number : 97 Question Id : 8318966457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If 'L' is the length of chain, the compensating errors that occur in chaining are proportional to_____.

Options :

1. ✖ L

2. ✖ $1/L$

3. ✔ $L^{1/2}$

4. ✖ $L^{-1/2}$

Question Number : 98 Question Id : 8318966458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following is mid-ordinate value for a circular curve of radius 50 m and chord length 60 m?

Options :

1. ✖ 10 m

2. ✖ 15 m

3. ✖ 12.5 m

4. ✔ 8 m

Question Number : 99 Question Id : 8318966459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

On which end of a circle, the zero is marked in a prismatic compass?

Options :

1. ✖ East end

2. ✖ North end

3. ✔ South end

4. ✖ West end

Question Number : 100 Question Id : 8318966460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the bearing of a line AB is N 60° 30′ and that of BC is 122° of a closed traverse ABCDE, then the measure of the interior angle B is

Options :

1. ✖ 240° 30′

2. ✖ 122° 00′

3. ✔ 118° 30′

4. ✖ 154° 00′

Question Number : 101 Question Id : 8318966461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

An imaginary line joining the point of intersection of the cross-hairs of the diaphragm and the optical center of the object glass is called as_____.

Options :

1. ✖ fundamental line

2. ✖ axis of telescope

3. ✖ axis of level tube

4. ✔ line of collimation

Question Number : 102 Question Id : 8318966462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Design of laterally unsupported steel beams is governed by_____.

Options :

1. ✖ yield stress

2. ✖ shear capacity

3. ✔ lateral-torsional buckling

4. ✖ bearing strength at supports

Question Number : 103 Question Id : 8318966463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Deflection at the free end of a cantilever beam of length 2 m with 5 kN point load at the end is_____.

Options :

1. ✔ $(5 \times 2^3) / (3EI)$

2. ✖ $(5 \times 2^2) / (2EI)$

3. ✖ $(5 \times 2^3) / (6EI)$

4. ✖ $(5 \times 2^3) / (2EI)$

Question Number : 104 Question Id : 8318966464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A thin-walled circular pressure vessel has an internal pressure ‘p’, radius ‘r’, and wall thickness ‘t’. What is the hoop stress?

Options :

1. ✔ pr / t

2. ✖ 2pr / t

3. ✖ pt / r

4. ✖ pr / 2t

Question Number : 105 Question Id : 8318966465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A solid circular shaft is subjected to a constant torque. Which statement is correct about shear stress?

Options :

1. ✖ Maximum at center and zero at surface

2. ✖ Uniform across cross-section

3. ✔ Maximum at outer surface and zero at center

4. ✖ Varies linearly and is maximum at center

Question Number : 106 Question Id : 8318966466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Capillary rise is most prominent in which soil?

Options :

1. ✖ Gravel

2. ✖ Sand

3. ✔ Silt

4. ✖ Clay

Question Number : 107 Question Id : 8318966467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Negative skin friction occurs when_____.

Options :

1. ✖ pile is in overconsolidated clay

2. ✔ surrounding soil settles more than pile

3. ✖ pile expands

4. ✖ water table rises

Question Number : 108 Question Id : 8318966468 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following parameters most significantly influences the development length in a reinforced concrete beam?

Options :

1. ✔ Diameter of bar

2. ✖ Concrete cover

3. ✖ Aggregate size

4. ✖ Modulus of elasticity of steel

Question Number : 109 Question Id : 8318966469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following statements best explains why shear reinforcement (stirrups) is provided in reinforced concrete beams?

Options :

1. ✖ To resist bending moment

2. ✖ To increase the ductility of the beam

To resist diagonal tensile stresses caused by shear

3. ✔

To reduce deflection under service loads

4. ✖

Question Number : 110 Question Id : 8318966470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which method is used for structural analysis of indeterminate structures?

Options :

Equilibrium method

1. ✖

Virtual work method

2. ✖

Force method

3. ✔

Free body diagram

4. ✖

Question Number : 111 Question Id : 8318966471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Let i be an imaginary number such that $i = \sqrt{-1}$. Let a and b be real numbers satisfying $a^2 + b^2 = 1$. Then, the eigenvalues of the matrix $\begin{bmatrix} -a & b \\ b & a \end{bmatrix}$ are_____

Options :

1. ✖ 1 and 1

2. ✖ i and i

3. ✖ i and $-i$

4. ✔ 1 and -1

Question Number : 112 Question Id : 8318966472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $A = \begin{pmatrix} -3 & 2 \\ 1 & 0 \end{pmatrix}$ is a 2×2 matrix, then A satisfies the relation _____

Options :

1. ✖ $A^2 - 2A + 3I = O$

2. ✖ $A^3 - A^2 + A = O$

3. ✖ $(A + I)(A + 2I) = O$

4. ✔ $A^3 + 3A^2 - 2A = O$

Question Number : 113 Question Id : 8318966473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $F = F(x, y, z) = \frac{x^2y^2z^2}{x^2+y^2+z^2}$, $G = G(x, y, z) = \log\left(\frac{xy+yz+zx}{x^2+y^2+z^2}\right)$ and $H = F + G$, then $x\frac{\partial H}{\partial x} + y\frac{\partial H}{\partial y} + z\frac{\partial H}{\partial z} =$ _____

Options :

1. ✖ 0

2. ✔ $4F$

3. ✖ $2G$

4. ✖ $6H$

Question Number : 114 Question Id : 8318966474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The directional derivative of $f(x, y, z) = xyz$ at the point (1,2,3) in the direction of the vector $2\hat{\imath} + \hat{\jmath} - 2\hat{k}$ is _____

Options :

1. ✖ $\frac{5}{3}$

2. ✖ $\frac{-5}{3}$

3. ✔ $\frac{11}{3}$

4. ✖ $\frac{19}{3}$

Question Number : 115 Question Id : 8318966475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $\sin x$ is a solution of the differential equation

$$\frac{d^4y}{dx^4} + 2\frac{d^3y}{dx^3} + 6\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 5y = 0,$$

then the general solution is _____

Options :

1. ✖ $y = C_1 \sin x + e^{-x}(C_2 \sin 2x + C_3 \cos 2x)$

2. ✔ $y = C_1 \sin x + C_2 \cos x + e^{-x}(C_3 \sin 2x + C_4 \cos 2x)$

3. ✖ $y = C_1 \sin x + C_2 \cos x + C_3 \sin 2x + C_4 \cos 2x$

4. ✖ $y = C_1 \sin x + C_2 \cos x + C_3 e^{-3x} + C_4 e^{-2x}$

Question Number : 116 Question Id : 8318966476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Convert the non-linear equation $xy' + y = x^4y^3$ into a linear one using transformation $z = y^{-2}$.

Options :

1. ✔ $\frac{dz}{dx} - \frac{2z}{x} = -2x^3$

2. ✖ $\frac{dz}{dx} + \frac{2z}{x} = 2x^3$

3. ✖ $\frac{dz}{dx} - \frac{z}{2x} = 2x^2$

4. ✖ $\frac{dz}{dx} + \frac{z}{2x} = -2x^2$

Question Number : 117 Question Id : 8318966477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The complex valued function $f(z) = iz - |z|^2$ is analytic at

Options :

1. ✖ nowhere

2. ✖ everywhere

3. ✖ $z = 1$

4. ✔ $z = 0$

Question Number : 118 Question Id : 8318966478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If X is a continuous random variable with the probability density function

$$f(x) = \begin{cases} K(1 - x^3), & \text{if } 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$$

Then, the value of K is _____

Options :

1. ✖ $\frac{3}{4}$

2. ✔ $\frac{4}{3}$

3. ✖ $\frac{1}{3}$

4. ✖ 3

Question Number : 119 Question Id : 8318966479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The values of a function $f(x)$ at discrete values of x are given in the following table

x	0	1	2	3	4
$f(x)$	1	4	8	10	15

Using Trapezoidal rule, the value of $\int_0^4 f(x)dx$ is _____

Options :

1. ✖ 18

2. ✖ 40

3. ✖ 25

4. ✔ 29

Question Number : 120 Question Id : 8318966480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The probability distribution of a random variable X is

$X = x$	10	20	30	40	50
$P(X = x)$	k	$2k$	$3k$	$4k$	$5k$

Then, $P(X=50) - \frac{P(X<30)}{P(X>20)} =$ _____

Options :

1. ✖ $\frac{2}{3}$

2. ✖ $\frac{5}{6}$

3. ✔ $\frac{1}{12}$

4. ✖ 0