

National Testing Agency

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Structural Engineering

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Structural Engineering

Section Id : 9095822
Section Number : 1
Section type : Online
Mandatory or Optional: Mandatory
Number of Questions: 100
Number of Questions to be attempted: 100
Section Marks: 100
Display Number Panel: Yes
Group All Questions: No

Sub-Section Number: 1
Sub-Section Id: 9095822
Question Shuffling Allowed : Yes

Question Number : 1 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A cantilever beam of rectangular cross section is subjected to a concentrated load W at its free end. If the width of the beam is doubled, the deflection at the free end as compared to earlier case, will be -----

- A. 0.25 times
- B. 0.50 times
- C. 2.00 times
- D. 2.50 times

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 2 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A fixed beam AB of span L carries a uniformly distributed load w per unit length. During loading, the support B sinks downwards by an amount γ . If $\gamma = (wL^4)/(72EI)$, What is the fixing moment at B?

- A. $wL^2/12$
- B. $wL^2/16$
- C. $6EI\gamma/L^2$
- D. Zero

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 3 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum grade of concrete to be adopted for RCC structures as per IS 456: 2000

- A. M15
- B. M20
- C. M25
- D. M40

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 4 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The inter-storey deflection is

- A. Deflection between top and bottom of a column in a storey
- B. Deflection of the top storey
- C. Deflection of bottom storey
- D. Maximum deflection of a beam in a storey

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 5 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Seismic Zone factor for Zone III is

- A. 0.36
- B. 0.24
- C. 0.16
- D. 0.10

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 6 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Assertion (A): When a contour survey of a steeply sloping area is envisaged, tacheometric methods are often used.

Reason (R): Stadia Tacheometry leads to more accurate computation of lengths compared to steel tapes measured in however cautious and careful manner.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true and R is not a correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Options :

1. A
2. B
3. C
4. D

Question Number : 7 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Design acceleration coefficient of the response spectrum in IS1893 (Part 1) is for ---- % damping

- A. 2
- B. 5
- C. 1
- D. 10

Options :

1. A
2. B
3. C
4. D

Question Number : 8 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The approximate ratio between the strengths of cement concrete at 7days and at 28 days is

- A. $\frac{3}{4}$
- B. $\frac{2}{3}$
- C. $\frac{1}{2}$
- D. $\frac{1}{3}$

Options :

1. A
2. B
3. C
4. D

Question Number : 9 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

..... is a notion or idea that drives the whole project

- A. Form and shape
- B. Zoning
- C. Concept
- D. Manmade features

Options :

1. A
2. B
3. C
4. D

Question Number : 10 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For a bare frame to be a non-sway frame, the inter-storey deflection should be less than

- A. Storey height/2000
- B. Storey height/4000
- C. Storey height/1000
- D. Storey height/3000

Options :

1. A
2. B
3. C
4. D

Question Number : 11 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

According to IS 456:2000 nominal mix ratio can be adopted for concrete grades up to

- A. M15
- B. M20
- C. M25
- D. M40

Options :

1. A
2. B
3. C
4. D

Question Number : 12 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Effective length factor k , of a column of a rigid jointed frame braced against side sway can theoretically be

- A. 2
- B. 4
- C. 1.5
- D. Between 0 and 1

Options :

1. A
2. B
3. C
4. D

Question Number : 13 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

..... method gives upper bound value of frequency .

- A. Rayleigh method
- B. Dunkerley's method
- C. Duhamels method
- D. Classical method

Options :

1. A
2. B
3. C
4. D

Question Number : 14 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Frequency at which the system vibrates after giving an initial displacement or initial velocity is called as

- A. Forced Frequency
- B. Natural frequency
- C. Resonant Frequency
- D. Damped Frequency

Options :

1. A
2. B
3. C
4. D

Question Number : 15 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If critical damping ratio $\varepsilon < 1$, then which of the following is true

- A. Damping in system is greater than what is required to remove the energy of the system
- B. Damping in system is less than what is required to remove the complete vibration energy of system
- C. Damping in system is exactly equal to damping required to remove the vibration of the system
- D. Damping in system is equal to or greater than damping required to remove the vibration of the system

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 16 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The approximate ratio of strengths of 150mm x 300mm concrete cylinder to that of 150mm cube of same concrete is

- A. 0.50
- B. 0.85
- C. 1
- D. 1.25

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 17 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The intersection point of mode shape with the column line other than the support is called as

- A. Node
- B. Mode
- C. Stiffness
- D. Frequency

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 18 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The process of evaluating cost of construction of a project is called

- A. Rough cost
- B. Estimate
- C. Actual cost
- D. Workable cost

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 19 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A flat plate is usually supported

- A. On beams
- B. On footings
- C. On columns
- D. On piles

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 20 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Assertion (A): The bearing capacity of soil gets affected if the water table is at the base of the footing

Reason (R): Water in soil affects the shear strength parameters as well as the unit weight.

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true and R is not a correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Options :

1. A
2. B
3. C
4. D

Question Number : 21 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the following statements:

- i. The bearing capacity of a footing on clay does not significantly get altered by the presence of water table.
 - ii. The bearing capacity of a footing on saturated clay ($\phi = 0$) is a function of its size.
- A. 1 only
 - B. 2 only
 - C. Both 1 and 2
 - D. Neither 1 nor 2

Options :

1. A
2. B
3. C
4. D

Question Number : 22 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the slump of a concrete mix is 6cm, its workability is considered to be

- A. Very high
- B. High
- C. Medium
- D. Low

Options :

1. A
2. B
3. C
4. D

Question Number : 23 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum diameter of main reinforcement for a column is

- A. 6mm
- B. 12mm
- C. 8mm
- D. 10mm

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 24 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Shear strength of concrete in a RCC beam is a function of ----- of the following

- (i) Compressive strength of concrete
- (ii) Percentage of shear reinforcement
- (iii) Percentage of tension reinforcement
- (iv) Percentage of compression reinforcement

- A. i, ii and iv
- B. i, iii and iv
- C. i and iii
- D. i and iv

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 25 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a RC section under flexure the assumption that a 'plane section before bending remains plane after bending' leads to

- A. Strain distribution being linear across the depth
- B. Stress distribution being linear across the depth
- C. Both stress and Strain distribution being linear across the depth
- D. Shear distribution being linear across the depth

Options :

- 1. A
- 2. B
- 3. C

4. D

Question Number : 26 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Maximum strain in the tension reinforcement in the section at failure should be

- A. More than $(f_y / 1.15 E_s) + 0.002$
- B. Equal to 0.0035
- C. More than $(f_y / E_s) + 0.002$
- D. Less than $(f_y / 1.15 E_s) + 0.002$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 27 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In RCC beam as the percentage area of tension reinforcement increases

- A. Depth of neutral axis decreases
- B. Depth of neutral axis increases
- C. Depth of neutral axis does not change
- D. Lever arm increases

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 28 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum radius specified for a hook for high yield bar

- A. 2 x dia of bar
- B. 4 x dia of bar
- C. 6 x dia of bar
- D. 8 x dia of bar

Options :

- 1. A
- 2. B
- 3. C

4. D

Question Number : 29 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The maximum area of tension reinforcement shall not exceed

- A. $0.04bD$
- B. $0.03bD$
- C. $0.06bD$
- D. $0.02bD$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 30 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum reinforcement for slab when high strength steel is used

- A. 0.15%
- B. 25%
- C. 0.12%
- D. 0.5%

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 31 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Maximum shear stress τ_{cmax} for M20 concrete is

- A. 2.8
- B. 2.5
- C. 3.1
- D. 3.4

Options :

- 1. A

- 2. B
- 3. C
- 4. D

Question Number : 32 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The vertical deflection is limited for span to depth ratio of cantilever up to 10m span is

- A. 5
- B. 2
- C. 7
- D. 20

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 33 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

.....formwork is used when it is required for more no of repetitions.

- A. Stone
- B. Steel
- C. Timber
- D. Bamboo

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 34 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When formwork is required for small ones like residential buildings with less repetitions,.....is preferred to steel.

- A. Timber
- B. Fibreglass
- C. Metal sheets
- D. Aluminium

Options :

- 1. A

- 2. B
- 3. C
- 4. D

Question Number : 35 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Moisture content of aboutis appropriate for timber formwork

- A. 20%
- B. 30%
- C. 40%
- D. 50%

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 36 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A temporary rigid structure having platforms to enable masons to work at different stages of a building is known as.....

- A. Underpinning
- B. Shoring
- C. Jacking
- D. Scaffolding

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 37 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If R and T are Rise and Tread of a stair spanning horizontally, the steps are supported by a wall on one side and on a stringer beam on other side, the steps are designed as beams of width

- A. $R+T$
- B. $\text{SQRT}(T^2-R^2)$
- C. $\text{SQRT}(R^2+T^2)$
- D. $R-T$

Options :

1. A
2. B
3. C
4. D

Question Number : 38 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If longitudinally spanning stairs are cast along with their landing, the maximum bending moment per meter width, is taken as

- A. $wl^2/4$
- B. $wl^2/8$
- C. $wl^2/10$
- D. $wl^2/12$

Options :

1. A
2. B
3. C
4. D

Question Number : 39 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a reinforced concrete beam-column, the increase in the flexural strength along with the increase in the axial strength occurs

- A. Beyond the elastic limit of the material
- B. When the yield of the tension reinforcement governs the strength
- C. When the crushing of the concrete in the compression zone governs the strength
- D. Beyond the ultimate strength of the material

Options :

1. A
2. B
3. C
4. D

Question Number : 40 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Columns may be made of plain concrete if their unsupported lengths do not exceed their ----- least lateral dimension

- A. Two times
- B. Three times
- C. Four times
- D. Five times

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 41 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The purpose of lateral ties in short reinforced concrete columns is to

- A. Facilitate construction
- B. Facilitate compaction of concrete
- C. Avoid buckling of longitudinal bars
- D. Increase the load carrying capacity of column

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 42 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

To make the beam ductile, the spacing of stirrups at lap splice should be less than or equal to

- A. 100 mm
- B. 150 mm
- C. 200 mm
- D. $d/4$ where d is the depth of beam

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 43 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

To make the beam ductile the first stirrup at the beam column junction should start at

- A. 100 mm
- B. 150 mm
- C. 50mm
- D. $d/4$ where d is the depth of beam

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 44 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Closely spaced stirrups in beams at both ends should be adopted for a length not less than

- A. $2d$
- B. d
- C. $d/2$
- D. $2.5 d$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 45 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

While designing for shear, the capacity shear component, namely $(M_a + M_b)/L$ is designed with an additional load factor of

- A. 1.5
- B. 1.4
- C. 1.2
- D. 1.1

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 46 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The horizontal distance between any two consecutive contours is called

- A. Vertical equivalent
- B. Horizontal equivalent
- C. Contour interval
- D. Contour gradient

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 47 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum thickness of the shear wall should not be less than

- A. 100 mm
- B. 150 mm
- C. 200 mm
- D. 100 mm

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 48 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Boundary elements are to be provided when factored shear exceeds

- A. $0.10f_{ck}$
- B. $0.15f_{ck}$
- C. $0.20f_{ck}$
- D. $0.30f_{ck}$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 49 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The bearing capacity of a water logged soil can be increased by

- A. Grouting
- B. Compacting the soil
- C. Draining the soil
- D. Increasing the depth

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 50 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Building bent deflects in the way same as a

- A. Cantilever beam
- B. Fixed beam
- C. Truss system
- D. Portal frame

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 51 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A revised estimate is prepared if the sanctioned estimate exceeds

- A. 2%
- B. 5%
- C. 8%
- D. 10%

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 52 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cantilever method is based upon same action as a long cantilever beam subjected to a :-

- A. Transverse load
- B. Axial load
- C. Moment
- D. No load

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 53 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of cost of labour to the total cost of the building is

- A. 1:10
- B. 1:4
- C. 1:1
- D. 3:10

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 54 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If D is the overall thickness of the slab, the diameter of the reinforcing bars should not exceed

- A. $(1/4) D$
- B. $(1/5) D$
- C. $(1/6) D$
- D. $(1/8) D$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 55 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The critical section for two way shear of footing is

- A. Face of the column
- B. Distance d from the face of the column
- C. Distance $d/3$ from the face of the column
- D. Distance $d/2$ from the face of the column
(where d is effective depth of footing)

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 56 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The maximum area of compression reinforcement in a beam of cross section $B \times D$ is limited to

- A. $0.02 BD$
- B. $0.03 BD$
- C. $0.04 BD$
- D. $0.05 BD$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 57 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The maximum deflection of a structure should not normally exceed lesser of the span/350 or

- A. 10 mm
- B. 15 mm
- C. 20 mm
- D. 25 mm

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 58 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The minimum depth of soil exploration below a footing shall be atleast

- A. Thrice the width of footing
- B. Twice the width of footing
- C. Four times the width of footing
- D. Equal to the width of footing

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 59 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Bentonite Slurry is used in

- A. Wash Boring
- B. Auger Boring
- C. Rotary Drilling
- D. Auger Shell Boring

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 60 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In analysis of rates , contractor profit is taken at the rate of

- A. 1%
- B. 5%
- C. 10%
- D. 20%

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 61 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The cement mortar ratio used for ceiling plastering is

- A. 1:5
- B. 1:4
- C. 1:3
- D. 1:6

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 62 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A well-written project plan gives guidance for obtaining

- A. Resources
- B. Acquiring financing
- C. Executing the work
- D. All the above

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 63 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The steps of Project planning process is

- i. Identifying and Sequencing the Activities
- ii. Creating Work Breakdown Structure
- iii. Developing the Schedule and Budget
- iv. Developing the Plan
- v. Resources Planning

- A. v, iv, iii, ii ,i
- B. ii ,i, iv, v , iii
- C. iv, ii ,i ,v ,iii
- D. v, iii, ii ,i, iv,

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 64 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Resources planning focus on _____.

- A. Sequencing the activity
- B. Men, Material, Machine & Money
- C. Work Breakdown Structure
- D. Cost and Time Estimate

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 65 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the type of crack shown in Fig.1



Fig.1

- A. Torsion crack
- B. Tension crack
- C. Sliding crack
- D. Flexural crack

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 66 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the type of material shown in Fig.2

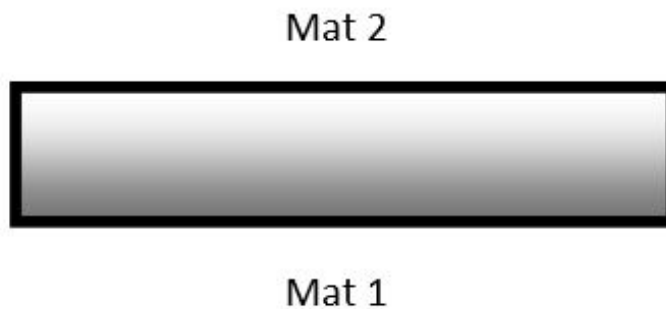


Fig.2

- A. Bi-directional functionally graded
- B. Depth-wise functionally graded
- C. Axially functionally graded
- D. Breadth-wise functionally graded

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 67 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the Gaussian quadrature of numerical integration, if we use five gauss points, then we can integrate a function of degree upto

- A. 3rd degree
- B. 5th degree
- C. 9th degree
- D. 11th degree

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 68 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The least bearing capacity of soil is that of

- A. Moist clays
- B. Hard rocks
- C. Soft rocks
- D. Laminated rocks

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 69 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Wilson- θ method is unconditionally stable if $\theta \leq$

- A. 0.37
- B. 1
- C. 1.37
- D. 2

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 70 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Rayleigh damping of a three degree of freedom system for $\omega_1 = 15.33 \text{ rad/sec}$ $\rho_1 = 0.03$; $\omega_2 = 74.79 \text{ rad/sec}$ $\rho_2 = 0.04$. What will be damping factor when $\omega_3 = 134.29 \text{ rad/sec}$.

- A. 0.035
- B. 0.0656
- C. 0.074
- D. 0.093

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 71 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For one degree of freedom system, when damping =0.02 and period =0.5 sec; the maximum displacement is 67.8mm. What is Pseudo acceleration in terms of 'g'

- A. 0.5
- B. 0.75
- C. 1.098
- D. 2

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 72 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For the purpose of design as per IS 456, deflection of RC slab or beam is limited to

- A. 0.2 % of span
- B. 0.25 % of span
- C. 0.4 % of span
- D. 0.45 % of span

Options :

- 1. A
- 2. B

3. C

4. D

Question Number : 73 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

As per IS 456, side face reinforcement, not less than 0.05% of web area, is provided on each side when the depth of web is not less than

A. 300 mm

B. 400 mm

C. 500 mm

D. 750 mm

Options :

1. A

2. B

3. C

4. D

Question Number : 74 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a reinforced concrete T beam (in which the flange is in compression), the position of neutral axis will

A. Be within the flange

B. Be within the web

C. Depend on the thickness of the flange in relation to total depth and percentage of reinforcement

D. At the junction of flange and web

Options :

1. A

2. B

3. C

4. D

Question Number : 75 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following deformation is important in case of deep beams when compared to flexure alone?

A. Shear

B. Axial

C. Torsional

D. Bearing

Options :

1. A

- 2. B
- 3. C
- 4. D

Question Number : 76 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The main reinforcement of a RC slab consists of 10mm bars at 10cm spacing. If it is desired to replace 10mm bars by 12mm bars , then the spacing of 12mm bars should be

- A. 10.5cm
- B. 12.5cm
- C. 14.4cm
- D. 16.4cm

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 77 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A reinforced concrete beam of 10m effective span and 1m effective depth is supported on 500mm X 500mm columns. If the total uniformly distributed load on the beam is 10MN/m , the design shear force at the critical section for the beam is

- A. 50MN
- B. 47.5MN
- C. 37.5MN
- D. 43MN

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 78 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A reinforced concrete beam is subjected to the following bending moments.

Dead Load – 20 kN-m

Live Load – 30 kN-m

Seismic Load – 10 kN-m

The design bending moment for limit state of collapse is

- A. 60 kN-m
- B. 75 kN-m
- C. 72kN-m
- D. 80 kN-m

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 79 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the case of continuous RC beam ,in order to obtain the maximum positive span moment , where should the live load be placed?

- A. On all the spans
- B. On alternate spans starting from the left
- C. On spans adjacent to the spans under consideration
- D. On the span plus alternate spans

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 80 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Limit state design method , the moment of resistance for a balanced section using M20 grade concrete and HYSD steel of grade Fe415 is given by $M_{u,lim} = kbd^2$, what is the value of k?

- A. 2.98
- B. 2.76
- C. 1.19
- D. 0.89

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 81 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the stirrup spacing is 0.75 times the effective depth of an RC beam , then the shear capacity of stirrup is equal to

- A. $1.25(f_y A_{sv})$
- B. $1.16 (f_y A_{sv})$
- C. $1.08(f_y A_{sv})$
- D. $1.00(f_y A_{sv})$

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 82 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a 2-legged 8mm diameter HYSD bar is used as shear reinforcement for a beam of width 230mm and effective depth 300mm, what is the nearest magnitude of the spacing of minimum shear reinforcement?

- A. 420mm
- B. 390mm
- C. 350mm
- D. 320mm

Options :

- 1. A
- 2. B
- 3. C

4. D

Question Number : 83 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The moment area theorems in the structural analysis fall in the category of

- A. Force method
- B. Displacement method
- C. Stiffness method
- D. Iterative method

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 84 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A square column section of size 350 x 350 mm is reinforced with four bars of 25mm diameter and four bars of 16mm diameter. Then the transverse steel should be

- A. 5mm dia @ 240mm c/c
- B. 6mm dia @ 250mm c/c
- C. 8mm dia @ 250mm c/c
- D. 8mm dia @ 350mm c/c

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 85 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A concrete column carries an axial load of 450kN and a bending moment of 60kNm at its base. An isolated footing of size 2m X 3m with the 3m side along the plane of the bending moment is provided under the column. Centres of gravity of the column and footing coincide. The net maximum and minimum pressures in kPa, on the soil under the footing are, respectively.

- A. 95 and 75
- B. 75 and 55
- C. 95 and 55
- D. 75 and 75

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 86 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a shape test of aggregate , which one of the following gives the correct slot for flakiness index for a material passing 50mm sieve and retained on 40mm sieve

- A. 25mm
- B. 27mm
- C. 81mm
- D. 30mm

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 87 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the percentage of the fine aggregate of fineness modulus 2.6 to be combined with coarse aggregate of fineness modulus 6.8 for obtaining combined aggregate of fineness modulus 5.4?

- A. 30%
- B. 40%
- C. 50%
- D. 60%

Options :

- 1. A
- 2. B

3. C

4. D

Question Number : 88 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the ratio of flexural strength (f_{cr}) to the characteristics compressive strength of concrete (f_{ck}) for M25 grade concrete?

A. 0.08

B. 0.11

C. 0.14

D. 0.17

Options :

1. A

2. B

3. C

4. D

Question Number : 89 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A single degree of freedom system of mass 22kg and stiffness 17kN/m vibrates freely. If damping in the system is 2%, the damped circular frequency is nearly

A. 0.88rad/sec

B. 20.8rad/sec

C. 27.8rad/sec

D. 0.50rad/sec

Options :

1. A

2. B

3. C

4. D

Question Number : 90 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Assertion (A) : The concept of strain energy can be used to analyse a statically indeterminate structure

Reason (R): There is a direct relationship between strain energy of a structure and the slopes and deflection caused in it

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true and R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Options :

1. A
2. B
3. C
4. D

Question Number : 91 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Unequal settlements in the supports of a statically indeterminate structure develop

- A. Members forces
- B. Reaction from supports
- C. No reactions
- D. Strains in some members only

Options :

1. A
2. B
3. C
4. D

Question Number : 92 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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

- A. (EI/L)
- B. $(2EI/L)$
- C. $(3EI/L)$
- D. $(4EI/L)$

Options :

1. A
2. B
3. C
4. D

Question Number : 93 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The moment at the indeterminate support of a two span continuous beam of 6m each with simple support at the ends carrying a UDL of 20kN/m over only the left span is (Flexural rigidity is the same for both the spans)

- A. 90 kN-m Hogging
- B. 45 kN-m Hogging
- C. 45 kN-m Sagging
- D. Zero

Options :

1. A
2. B
3. C
4. D

Question Number : 94 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a point load acting at the mid span of a fixed beam of uniform section produces fixed end moments of 60kN-m , then the same load spread uniformly over the entire span will produce fixed end moments equal to

- A. 20kN-m
- B. 30kN-m
- C. 40kN-m
- D. 45kN-m

Options :

1. A
2. B
3. C
4. D

Question Number : 95 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The liquid limit and plastic limit of sample are 65% and 29% respectively. The percentage of the soil fraction with grain size finer than 0.002mm is 24. The activity ratio of the soil sample is

- A. 0.50
- B. 1.00
- C. 1.50
- D. 2.00

Options :

1. A
2. B
3. C
4. D

Question Number : 96 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Assertion (A) : Black cotton soils are clays and they exhibit characteristic property of swelling

Reason (R): These clays contain Montmorillonite which attracts external water into its lattice structure

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true and R is not a correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 97 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The collapsible soil is associated with

- A. Dune sands
- B. Laterite soils
- C. Loess
- D. Black cotton soils

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 98 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consistency as applied to cohesive soils is an indicator of its

- A. Density
- B. Moisture content
- C. Shear strength
- D. Porosity

Options :

- 1. A
- 2. B
- 3. C
- 4. D

Question Number : 99 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The field density and field moisture content of a soil can be determined by;

1. Core cutter method
2. Sand replacement method
3. Proctor compaction test
4. Modified proctor compaction test

- A. 1,2,3 and 4
B. 1 and 2 only
C. 2 and 3 only
D. 2 and 4 only

Options :

1. A
2. B
3. C
4. D

Question Number : 100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the angle of intersection of a contour and a ridge line?

- A. 30°
B. 0°
C. 180°
D. 90°

Options :

1. A
2. B
3. C
4. D