National Testing Agency

Question Paper Name:	5315 Structural Engineering 30th June 2019 Shift 1
Subject Name:	Structural Engineering
Creation Date:	2019-06-30 13:01:40
Duration:	180
Total Marks:	100
Display Marks:	Yes

Structural Engineering

Group Number :	1
Group Id :	489994227
Group Maximum Duration :	0
Group Minimum Duration :	120
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	100

Structural Engineering

Section Id :	489994283
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:	489994309
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

Flaky or Elongated aggregate will

A. Increase the packing
B. Reduce workability
C. Improve flexural strength
D. Improve shear strength

Options :

1. 1

2. 2

3. 3

4. 4

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

Presence of Chloride in water mixed with concrete

A. Accelerate corrosion of rebar

B. Reduce corrosion

C. Cause leaching

D. No effect

Options :

1. 1

2. 2

3. 3

4. 4

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

Yield strength of rebar is the stress corresponding to

A. 0.0035 strain

B. 0.2% proof strain

C. Ultimate strength point

D. Breaking point

Options :

1. 1

2. 2

3. 3

4. 4

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

Percentage of elongation for Fe 415 steel should be

A. Maximum 12%

B. Minimum 14.5%

C. Depend on diameter of rebar

D. Depends on grade of steel

Options :

1. 1

2. 2

3. 3

4. 4

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 quality of steel can be checked at site through

A. Bend & Rebend test
B. Acid picking test
C. Tensile strength test
D. Rapid chloride penetration test

Options :

1. 1
2. 2
3. 3
4. 4

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

For Zone III, the buildings will have to be designed for a minimum design earthquake lateral load equal to _____ % of seismic weight.

A. 0.7
B. 0.8
C. 1.1
D. 1.5

Options :

1. 1
2. 2
3. 3
4. 4

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

While computing accidental eccentricity, the percentage of plain dimension of the building considered is

A. 5 to 10
B. 10 to15
C. 10 to 20
D. 15 to 20

Options :

1. 1
2. 2
3. 3
4. 4

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

_____ represents the notions of totality, wholeness, focus, infinity, unity, timelessness.

A. Sphere
B. Triangle
C. Square
D. Circle

Options :

1. 1
2. 2
3. 3
4. 4

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

Daylight from _____ facing windows tends to be shadow less, diffuse, and neutral or slightly greyish most of the day and year.

A. East
B. West
C. North
D. South

Options :

1. 1
2. 2
3. 3
4. 4

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

_____ refers to any movement characterized by a patterned recurrence of elements or motifs at regular or irregular intervals.

A. Axis
B. Hierarchy
C. Rhythm
D. Symmetry

Options :

1. 1
2. 2
3. 3
4. 4

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

Effective length factor k, of a column of a rigid jointed frame not braced against side sway can theoretically be

A. 0.3
B. 0.6
C. 0.8
D. Between 0 and infinity

Options :

1. 1
2. 2
3. 3
4. 4

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

The ratio between amplitude of force transmitted to the foundation and the amplitude of the applied force is termed as

A. Transmissibility
B. Excitation
C. Response Spectrum
D. Participation factor

Options :

1. 1
2. 2
3. 3
4. 4

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

A plot of maximum response of linear single degree of freedom oscillator as a function of natural period for a given damping for a given component of earthquake motion is termed as

A. Response Spectrum
B. Tripartite plot
C. Time History Analysis
D. Earthquake Excitation

Options :

1. 1
2. 2
3. 3
4. 4

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

Which one of the following principle is not adopted in Dunkerley'S Method

A. Flexibility coefficient
B. Modal Orthogonally
C. Principle of working of springs
D. Lower Bound Theorem

Options :

1. 1
2. 2
3. 3
4. 4

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

Complementary part of linear differential equation depends on

A. Force applied on the system
B. Natural property of the system
C. Both force applied and natural property of system
D. Neither the force applied nor the natural property of system

Options :

1. 1
2. 2
3. 3
4. 4

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 relationship between natural frequency and damped frequency is given by

A. $\omega_D = \omega_n \sqrt{(1-\varepsilon^2)}$
B. $\omega_n = \omega_D \sqrt{(1-\varepsilon^2)}$
C. $\omega_D = \omega_n \sqrt{(1+\varepsilon^2)}$
D. $\omega_n = \omega_D \sqrt{(1+\varepsilon^2)}$

Options :

1. 1
2. 2
3. 3
4. 4

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

Tube–in -Tube is also known as

A. Pipe and open
B. Cylinder and shaft
C. Hollow and duct
D. Hull and core

Options :

1. 1
2. 2
3. 3
4. 4

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 diagrid is a framework of

A. Horizontally intersecting beams
B. Diagonally intersecting beams
C. Vertically intersecting beams
D. Inclined intersecting beams

Options :

1. 1
2. 2
3. 3
4. 4

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

Wave forces are

A. Greatest at the top of the building
B. Greatest at the middle of the building
C. Greatest at the base of the building
D. Greatest at the side of the building

Options :

1. 1
2. 2
3. 3
4. 4

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

Soft floors are

A. Higher level floors
B. Middle level floors
C. Critical level floors
D. Lower level floors

Options :

1. 1
2. 2
3. 3
4. 4

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

The allowable maximum crack width under severe exposure is

A. 0.02mm
B. 0.1mm
C. 0.2mm
D. 0.01mm

Options :

1. 1
2. 2
3. 3
4. 4

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

Length of positive and negative reinforcement bar extended over support not less than

A. One fourth of development length
B. One third of development length
C. One tenth of development length
D. Development length

Options :

1. 1
2. 2
3. 3
4. 4

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 explanatory handbook SP 24 suggests adopting a torsional stiffness C value for plain concrete is equal to

A. 0.50 times St Venant value
B. 0.20 times St Venant value
C. 0.25 times St Venant value
D. 0.75 times St Venant value

Options :

1. 1
2. 2
3. 3
4. 4

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

If the slab is simply supported on all four sides, the dispersion of loads is assumed at

A. 30 degree
B. 45 degree
C. 60 degree
D. 25 degree

Options :

1. 1
2. 2
3. 3
4. 4

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

At what stress does the first flexural crack appear in RCC beams made of M25 grade of concrete

A. 2.0MPa
B. 2.5MPa
C. 3.0MPa
D. 3.5MPa

Options :

1. 1
2. 2
3. 3
4. 4

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

The minimum bottom cover to be provided in a RCC footing is

A. 25mm
B. 50mm
C. 75mm
D. 20mm

Options :

1. 1
2. 2
3. 3
4. 4

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

The maximum area of tension reinforcement in beams shall not exceed

A. 17%

B. 15%

C. 4%

D. 0.15%

Options :

1. 1

2. 2

3. 3

4. 4

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 slab is designed as one way if the ratio of long span to shorter span is

A. < 1

B. Between 1.5 to 2

C. > 2

D. Between 1 to 1.5

Options :

1. 1

2. 2

3. 3

4. 4

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 minimum number of main steel provided in RCC circular column

A. 4

B. 5

C. 2

D. 6

Options :

1. 1

2. 2

3. 3

4. 4

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 radius specified for a hook for high yield bar

A. 2 x dia of bar

B. 4 x dia of bar

C. 0.5 x dia of bar

D. 0.25 x dia of bar

Options :

1. 1

2. 2

3. 3

4. 4

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

The maximum area of compression reinforcement shall not exceed

A. 0.04bD

B. 0.03bD

C. 0.02bD

D. 0.01bD

Options :

1. 1

2. 2

3. 3

4. 4

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 minimum reinforcement for slab when high strength steel is used

A. 0.10%

B. 0.15%

C. 0.12%

D. 25%

Options :

1. 1

2. 2

3. 3

4. 4

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

Maximum shear stress Ƭcmax for M20 concrete is

A. 2.8

B. 2.5

C. 3.1

D. 3.5

Options :

1. 1
2. 2
3. 3
4. 4

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

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

A. 5

B. 2

C. 7

D. 20

Options :

1. 1
2. 2
3. 3
4. 4

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

The formwork for .....consists of sheets, studs, wales, ties and braces.

A. Columns

B. Beams

C. Walls

D. Stairs

Options :

1. 1
2. 2
3. 3
4. 4

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

The forms are raised by the concrete in a plastic state and referred to as.....

A. Climbing forms
B. Jumping forms
C. Riser forms
D. Running forms

Options :

1. 1
2. 2
3. 3
4. 4

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

The formwork for .....consists of stringers, sheets, joists, bearer and vertical post.

A. Walls
B. Columns
C. Beams
D. Stairs

Options :

1. 1
2. 2
3. 3
4. 4

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

The .....formwork should be neither too dry nor too wet

A. Fibre glass
B. Steel
C. Timber
D. Metal

Options :

1. 1
2. 2
3. 3
4. 4

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

According to Euler, the buckling load for a column is given by $P=\frac{\pi^2 EI}{xl^2}$. In this equation, the value of x for a column with one end fixed and other end free is

A. 1
B. 2
C. 4
D. 6

Options :

1. 1
2. 2
3. 3
4. 4

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

An electric pole is 6.5 m high from the ground level. Its effective length for design purposes will be

A. 6.5m
B. 3.25m
C. 13.0m
D. 12.0m

Options :

1. 1
2. 2
3. 3
4. 4

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

In limit state approach, spacing of main reinforcement controls primarily

A. Vibration
B. Durability
C. Collapse
D. Cracking

Options :

1. 1
2. 2
3. 3
4. 4

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

The minimum column dimension for seismic resistance should be not less than

A. 150mm
B. 200mm
C. 300mm
D. 350mm

Options :

1. 1
2. 2
3. 3
4. 4

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

The property of fresh concrete , in which the water in the mix tends to rise to the surface while placing and compacting , is called

A. Segregation
B. Bleeding
C. Bulking
D. Creep

Options :

1. 1
2. 2
3. 3
4. 4

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

Splicing of bars in column should be done only with spacing of links not exceeding

A. 50mm
B. 150mm
C. 170mm
D. 200mm

Options :

1. 1
2. 2
3. 3
4. 4

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

Maximum distance between expansion joints in structures as per IS 456-2000 is

A. 25m
B. 30m
C. 45m
D. 60m

Options :

1. 1
2. 2
3. 3
4. 4

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

While designing for shear, the capacity shear component arrived at using sagging and hogging capacities , namely $(M^{as} + M^{bh})/L$ is designed with an additional load factor of

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

Options :

1. 1
2. 2
3. 3
4. 4

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 coupling beam connecting two walls with large shear should be designed with

A. Conventional reinforcement for flexure
B. Conventional reinforcement for flexure and shear
C. Conventional reinforcement for shear
D. Diagonal reinforcement with confining bars

Options :

1. 1
2. 2
3. 3
4. 4

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

Failure at a construction joint in a shear wall can be prevented by

A. Providing designed vertical reinforcement across the horizontal joint
B. Increasing roughness between old and new concrete
C. Increasing positive compression and gross cross sectional area of the joint
D. All the above

Options :

1. 1
2. 2
3. 3
4. 4

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

Which of the following supports are not used in portals?

A. Fixed
B. Pin
C. Partial
D. Roller

Options :

1. 1
2. 2
3. 3
4. 4

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

What is the relation between shear at the base of each columns of a portal frame which is pin supported?

A. They are equal
B. One is double of other
C. One is triple of other
D. Depends upon magnitude of load applied

Options :

1. 1
2. 2
3. 3
4. 4

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

The deflection at any point of a perfect frame can be obtained by applying a unit load at the joint in

A. Vertical direction
B. Horizontal direction
C. Inclined direction
D. The direction in which the deflection is required

Options :

1. 1
2. 2
3. 3
4. 4

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

If there are m unknown member forces, r unknown reaction components and j number of joints, then the degree of static indeterminacy of a pin-jointed plane frame is given by

A. $m + r - 2j$
B. $m + r - 3j$
C. $3m + r - 3j$
D. $6m + r - 6j$

Options :

1. 1
2. 2
3. 3
4. 4

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

For the plain reinforcing bars in compression, the permissible design bond stress in tension, is increased by

A. 10%
B. 15%
C. 20%
D. 25%

Options :

1. 1
2. 2
3. 3
4. 4

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

In case of continuous beams, the distance between the points of zero moment, may be obtained as (where L is the effective span).

A. 0.5L
B. 0.6L
C. 0.7L
D. 0.8L

Options :

1. 1
2. 2
3. 3
4. 4

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

In the method used to establish the magnitude of live load, what is the reference time period?

A. 30 years
B. 35 years
C. 50 years
D. 60 years

Options :

1. 1
2. 2
3. 3
4. 4

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

Live loads, with time can vary in :-

A. Magnitude
B. Position
C. Neither position nor magnitude
D. Position as well as magnitude

Options :

1. 1
2. 2
3. 3
4. 4

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

Dead load comprises of

A. Permanently attached loads

B. Temporarily attached loads

C. Permanent as well as temporary loads

D. Snow load

Options :

1. 1

2. 2

3. 3

4. 4

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

_____refers to the effect produced by deriving the maximum benefits from the minimum dimensions of a room.

A. Compactness

B. Roominess

C. Grouping

D. Privacy

Options :

1. 1

2. 2

3. 3

4. 4

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

In case of foundations on sandy soil, maximum permissible differential settlement, is usually limited to

A. 15mm

B. 25mm

C. 35mm

D. 45mm

Options :

1. 1

2. 2

3. 3

4. 4

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

The fineness modulus of fine aggregate is in the range of

A. 2.0 to 3.5
B. 3.5 to 5.0
C. 5.0 to 7.0
D. 6.0 to 8.5

Options :

1. 1
2. 2
3. 3
4. 4

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 moment carrying capacity of a section at plastic hinge is

A. Zero
B. Yield moment
C. Twice of yield moment
D. Fully Plastic moment

Options :

1. 1
2. 2
3. 3
4. 4

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

Contour lines with V-shaped with convexity towards higher ground indicate

A. Valley
B. Ridge
C. Hill
D. Stream

Options :

1. 1
2. 2
3. 3
4. 4

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

Setting out work indicate

A. Marking of slab

B. Marking of beam

C. Marking of columns

D. Marking of footings

Options :

1. 1

2. 2

3. 3

4. 4

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

The formula to calculate the volume of trapezoidal footing is

A. (h/3)(a1+a2+(a1*a2))

B. (h/3)(a1+a2+SQRT(a1*a2))

C. (h/3)(a1+a2+SQRT(a1+a2))

D. (h/4)(a1+a2+SQRT(a1*a2))

Options :

1. 1

2. 2

3. 3

4. 4

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

Strength of concrete increases with

A. Increase in water cement ratio

B. Increase in fineness of cement

C. Decrease in curing time

D. Decrease in size of aggregate

Options :

1. 1

2. 2

3. 3

4. 4

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

If the hinged end of a propped cantilever of span L and flexural rigidity EI undergoes a rotation , then the shear force in the beam will be

A. $(EI\theta)/L^2$
B. $(2EI\theta)/L^2$
C. $(3EI\theta)/L^2$
D. $(6EI\theta)/L^2$

Options :

1. 1
2. 2
3. 3
4. 4

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

All other resources depend on _____.

A. Men
B. Money
C. Machines
D. Materials

Options :

1. 1
2. 2
3. 3
4. 4

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

Duration for an activity can be arrived from _____.

A. Dividing the quantity of work with quantity of resources employed to do it, for a day
B. Summing the quantity of work with quantity of resources employed to do it, for a day
C. Multiplying the quantity of work with quantity of resources employed to do it, for a day
D. Dividing the cost of work with quantity of work

Options :

1. 1
2. 2
3. 3
4. 4

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

If stiffness matrix of a free – free element I-J is shown below then how to get the flexibility matrix of a cantilever beam element fixed at I and free at J

$$[K] = \begin{bmatrix} K_{II} & K_{IJ} \\ K_{JI} & K_{JJ} \end{bmatrix}$$

A. K_{II}^{-1}

B. K_{IJ}^{-1}

C. K_{JI}^{-1}

D. K_{JJ}^{-1}

Options :

1. 1
2. 2
3. 3
4. 4

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

Flexibility Matrix of a cracked beam element is given by

A. $[a]_{crack} = [a]_{intact}$

B. $[a]_{crack} = [a]_{overlay}$

C. $[a]_{crack} = [a]_{intact} + [a]_{overlay}$

D. $[a]_{crack} = [a]_{intact} - [a]_{overlay}$

Options :

1. 1
2. 2
3. 3
4. 4

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 $a/h \leq 0.2$ (a=depth of the crack; h=depth of the beam) the fundamental frequency of the homogeneous beam

A. Decreases

B. Remains constant

C. Increases

D. Increases or decreases

Options :

1. 1
2. 2
3. 3
4. 4

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

If there are three cracks in the BDFG fixed – fixed cracked beam, two cracks are at 0.25L and 0.5L from the left end of beam and the position of the third crack varies, the decrease of all the frequencies will be more when the third crack is at

A. Right support
B. Centre of span
C. Left support
D. None of the above

Options :

1. 1
2. 2
3. 3
4. 4

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

Who introduced Response spectrum method?

A. Housner
B. New mark
C. Biot
D. Wilson

Options :

1. 1
2. 2
3. 3
4. 4

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 extremely soft soil, the acceleration _____ and the spectral displacements _____.

A. Decrease, Increase
B. Increase, Decrease
C. Increase, Increase
D. Decrease, Decrease

Options :

1. 1
2. 2
3. 3
4. 4

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

For a 2 degree freedom structure, the normalized Eigen vector is given by $[\Phi]=\frac{1}{\sqrt{m}}\begin{bmatrix}0.707 & -0.707\\ 1 & 1\end{bmatrix}$; and mass matrix $[M]=m\begin{bmatrix}1 & 0\\ 0 & 0.5\end{bmatrix}$; in earthquake analysis for base excitation calculate modal participation factors.

A. $0.5\sqrt{m}$, $0.5\sqrt{m}$

B. $0.207\sqrt{m}$, $-1.207\sqrt{m}$

C. $1.207\sqrt{m}$, $-0.207\sqrt{m}$

D. $-1.207\sqrt{m}$, $0.207\sqrt{m}$

Options :

1. 1
2. 2
3. 3
4. 4

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

What is the value of minimum reinforcement (in case of Fe415) in a slab?

A. 0.1%

B. 0.12%

C. 0.15%

D. 0.2%

Options :

1. 1
2. 2
3. 3
4. 4

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

Doubly reinforced beams are recommended when

A. The depth of the beam is restricted

B. The breadth of the beam is restricted

C. Both depth and breadth are restricted

D. The shear is high

Options :

1. 1
2. 2
3. 3

4. 4

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

Minimum tension steel in RC beam needs to be provided to

A. Prevent sudden failure

B. Arrest crack width

C. Control excessive deflection

D. Prevent surface hair cracks

Options :

1. 1

2. 2

3. 3

4. 4

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

What is the value of flexural strength of M35 concrete?

A. 2.14Mpa

B. 4.14Mpa

C. 3.00Mpa

D. 1.75Mpa

Options :

1. 1

2. 2

3. 3

4. 4

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

The cross sectional area of longitudinal reinforcement shall not be less than ----- --- and not more than -------of the gross cross sectional area of the column.

A. 0.8% and 6%

B. 0.6% and 8%

C. 0.5% and 9%

D. 0.1% and 5%

Options :

1. 1

2. 2

3. 3

4. 4

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

The minimum strain at failure in tension steel having yield stress $f_y = 415Mpa$ and young's modulus $E_x = 200Gpa$, as per Limit State Method of Design, is

A. 0.0025
B. 0.0038
C. 0.0045
D. 0.0050

Options :

1. 1
2. 2
3. 3
4. 4

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

An axially loaded column is of 300mm X 300mm size. Effective length of column is 3m. What is the minimum eccentricity of the axial load for the column?

A. 0
B. 10mm
C. 16mm
D. 20mm

Options :

1. 1
2. 2
3. 3
4. 4

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

A shear wall of length 5m, height 3m and thickness 250mm has to resist the forces due to horizontal earthquake in its plane. The relevant section modulus of the wall section is

A. $3.75 \times 10^8 mm^3$
B. $10.41 \times 10^8 mm^3$
C. $31.25 \times 10^8 mm^3$
D. $75 \times 10^8 mm^3$

Options :

1. 1
2. 2
3. 3
4. 4

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

The development length in compression for a 20mm diameter deformed bar of grade Fe415 embedded in concrete of grade M25 whose design bond stress is 1.40 N/mm^2, is

A. 1489mm

B. 1289mm

C. 806mm

D. 645mm

Options :

1. 1

2. 2

3. 3

4. 4

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

Due to circumferential action of the spiral in a spirally reinforced column

A. Capacity of column is decreased

B. Ductility of column reduces 645mm

C. Capacity of column is decreased but ductility of column increases

D. Both the capacity of column and ductility of column increase

Options :

1. 1

2. 2

3. 3

4. 4

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

A rectangular beam of depth d is under bending. Load has been gradually increased when the top fibre has obtained five times the strain at the first yield. What depth of the beam will still respond by elastic conditions?

A. 0.16d

B. 0.20d

C. 0.25d

D. 0.40d

Options :

1. 1

2. 2

3. 3

4. 4

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

If aggregate size of 50-40 mm is to be tested for determining the proportion of elongated aggregates, the slot length of the gauge should be

A. 45mm
B. 53mm
C. 81mm
D. 90mm

Options :

1. 1
2. 2
3. 3
4. 4

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 amount of water required for a workable RC mix 1:2:4 by weight, when W/C is 0.60 and unit weight of concrete is 2400kg/m^3?

A. 160 litres
B. 206 litres
C. 246 litres
D. 285 litres

Options :

1. 1
2. 2
3. 3
4. 4

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 cyclic frequency is nearly

A. 2.4Hz
B. 0.88Hz
C. 4.4Hz
D. 0.66Hz

Options :

1. 1
2. 2
3. 3
4. 4

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

The force required to produce a unit displacement (translation without rotation) at either one-third point of a fixed beam of span L and of uniform flexural rigidity EI is

A. $(729EI/L^3)$
B. $(724EI/L^3)$
C. $(724EI/3L^3)$
D. $(729EI/2L^3)$

Options :

1. 1
2. 2
3. 3
4. 4

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

A statically indeterminate building frame may be converted to a statically determinate one by assuming

A. Hinges at mid height of columns
B. Hinges at mid span of the beams
C. Hinges at both mid height of columns and mid span of beams
D. One support as fixed at base and other support on rollers

Options :

1. 1
2. 2
3. 3
4. 4

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

Consider the following statements

1. A statically indeterminate structure is not economical from the material stand point in comparison to a statically determinate structure.
2. If n redundant in a statically indeterminate structure of n degree of static indeterminacy are removed, the structure will become statically determinate but unstable.
3. In the rigid frame analysis, the axial effects are ignored as their influence is negligibly small compared to bending and shear effects.

Which of the statements is/are correct?

A. 1 only
B. 1 and 2
C. 3 only
D. 2 and 3

Options :

1. 1
2. 2

3. 3

4. 4

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

If the axial deformation is neglected, what is the kinematic indeterminacy of a single bay portal frame fixed at base?

A. 2
B. 3
C. 4
D. 6

Options :

1. 1

2. 2

3. 3

4. 4

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

Which of the following are examples of indeterminate structures?

i. Fixed beam
ii. Continuous beam
iii. Two hinged arch
iv. Beam overhanging on both sides

Select the correct answer using the codes given below

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

Options :

1. 1

2. 2

3. 3

4. 4

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

Bearing capacity of a soil strata supporting a footing of size 3m x 3m will not be affected by the presence of ground water table located at a depth which is

A. 1.0m below the base of the footing
B. 1.5m below the base of the footing
C. 2.5m below the base of the footing
D. 3.0m below the base of the footing

Options :

1. 1
2. 2
3. 3
4. 4

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

As per Terzaghi's equation, the bearing capacity of strip footing resting on surface of cohesive soil (c=10kN/m^2) for unit width (assume N_c as 5.7) is

A. 47 kN/mm^2
B. 57 kN/mm^2
C. 67 kN/mm^2
D. 77 kN/mm^2

Options :

1. 1
2. 2
3. 3
4. 4

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

Two circular footings of diameters D_1 and D_2 are resting on the surface of a purely cohesive soil. The ratio D_1/D_2 =2. If the ultimate load carrying capacity of the footing of diameter D_1 is 200kN/m^2, then the ultimate bearing capacity (in kN/m^2) of the footing of diameter D_2 will be

A. 100
B. 200
C. 314
D. 571

Options :

1. 1
2. 2
3. 3
4. 4

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

Assertion (A): The bearing capacity of a footing always gets affected by the ground water table.
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. 1
2. 2
3. 3
4. 4

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

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 ($\varphi = 0$) is a function of its size.

A. 1 only
B. 2 only
C. Both 1 and 2
D. Neither 1 nor 2

Options :

1. 1
2. 2
3. 3
4. 4

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

High carbon content in the steel causes

A. Decrease in tensile strength but increase in ductility
B. Increase in tensile strength but decrease in ductility
C. Decrease in both tensile strength and ductility
D. Increase in both tensile strength and ductility

Options :

1. 1
2. 2
3. 3
4. 4