

Andhra Pradesh State Council of Higher Education

Notations :

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

Question Paper Name :	Civil Engineering 29th April 2026 Shift 1
Subject Name :	Civil Engineering
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Civil Engineering

Group Number :	1
Group Id :	75207666
Group Maximum Duration :	0
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Show Attended Group? :	No
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Civil Engineering

Section Id :	75207666
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	120
Number of Questions to be attempted :	120
Section Marks :	120
Section Negative Marks :	0
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	75207666
Question Shuffling Allowed :	Yes
Is Section Default? :	No

Question Number : 1 Question Id : 7520767801 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A propped cantilever beam has a degree of static indeterminacy equal to _____

Options :

1. ✘ 2

2. ✔ 1

3. ✘ 3

4. ✘ 4

Question Number : 2 Question Id : 7520767802 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A three-hinged arch of span 8 m carries a central point load of 32 kN. If the central rise is 2 m, the horizontal thrust is _____

Options :

1. ✘ 12 kN
2. ✘ 16 kN
3. ✘ 24 kN
4. ✔ 32 kN

Question Number : 3 Question Id : 7520767803 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A cable of span 10 m carries a uniformly distributed load of 6 kN/m over the entire span. If the central dip is 3 m, the horizontal tension is _____

Options :

1. ✘ 20 kN
2. ✔ 25 kN
3. ✘ 30 kN

4. ✘ 35 kN

Question Number : 4 Question Id : 7520767804 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A prestressing force of 300 kN is applied to a concrete member of cross-sectional area 15000 mm². Due to losses, 20% of the prestress is lost. The effective compressive stress in concrete is _____

Options :

1. ✘ 12 MPa

2. ✘ 14 MPa

3. ✔ 16 MPa

4. ✘ 18 MPa

Question Number : 5 Question Id : 7520767805 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A steel tie of gross cross-sectional area 800 mm² has a hole of 20 mm diameter for a bolt. If the plate thickness is 10 mm and the tensile load is 140 kN, the net tensile stress in the member is _____

Options :

1. ✘ 210.10 MPa
2. ✘ 225.25 MPa
3. ✔ 233.33 MPa
4. ✘ 250.25 MPa

Question Number : 6 Question Id : 7520767806 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A steel column with pinned ends has a length of 2 m. The modulus of elasticity

$E = 2 \times 10^5$ MPa and moment of inertia $I = 8 \times 10^6$ mm⁴. The Euler critical load is _____

Options :

1. ✘ 98.7 kN
2. ✘ 197.4 kN
3. ✔ 394.8 kN
4. ✘ 789.6 kN

Question Number : 7 Question Id : 7520767807 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A steel beam is subjected to a bending moment of 60 kN-m. If the allowable bending stress is 150 MPa, the required section modulus is _____

Options :

1. ✘ $2 \times 10^5 \text{ mm}^3$
2. ✘ $3 \times 10^5 \text{ mm}^3$
3. ✔ $4 \times 10^5 \text{ mm}^3$
4. ✘ $5 \times 10^5 \text{ mm}^3$

Question Number : 8 Question Id : 7520767808 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A simply supported beam of span 6m carries a central point load. If the plastic moment capacity is 90 kN-m, the collapse load is _____

Options :

1. ✘ 45 kN
2. ✔ 60 kN
3. ✘ 75 kN

4. ✘ 90 kN

Question Number : 9 Question Id : 7520767809 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A bolt of diameter 16 mm carries a shear force of 40.2 kN in single shear. Shear stress in the bolt is _____

Options :

1. ✘ 150 MPa

2. ✘ 175 MPa

3. ✔ 200 MPa

4. ✘ 225 MPa

Question Number : 10 Question Id : 7520767810 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

When a thin cylindrical shell is subjected to internal fluid pressure, the stresses developed in its wall?

Options :

1. ✔ Circumferential and longitudinal

2. ✘ Diagonal and bending
3. ✘ Vertical and bending
4. ✘ Irregular and bending

Question Number : 11 Question Id : 7520767811 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A hollow circular shaft has an outer diameter of 100 mm and a wall thickness of 25 mm. Allowable shear stress in the shaft is 125 MPa. The maximum torque the shaft can transmit is _____

Options :

1. ✘ 46 kN-m
2. ✘ 24.5 kN-m
3. ✔ 23 kN-m
4. ✘ 11.5 kN-m

Question Number : 12 Question Id : 7520767812 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The effective length of a column of length “L” fixed against the rotation and translation at one end and free at the other end is _____

Options :

1. ✘ 0.5L

2. ✘ 0.7L

3. ✘ 1.414L

4. ✔ 2.0L

Question Number : 13 Question Id : 7520767813 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The diameter of the kernel of a circular section of diameter ‘ d ’ is _____

Options :

1. ✘ $\frac{d}{2}$

2. ✘ $\frac{d}{3}$

3. ✓ $\frac{d}{4}$

4. ✗ $\frac{d}{\sqrt{2}}$

Question Number : 14 Question Id : 7520767814 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Rotation contribution at the fixed end of a member is _____

Options :

1. ✗ 0.75

2. ✗ 0.5

3. ✗ 1.0

4. ✓ zero

Question Number : 15 Question Id : 7520767815 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Redundant frames may be analysed by using _____

Options :

1. ✗ Castigliano's first theorem

2. ✓ Castigliano's second theorem

3. ✗ Moment-area theorem

4. ✗ Funicular polygon

Question Number : 16 Question Id : 7520767816 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The ratio of the maximum shear stress and the average shear stress in a circular section is _____

Options :

1. ✗ $3/4$

2. ✓ $4/3$

3. ✗ $2/3$

4. ✗ $3/2$

Question Number : 17 Question Id : 7520767817 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The bending moment diagram for a cantilever beam subjected to a couple at the free end would be a _____

Options :

1. ✘ triangle
2. ✘ parabola
3. ✘ cubic parabola
4. ✔ rectangle

Question Number : 18 Question Id : 7520767818 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The flexibility matrix method is also known as _____

Options :

1. ✔ force method
2. ✘ displacement method
3. ✘ stiffness method
4. ✘ stress function method

Question Number : 19 Question Id : 7520767819 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In the case of stiffness method of structural analysis, the quantity taken as redundant is _____

Options :

1. ✓ deflection or rotation
2. ✗ torsion
3. ✗ bending
4. ✗ strain energy

Question Number : 20 Question Id : 7520767820 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

As per IS 456-2000, the maximum spacing of vertical stirrups is to be limited to ____

Options :

1. ✗ 0.50d or 150 mm
2. ✗ 0.30d or 120 mm
3. ✗ 0.60d or 160 mm

4. ✓ 0.75d or 300 mm

Question Number : 21 Question Id : 7520767821 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

To avoid the limit state of collapse, the safety of RC structures is checked for appropriate combinations of dead load (DL), live load (LL), wind load (WL) and earthquake load (EQ). Which of the following combinations is not considered?

Options :

1. ✗ 1.5 DL+1.5 LL

2. ✓ 1.5 DL+1.5 WL+ 1.5 EQL

3. ✗ 0.9 DL+1.5 WL

4. ✗ 1.2 DL+1.2 LL+1.2 WL

Question Number : 22 Question Id : 7520767822 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The maximum spacing of longitudinal bars measured along the periphery of a column is _____

Options :

1. ✓ 300 mm

2. ✘ 150 mm

3. ✘ 450 mm

4. ✘ 200 mm

Question Number : 23 Question Id : 7520767823 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The diameter of the lateral ties in a column shall in no case be less than ____

Options :

1. ✘ 12 mm

2. ✘ 16 mm

3. ✔ 6 mm

4. ✘ 20 mm

Question Number : 24 Question Id : 7520767824 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the minimum grade of concrete recommended in coastal areas according to

IS - 456-2000?

Options :

1. ✘ M20

2. ✘ M25

3. ✔ M30

4. ✘ M15

Question Number : 25 Question Id : 7520767825 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which section is good from ductility point of view?

Options :

1. ✔ Under reinforced section

2. ✘ Balanced section

3. ✘ Over reinforced section

4. ✘ Section with special steel

Question Number : 26 Question Id : 7520767826 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

High strength/ high grade concrete is preferred for pre-stressed concrete for controlling _____

Options :

1. ✘ ductility
2. ✘ brittleness
3. ✘ shrinkage
4. ✔ creep

Question Number : 27 Question Id : 7520767827 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which one of the following is categorized as a long term loss of pre-stress in a pre-stressed concrete member?

Options :

1. ✘ Loss due to elastic shortening
2. ✘ Loss due to friction
3. ✔ Loss due to relaxation of strands

4. ✘ Loss due to anchorage slip

Question Number : 28 Question Id : 7520767828 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A plate used for connecting two or more steel members is called _____

Options :

1. ✘ base plate

2. ✘ template

3. ✘ batten

4. ✔ gusset plate

Question Number : 29 Question Id : 7520767829 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Textural classifications are merely based on _____

Options :

1. ✘ consistency limit.

2. ✔ grain size.

3. ✘ grain size and plasticity index.

4. ✘ elasticity index.

Question Number : 30 Question Id : 7520767830 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Compressibility of a field deposit is _____

Options :

1. ✔ greater than that shown by a laboratory sample.

2. ✘ smaller than that shown by a laboratory sample.

3. ✘ not at all related to that of a laboratory sample.

4. ✘ equal to that of a laboratory sample.

Question Number : 31 Question Id : 7520767831 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The pore water pressure in the capillary zone is _____

Options :

1. ✘ Positive.

2. ✘ Zero.

3. ✓ Negative.

4. ✗ very small.

Question Number : 32 Question Id : 7520767832 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A clay deposit suffers a total settlement of 4 cm with one- way drainage, with two- way drainage, it suffers a total settlement of _____

Options :

1. ✓ 4 cm

2. ✗ 8 cm

3. ✗ 2 cm

4. ✗ 16 cm

Question Number : 33 Question Id : 7520767833 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The best method for compaction of cohesion-less soils is _____

Options :

1. ✗ consolidation.

2. ✓ vibration.

3. ✗ process.

4. ✗ deterioration.

Question Number : 34 Question Id : 7520767834 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The critical hydraulic gradient ' i_c ' for a soil with a grain specific gravity 'G' and a void ratio 'e' is given by

Options :

1. ✓
$$i_c = \frac{(G - 1)}{(1 + e)}$$

2. ✗
$$i_c = \frac{(G + 1)}{(1 + e)}$$

3. ✗
$$i_c = \frac{(G + e)}{(1 + e)}$$

$$i_c = \frac{(G - 1)}{(1 - e)}$$

4. ✘

Question Number : 35 Question Id : 7520767835 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The shear strength for a structural clay from the unconfined compression test is ____

Options :

1. ✔ half the unconfined compression strength
2. ✘ same as the unconfined compression strength
3. ✘ twice the unconfined compression strength
4. ✘ not related to the unconfined compression strength

Question Number : 36 Question Id : 7520767836 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

When a retaining wall moves away from the back fill, the pressure exerted on the wall is termed as ____

Options :

1. ✘ passive earth pressure
2. ✘ swelling pressure
3. ✘ pore pressure
4. ✔ active earth pressure

Question Number : 37 Question Id : 7520767837 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

During a CBR test, the load sustained by a re-moulded soil specimen at 5 mm penetration is 50 kg. The CBR value of the soil will be

Options :

1. ✘ 10%
2. ✘ 5%
3. ✘ 3.6%
4. ✔ 2.4%

Question Number : 38 Question Id : 7520767838 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The earth pressure distribution on braced sheeting is based on____

Options :

1. ✘ Rankin's theory
2. ✘ Coulomb's theory
3. ✘ Brinch Hansen's theory
4. ✔ empirical pressure diagrams inferred from experimental observations

Question Number : 39 Question Id : 7520767839 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Quick sand consolidation occurs when____

Options :

1. ✘ the void ratio of the soil becomes 1.0.
2. ✘ the upward seepage pressure in soil becomes zero.
3. ✘ the upward seepage pressure in soil becomes equal to the saturated unit weight of soil.

- the upward seepage pressure in soil becomes equal to
4. ✓ the submerged unit of weight of the soil.

Question Number : 40 Question Id : 7520767840 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The failure of the bottom of a deep excavation in sand due to the lowering of the water level inside relative to the outside is due to the phenomenon of _____

Options :

1. ✗ sliding
2. ✓ piping
3. ✗ sludging
4. ✗ bearing

Question Number : 41 Question Id : 7520767841 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The type of flow, if $\frac{\partial v}{\partial s} = 0$ is _____

Options :

1. ✓ uniform flow

2. ✘ non-uniform flow
3. ✘ steady flow
4. ✘ unsteady flow

Question Number : 42 Question Id : 7520767842 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

What is the non-dimensional number that results when the ratio of inertia force to gravity force is considered?

Options :

1. ✘ Reynold's number
2. ✔ Froude number
3. ✘ Mach number
4. ✘ Euler number

Question Number : 43 Question Id : 7520767843 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

What is the value of the included angle between two adjacent sides of the absolute best hydraulic trapezoidal open channel?

Options :

1. ✘ 60^0

2. ✘ 30^0

3. ✔ 120^0

4. ✘ 90^0

Question Number : 44 Question Id : 7520767844 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Flow over a spill way of a dam is to be treated as:

Options :

1. ✔ Flow over a weir

2. ✘ Flow through an orifice

3. ✘ Flow through a mouth piece

4. ✘ Flow through a pipeline

Question Number : 45 Question Id : 7520767845 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Hydraulic jump is _____

Options :

1. ✘ uniform flow
2. ✘ gradually varied flow
3. ✔ rapidly varied flow
4. ✘ critical flow

Question Number : 46 Question Id : 7520767846 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Pressure inside the casing of an impulse turbine is _____

Options :

1. ✘ negative pressure
2. ✘ positive pressure
3. ✔ atmospheric pressure
4. ✘ atmospheric pressure

Question Number : 47 Question Id : 7520767847 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The ratio of the weight of water consumed from various sources by a plant in order to produce one unit weight of plant above the root zone is called _____

Options :

1. ✘ irrigation
2. ✘ water ratio
3. ✘ evaporation ratio
4. ✔ transpiration ratio

Question Number : 48 Question Id : 7520767848 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The technical term used to relate the volume of water and the area of crop it matures is _____

Options :

1. ✔ duty
2. ✘ delta
3. ✘ drip

4. ✘ transpiration ratio

Question Number : 49 Question Id : 7520767849 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Total area of land in the irrigation boundary of a project (including the zones which can be cultivated and which cannot be cultivated) is known as _____

Options :

1. ✘ area to be irrigated
2. ✘ cultivable command area
3. ✔ gross command area
4. ✘ gross irrigated area

Question Number : 50 Question Id : 7520767850 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What type of dam is constructed using the hydraulic fill method?

Options :

1. ✘ Arch dam
2. ✘ Concrete gravity dam

3. ✘ Masonry gravity dam

4. ✔ Earthen dam

Question Number : 51 Question Id : 7520767851 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What type of canal is aligned along the natural watershed line?

Options :

1. ✘ Contour canal

2. ✔ Ridge canal

3. ✘ Side slope canal

4. ✘ Protective canal

Question Number : 52 Question Id : 7520767852 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Separation of solid wastes of different densities is done by _____

Options :

1. ✔ air classifiers

2. ✘ screens

3. ✘ shredders

4. ✘ magnetic devices

Question Number : 53 Question Id : 7520767853 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Which kind of light energy is effectively absorbed by CO₂ in lower boundary of the Troposphere?

Options :

1. ✘ Visible light

2. ✘ Ultra-violet rays

3. ✘ X- rays

4. ✔ Infra - red rays

Question Number : 54 Question Id : 7520767854 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Heating of solid wastes in an oxygen free atmosphere is called _____

Options :

1. ✔ Pyrolysis

2. ✖ Thermal decomposition

3. ✖ Carbonization

4. ✖ Incineration

Question Number : 55 Question Id : 7520767855 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The Hydraulic mean radius of a circular sewer of diameter “ D ” is given by _____

Options :

1. ✔ $\frac{D}{4}$

2. ✖ $\frac{D}{2}$

3. ✖ $\frac{D}{3}$

4. ✖ $\frac{D}{6}$

Question Number : 56 Question Id : 7520767856 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Aerobic biochemical treatment of sewage effluent is essentially a process of _____

Options :

1. ✘ reduction
2. ✘ dehydration
3. ✘ alkalisation
4. ✔ oxidation

Question Number : 57 Question Id : 7520767857 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Under normal conditions, the percentage of BOD removal during primary treatment is about _____

Options :

1. ✓ 30%
2. ✗ 10%
3. ✗ 70%
4. ✗ 85%

Question Number : 58 Question Id : 7520767858 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The design factors which are critical for an activated sludge treatment plant are ____

Options :

1. ✗ maximum and minimum flow rate
2. ✗ maximum hourly flow
3. ✓ maximum hourly flow and maximum daily organic load

4. ✘ maximum hourly flow and minimum daily organic load

Question Number : 59 Question Id : 7520767859 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Greenhouse effect is considered to be due to the increased levels of _____

Options :

1. ✘ Carbon Monoxide
2. ✔ Carbon Dioxide
3. ✘ Sulphur Dioxide
4. ✘ Chlorofluoro Carbons

Question Number : 60 Question Id : 7520767860 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The range of sound level of a jet aircraft at take-off stage is around _____

Options :

1. ✘ 80-90 dB
2. ✘ 90-100 dB
3. ✔ 100-110 dB

4. ✘ 70-80 dB

Question Number : 61 Question Id : 7520767861 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Considering the four common air pollutants found in urban environment - NO, SO₂, Soot and O₃, which one of them is the secondary pollutant?

Options :

1. ✘ NO

2. ✘ SO₂

3. ✘ Soot

4. ✔ O₃

Question Number : 62 Question Id : 7520767862 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The slurry from a biogas plant is used as a _____

Options :

1. ✘ form oil

2. ✔ fertilizer

3. ✘ sanitary usage

4. ✘ fabric filter

Question Number : 63 Question Id : 7520767863 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The maximum ruling gradient in a rolling terrain according to IRC can be ____

Options :

1. ✘ 1 in 15

2. ✘ 1 in 60

3. ✘ 1 in 90

4. ✔ 1 in 30

Question Number : 64 Question Id : 7520767864 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The length of road way between adjacent radial routes around a traffic round about is called _____

Options :

1. ✘ chord length

2. ✘ arc length
3. ✔ weaving length
4. ✘ radial length

Question Number : 65 Question Id : 7520767865 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

A landfill receives 20 tonnes/day of waste with compacted density of 1000 kg/m³.

The daily volume of landfill required is _____

Options :

1. ✘ 10 m³
2. ✘ 15 m³
3. ✔ 20 m³
4. ✘ 25 m³

Question Number : 66 Question Id : 7520767866 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The sound intensity increases from $I_1 = 10^{-6} \text{ W/m}^2$ to $I_2 = 10^{-4} \text{ W/m}^2$. The increase in sound level is _____

Options :

1. ✘ 10 dB
2. ✔ 20 dB
3. ✘ 30 dB
4. ✘ 40 dB

Question Number : 67 Question Id : 7520767867 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The total effective green time required for an intersection is 40 seconds, and total lost time per cycle is 20 seconds. The cycle length is _____

Options :

1. ✘ 40 seconds
2. ✘ 50 seconds
3. ✔ 60 seconds

4. ✘ 80 seconds

Question Number : 68 Question Id : 7520767868 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Secant formula is applicable for _____

Options :

1. ✘ short columns under axial loading
2. ✘ long columns under axial loading
3. ✘ short columns under eccentric loading
4. ✔ long columns under eccentric loading

Question Number : 69 Question Id : 7520767869 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A fixed beam of span 'L' rises by 'Δ' upwards at right hand support. The fixed end moment at right hand support will be _____

Options :

1. ✔ $6EI\Delta/L^2$ clockwise

2. ✘ $6EI\Delta/L^2$ anticlockwise
3. ✘ $3EI\Delta/L^2$ clockwise
4. ✘ $3EI\Delta/L^2$ anticlockwise

Question Number : 70 Question Id : 7520767870 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The average permissible stress in bond for plain bars in tension is _____

Options :

1. ✔ increased by 25% for bars in compression zone
2. ✘ increased by 60% for bars in compression zone
3. ✘ decreased by 25% for bars in compression zone
4. ✘ decreased by 60% for bars in compression zone

Question Number : 71 Question Id : 7520767871 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

In a soil sample of a consolidometer test, pore water pressure is _____

Options :

1. ✘ minimum at the centre
2. ✘ maximum at the top
3. ✘ maximum at the bottom
4. ✔ maximum at the centre

Question Number : 72 Question Id : 7520767872 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

For soft sensitive soil, the area ratio of sample _____

Options :

1. ✘ should not exceed 20%
2. ✔ should not exceed 10%
3. ✘ should not exceed 15%
4. ✘ should not exceed 40%

Question Number : 73 Question Id : 7520767873 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Cohesive soils are ____

Options :

1. ✘ good for backfill since they exert low earth pressure.
2. ✘ good for backfill because of their high shear strength.
3. ✔ poor for backfill because of large lateral earth pressure.
4. ✘ good for backfill as density is low.

Question Number : 74 Question Id : 7520767874 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The maximum shear stress (q_{max}) in a rectangular beam is ____

Options :

1. ✘ 1.25 times the average
2. ✔ 1.50 times the average
3. ✘ 1.75 times the average
4. ✘ 2.0 times the average

Question Number : 75 Question Id : 7520767875 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The minimum web thickness from serviceability requirement in plate girder, when transverse stiffeners are not provided and web connected to flanges along both longitudinal edges shall satisfy the condition:

Options :

1. ✘ $d/t_w \geq 200 \varepsilon$
2. ✔ $d/t_w \leq 200 \varepsilon$
3. ✘ $d/t_w \geq 270 \varepsilon$
4. ✘ $d/t_w \leq 270 \varepsilon$

Question Number : 76 Question Id : 7520767876 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Flow in a pipe is laminar if Reynolds number is _____

Options :

1. ✔ less than 2000.
2. ✘ between 4000 and 6000.

3. ✖ between 2000 and 4000.

4. ✖ above 6000.

Question Number : 77 Question Id : 7520767877 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Disinfection of water is done by _____

Options :

1. ✖ passing chlorine

2. ✔ heating and cooling

3. ✖ filtration

4. ✖ alum

Question Number : 78 Question Id : 7520767878 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The pH value of sea water is usually _____

Options :

1. ✖ 3 - 5

2. ✓ 8 - 8.3

3. ✗ 5 - 7

4. ✗ 7 - 7.3

Question Number : 79 Question Id : 7520767879 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

For water bound macadam roads in places of heavy rainfall, the recommended value of camber is _____

Options :

1. ✓ 1 in 36

2. ✗ 1 in 30

3. ✗ 1 in 48

4. ✗ 1 in 60

Question Number : 80 Question Id : 7520767880 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The ruling design speed on a National Highway in plain terrain as per IRC recommendations is _____

Options :

1. ✘ 60 kmph
2. ✘ 80 kmph
3. ✔ 100 kmph
4. ✘ 120 kmph

Question Number : 81 Question Id : 7520767881 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Contours of different elevations may cross each other only in the case of _____

Options :

1. ✔ an overhanging cliff
2. ✘ a vertical cliff
3. ✘ a saddle
4. ✘ an inclined plane

Question Number : 82 Question Id : 7520767882 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $\psi = 3xy$, the magnitude of the velocity vector at (2, -2) is _____

Options :

1. ✘ $4\sqrt{2}$
2. ✔ $6\sqrt{2}$
3. ✘ 12
4. ✘ 0

Question Number : 83 Question Id : 7520767883 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The minor losses due to sudden contraction is significantly attributed to _____

Options :

1. ✘ flow contraction
2. ✔ expansion of flow after sudden contraction
3. ✘ boundary friction
4. ✘ cavitation

Question Number : 84 Question Id : 7520767884 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

An oil of kinematic viscosity 0.4 strokes flows through a pipe of diameter 10 cm.

The flow may not be essentially laminar at a velocity of _____

Options :

1. ✓ 0.8 m/s
2. ✗ 8.0 m/s
3. ✗ 800 m/s
4. ✗ 8000 m/s

Question Number : 85 Question Id : 7520767885 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Flow duration curve is a plot of _____

Options :

1. ✗ flow against its time of occurrence in chronological order.
2. ✗ flow in ascending order against percentage time in chronological order.
3. ✓ flow that equated or exceeded against percentage time.

4. ✘ flow against duration of time for which it is situated.

Question Number : 86 Question Id : 7520767886 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Load on connection is not eccentric for _____

Options :

1. ✘ lap joint
2. ✘ single cover butt joint
3. ✔ double cover butt joint
4. ✘ tacked joint

Question Number : 87 Question Id : 7520767887 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The slenderness ratio of single angle single bolted strut should be less than _____

Options :

1. ✔ 180
2. ✘ 250

3. ✘ 300

4. ✘ 350

Question Number : 88 Question Id : 7520767888 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A steel column in a multi-storeyed structure carries a load of 125kN. It is built up of 2 ISMC 350 channels connected by lacing. The lacing is designed load of _____

Options :

1. ✘ 125 kN

2. ✘ 12.5 kN

3. ✔ 3.125 kN

4. ✘ zero

Question Number : 89 Question Id : 7520767889 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The neutral axis of the reinforced beam passes through _____

Options :

1. ✘ centre of gravity of the concrete section.

2. ✘ meta-centre of the concrete section.
3. ✔ centroid of the transformed section.
4. ✘ centroid of the concrete section.

Question Number : 90 Question Id : 7520767890 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Lateral ties in reinforced concrete columns are provided to resist _____

Options :

1. ✘ bending moment
2. ✘ shear
3. ✔ buckling of longitudinal steel bars
4. ✘ both bending moment and shear

Question Number : 91 Question Id : 7520767891 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

A reinforced slab built monolithically with the supporting columns and is reinforced in two or more directions, without any provision of beams, is called a _____

Options :

1. ✘ two way slab
2. ✔ flat slab
3. ✘ continuous slab
4. ✘ circular slab

Question Number : 92 Question Id : 7520767892 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The mineral responsible for swelling of black cotton soil is _____

Options :

1. ✘ kaolinite
2. ✔ montmorillonite
3. ✘ illite
4. ✘ quartz

Question Number : 93 Question Id : 7520767893 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Name the field test to evaluate sensitivity of soft clay:

Options :

1. ✘ Standard penetration test
2. ✘ Plate load test
3. ✘ Pressure meter test
4. ✔ Vane shear test

Question Number : 94 Question Id : 7520767894 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Permeability of soil:

Options :

1. ✔ Increases with increase in temperature.
2. ✘ Decreases with increase in temperature.
3. ✘ Is independent of temperature.
4. ✘ May increase/ decrease with temperature based on chemical composition of soil.

Question Number : 95 Question Id : 7520767895 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The minimum water content at which soil is fully saturated is _____

Options :

1. ✘ liquid limit
2. ✘ plastic limit
3. ✔ shrinkage limit
4. ✘ hygroscopic

Question Number : 96 Question Id : 7520767896 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The Indian Standard Soil classification symbol for low compressible inorganic silt is _____

Options :

1. ✘ LS
2. ✘ SL
3. ✔ ML
4. ✘ LM

Question Number : 97 Question Id : 7520767897 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

What type of stresses are artificially induced by prestressed concrete in a structure before it is loaded?

Options :

1. ✘ Tensile
2. ✔ Compressive
3. ✘ Shear
4. ✘ Torsional

Question Number : 98 Question Id : 7520767898 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

For production of structural elements, which of the following system is used?

Options :

1. ✘ Freyssinet system
2. ✘ Magnel-Blaton system
3. ✔ Hoyer's system
4. ✘ Lee McCall system

Question Number : 99 Question Id : 7520767899 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ 10 to 12%
2. ✗ 15 to 20%
3. ✗ 20 to 25%
4. ✗ 25 to 30%

Question Number : 100 Question Id : 7520767900 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✓ under reinforced section
2. ✗ critical section

3. ✘ over reinforced section

4. ✘ balanced section

Question Number : 101 Question Id : 7520767901 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Maximum longitudinal reinforcement in columns shall not exceed _____

Options :

1. ✘ 6% of effective sectional area.

2. ✘ 4% of gross sectional area.

3. ✔ 6% of gross sectional area.

4. ✘ 4% of effective sectional area.

Question Number : 102 Question Id : 7520767902 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The grade of concrete used for pre-stressed concrete shall not be less than _____

Options :

1. ✘ M20
2. ✘ M25
3. ✔ M35
4. ✘ M60

Question Number : 103 Question Id : 7520767903 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The analysis of slab spanning in one direction is done by assuming it to be a beam of _____

Options :

1. ✘ 1 m length
2. ✔ 1 m width
3. ✘ 1 m² area
4. ✘ 1 m³ of volume

Question Number : 104 Question Id : 7520767904 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The profile of the pre-stressing steel in pre-stressed concrete member follows

Options :

1. ✘ axial force diagram
2. ✘ shear force diagram
3. ✔ bending moment diagram
4. ✘ torsional moment diagram

Question Number : 105 Question Id : 7520767905 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Identify the roller best suitable for compaction of cohesionless soils.

Options :

1. ✘ Sheep Foot Roller
2. ✘ Grid roller
3. ✔ Vibratory Roller

4. ✘ Smooth steel roller

Question Number : 106 Question Id : 7520767906 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The abutments of bridges are to be designed for _____

Options :

1. ✘ active earth pressure
2. ✔ at rest earth pressure
3. ✘ passive earth pressure
4. ✘ no lateral pressure

Question Number : 107 Question Id : 7520767907 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The test performed on pile to separate load capacity into skin friction and end bearing components is _____

Options :

1. ✘ lateral load test

2. ✓ cyclic pile load test
3. ✗ compression load test
4. ✗ uplift load test

Question Number : 108 Question Id : 7520767908 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The minimum number of piles to be used if the piles are installed by the method of driving is _____

Options :

1. ✓ 3
2. ✗ 1
3. ✗ 2
4. ✗ 4

Question Number : 109 Question Id : 7520767909 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Toughness index gives a measure of shear strength of soil at _____

Options :

1. ✓ plastic limit
2. ✗ liquid limit
3. ✗ shrinkage limit
4. ✗ dry state

Question Number : 110 Question Id : 7520767910 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

What is the Indian Standard for pre-stressed concrete?

Options :

1. ✓ IS 1343
2. ✗ IS 456
3. ✗ IS 10262
4. ✗ IS 800

Question Number : 111 Question Id : 7520767911 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If the matrix $A = \begin{pmatrix} -8 & 5 \\ 2 & 4 \end{pmatrix}$ satisfies the equation $x^2 + 4x - k = 0$, then the value of k is _____

Options :

1. ✘ 42
2. ✘ -22
3. ✘ -32
4. ✔ 22

Question Number : 112 Question Id : 7520767912 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The integral $\int_0^{\pi/2} \frac{\sin x}{x^p} dx$ converges if _____

Options :

1. ✘ $p > 2$
2. ✘ $p > 3$

3. ✓ $p < 2$

4. ✗ $p > 4$

Question Number : 113 Question Id : 7520767913 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

Suppose C is the closed curve defined as the circle $x^2 + y^2 = 1$ with C oriented anti-clockwise. The value of the line integral $\oint_C (x dy - y dx)$ is equal to _____

Options :

1. ✗ 0

2. ✗ π

3. ✓ 2π

4. ✗ $\frac{\pi}{2}$

Question Number : 114 Question Id : 7520767914 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $y = A(x) \cdot e^{-x^2}$ is a solution of the differential equation $\frac{dy}{dx} + 2xy = 2e^{-x^2}$ with $y(0) = -3$, then the value of $A(1)$ is _____

Options :

1. ✓ -1

2. ✗ -2

3. ✗ -3

4. ✗ 2

Question Number : 115 Question Id : 7520767915 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If $F(s)$ is a Laplace transform of the function $f(t) = e^{-3t}(2 \cos 5t - 3 \sin 5t)$,

then $F(0) =$ _____

Options :

1. ✗ $-\frac{19}{29}$

2. ✗ $-\frac{19}{20}$

3. ✘ $-\frac{7}{26}$

4. ✔ $-\frac{7}{41}$

Question Number : 116 Question Id : 7520767916 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

The value of the integral $\int_{|z|=2} \frac{\cos z}{z^3} dz$ is _____

Options :

1. ✘ πi

2. ✔ $-\pi i$

3. ✘ $2\pi i$

4. ✘ $-2\pi i$

Question Number : 117 Question Id : 7520767917 Question Type : MCQ
Correct Marks : 1 Wrong Marks : 0

Suppose the probability that an individual suffers an adverse reaction from a particular drug is known to be 0.001. The probability that out of 2000 individuals, exactly three will suffer an adverse reaction is _____

Options :

1. ✘ $\frac{3e^{-3}}{2}$

2. ✘ e^{-3}

3. ✘ $\frac{3e^{-2}}{2}$

4. ✔ $\frac{4e^{-2}}{3}$

Question Number : 118 Question Id : 7520767918 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

If X is a normal random variable with mean $\mu = 100$ and variance $\sigma^2 = 25$, then

$P(90 < X < 120)$ is same as _____

Options :

1. ✘ $P(-1 < Z < 1)$

2. ✓ $P(-2 < Z < 4)$

3. ✗ $P(4 < Z < 4.1)$

4. ✗ $P(-2 < Z < 3)$

Question Number : 119 Question Id : 7520767919 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The values of x and $f(x)$ of a curve are as follows:

x	2	2.5	3	3.5	4
$f(x)$	3	6	8	10	12

By Simpson's one-third rule, the area under the curve $f(x)$ is _____

Options :

1. ✗ 26.3

2. ✗ 31.7

3. ✗ 13.2

4. ✓ 15.8

Question Number : 120 Question Id : 7520767920 Question Type : MCQ

Correct Marks : 1 Wrong Marks : 0

The coefficient of $\frac{1}{z}$ in the Laurent's series expansion of the function

$$f(z) = \frac{1}{z^2(1-z)} \text{ about } z = 0, \text{ is } \underline{\hspace{2cm}}$$

Options :

1. ✘ -1

2. ✘ 0

3. ✔ 1

4. ✘ 2