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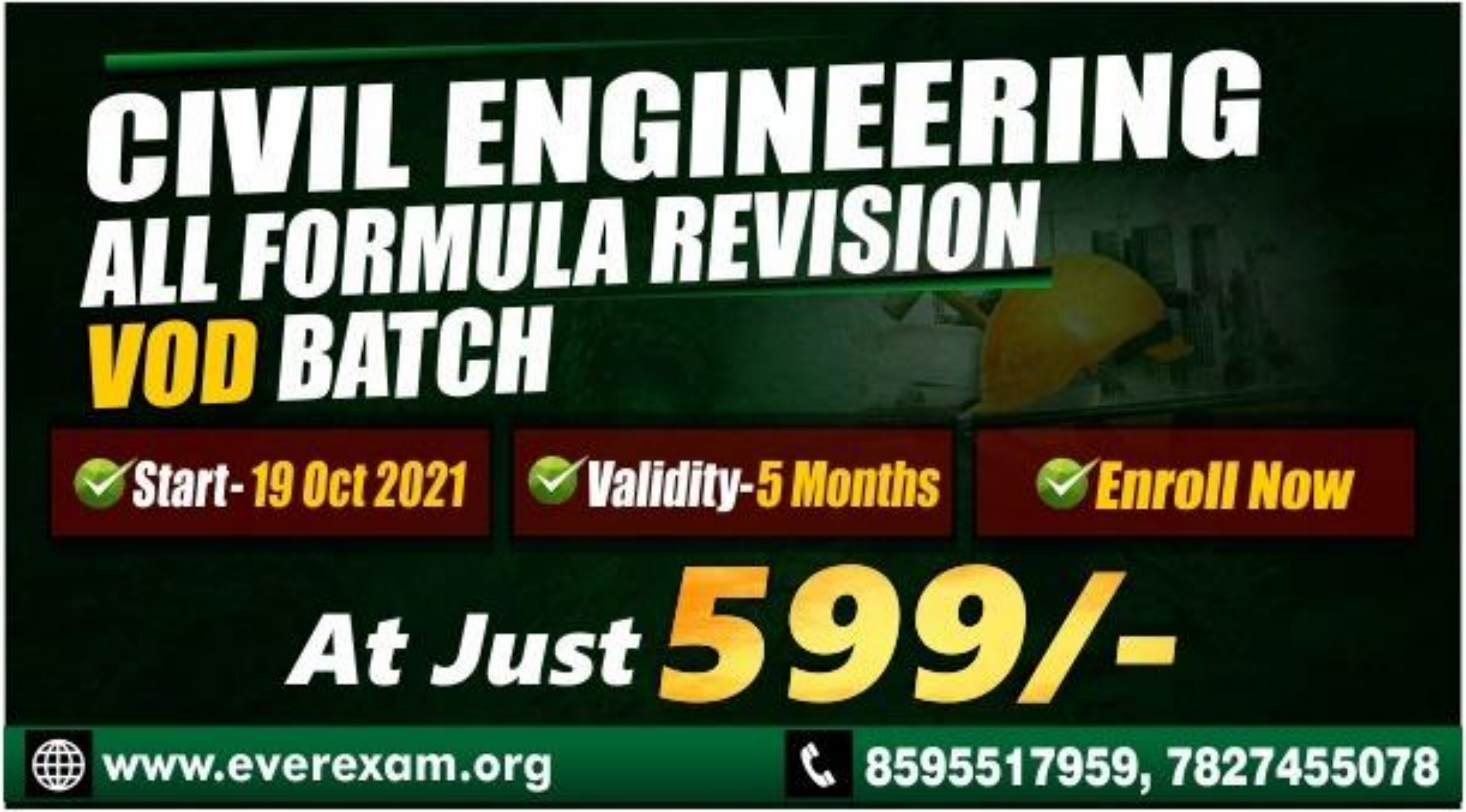
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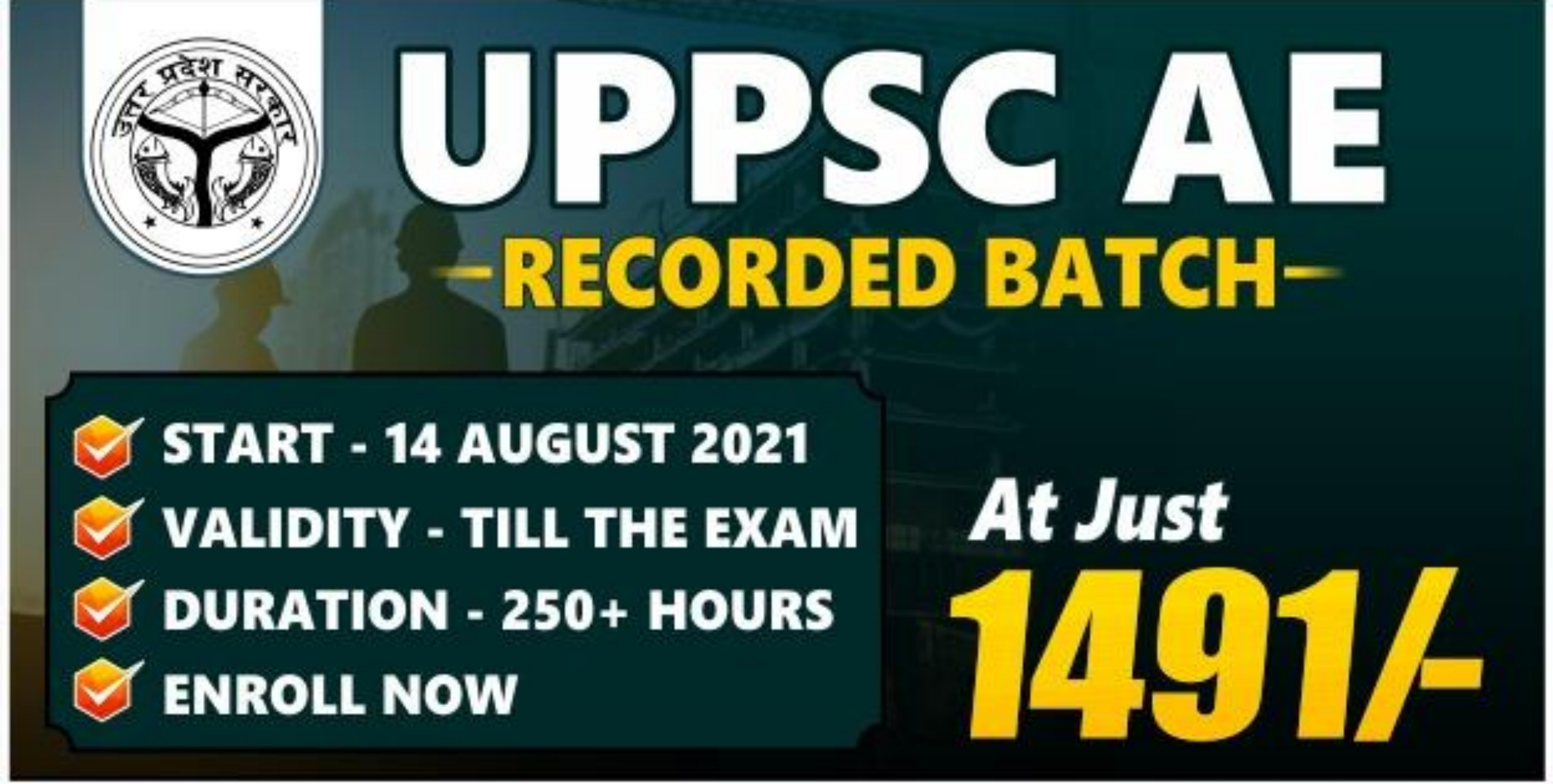
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Q : 1) The flexural tensile strength of concrete can be given as per IS : 456 : 2000

A : 0.45 / $\sqrt{f_{cu}}$

B : 0.7 / $\sqrt{f_{cu}}$

C : 0.7 / $\sqrt{f_{cu}}$

D : 0.45 / $\sqrt{f_{cu}}$

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Q : 2) The grain size (mm) of medium grained sand lies between

A : 0.425 to 0.075

B : 2.0 to 0.425

C : 4.75 to 2.0

D : 20 top 4.75

Q : 3) In a saturated soil deposit having a density of 20 kN/m^3, the effective normal stress on a horizontal plane at 5 m depth will be

A : 20 kN/m^2

B : 40 kN/m^2

C : 50 kN/m^2

D : 100 kN/m^2

Q : 4) The fixed support in an existing beam will change to _____ in the related conjugate beam.

A : Hinge support

B : Roller support

C : Free end

D : None of the above

Q : 5) A three hinged parabolic arch will have no bending moment if it hinged at _____ in addition to those at the supports.

A : One quarter of span

B : The crown

C : Anywhere

D : None of these

Q : 6) Weep holes are provided in retaining and breast walls

A : To drain off the water from the filling

B : To ventilate the stone masonry

C : To add architectural beauty

D : To increase compaction of the earth retained

Q : 7) As per IS : 456 : 2000, the chloride content for plain concrete should NOT be more than

A : 400 mg/L

B : 500 mg/L

C : 2000 mg/L

D : 3000 mg/L

Q : 8) In Newmark's influence chart for stress distribution, there are eight concentric circles and ten radial lines. The influence factor of the chart is

A : 0.1

B : 0.01

C : 0.125

D : 0.0125

Q : 9) The group efficiency of a pile group

A : Will be always less than 100%

B : Will be always greater than 100%

C : May be less than 100% or more than 100% depending upon other factors

D : Is more than 100% in cohesionless soil and less than 100% in cohesive soil

Q : 10) A particle moves in a straight line. Its position is defined by the equation $x = 6t^2 - t^3$ where t in seconds and x is in meters. The maximum velocity of the particle during its motion will be

A : 12 m/s

B : 6 m/s

C : 24 m/s

D : 48 m/s

Q : 11) The ratio of the deflection of the free end of a cantilever beam having span 'L', due to a concentrated load 'W' at $\frac{1^{rd}}{3}$ and $\frac{2^{rd}}{3}$ span from free end of the span is

A : $\frac{2}{5}$

B : $\frac{4}{7}$

C : $\frac{3}{7}$

D : $\frac{2}{7}$

EI is constant

Q : 12) The maximum percentage of ingredient in cement is that of

A : Lime

B : Iron oxide

C : Aluminium

D : Silica

Q : 13) Reinforcement provided in a rectangular RCC beam of effective depth 500 mm is such that actual depth of neutral axis is at 300 mm from extreme compression fibre Fe 415 steel is used and provided on tension face only. It is a

A : Doubly reinforced section

B : Under reinforced section

C : Over reinforced section

D : Balanced section

Q : 14) In limit state design of concrete structure, the stress distribution of concrete is assumed to be

A : Linear

B : Rectangular

C : Parabolic

D : Parabolic and rectangular

Q : 15) The minimum number of observation wells required to determine the permeability of a stratum in the field by a pumping test

A : One

B : Two

C : Three

D : None of the above

Q : 16) A critical activity has

A : Minimum float

B : Zero float

C : Maximum float

D : None of the above

Q : 17) When two concurrent forces 20 kg and 15 kg act at right angles on a particle, then their resultant will be equal to

A : 35 kg

B : 25 kg

C : 5 kg

D : $20\sqrt{15}$ kg

Q : 18) For a base failure, the Depth factor D_f is

A : Zero

B : 1

C : $0 < D_f < 1$

D : $D_f > 1$

Q : 19) The coefficient of consolidation is determined by

A : Penetrometer method

B : Casagrande's apparatus

C : Square root of time fitting method

D : Differentiation method

Q : 20) In moment area method, the deflection of a point 'A' from a tangent at 'B' is equal to the

A : Area of $\frac{M}{EI}$ diagram between 'A' and 'B'

B : Moment of $\frac{M}{EI}$ diagram between 'A' and 'B' about point 'A'

C : Moment of $\frac{M}{EI}$ diagram between 'A' and 'B' about point 'B'

D : $\frac{1}{2} \times$ area of $\frac{M}{EI}$ diagram between 'A' and 'B'

Q : 21) The specific gravity of most stones lie between

A : 1.8 to 2.2

B : 2.5 to 3.0

C : 3.0 to 3.5

D : 3.5 to 4.5

Q : 22) As per IS 456 : 2000, maximum water – cement ratio and minimum cement content for moderate exposure condition used in plain cement concrete are _____ respectively.

A : 0.6 and 220 kg/m^3

B : 0.6 and 240 kg/m^3

C : 0.5 and 250 kg/m^3

D : 0.55 and 250 kg/m^3

Q : 23) Sensitivity of a clay be defined as

A : Percentage of volume change of soil under saturated condition

B : Ratio of unconfined compressive strength of undistracted soil to that of soil in a remoulded state

C : Ratio of volume of voids to volume of solids

D : None of the above

Q : 24) As per Indian standard soil classification system, a sample of silty clay with liquid limit of 40% and plasticity index of 28% is classified as

A : CH

B : CI

C : CL

D : CL – ML

Q : 25) The ratio of moment of inertia of a circular plate to that of a square plate for equal depth is

A : Less than one

B : Equal to one

C : Greater than one

D : None of the above

Q : 26) The principle of virtual work can be applied to elastic system by considering the virtual work of

A : Internal forces only

B : External forces only

C : Internal as well as external forces

D : None of these

Q : 27) Which of the following pairs is NOT matched correctly with regards to coarse aggregate 10 mm size?

(a) Strength	10 percent fine
(b) Toughness	Impact test
(c) Hardness	Abrasion test
(d) Specific gravity	Pyconometer

Q : 28) In design of steel structure, the design wind speed is 45 m/sec, the basic wind pressure to be considered will be

A : 27.0 N/m^2

B : 29.25 N/m^2

C : 1.215 kN/m^2

D : 1.316 kN/m^2

Q : 29) Initial load tests and routine tests are carried out on

A : Working piles and test piles respectively

B : Test piles and working piles respectively

C : Working piles

D : Test piles

Q : 30) If forces of 1N, 2N, 3N, 4N, 5N and 6N act in order along the sides of a regular hexagon, their resultant is

A : 0

B : 6N

C : 12N

D : 21N

Q : 31) What is the virtual quantity in case of virtual work method?

A : Slope

B : Load

C : Displacement

D : Moment

Q : 32) The strength of timber is maximum

A : Parallel to the grain

B : Perpendicular to the grain

C : 45° to the grain

D : Same in all direction

Q : 33) Consider the following methods of preservation of timber.

1. Dipping
2. Brushing or spraying
3. Pressure impregnation

The correct sequence in decreasing order of the effectiveness of these methods of preservation is

A : 1, 2, 3 B : 2, 1, 3

C : 3, 1, 2 D : 3, 2, 1

Q : 34) The maximum value of slenderness ratio of compression number carrying loads resulting from dead load and superimposed load is

A : 150

B : 180

C : 200

D : 250

Q : 35) If ‘P’ is the percentage of water required for determination of normal consistency of cement, then percentage of water to be added for determination of initial setting time is

A : 0.70 P

B : 0.75 P

C : 0.80 P

D : 0.85 P

Q : 36) Consider the following oxides.

1. Al_2O_3
2. CaO
3. SiO_2

The correct sequence in increasing order oof their percentage in an ordinary Portland cement is

A : 1, 3, 2

B : 2, 1, 3

C : 3, 1, 2

D : 1, 2, 3

Q : 37) In an isolated reinforced concrete column footing of effective depth d, the stress in punching shear is checked

A : At the centre of column

B : At the face of column

C : At a distance d/2 away from face of the column

D : At a distance d away from face of the column

Q : 38) If the resultant of two equal forces has the same magnitude as either of the forces, then the angle between the two forces is

A : 30^o

B : 60^o

C : 90^o

D : 120^o

Q : 39) Cavity wall is generally provided for

1. Heat insulation
2. Sound insulation
3. Prevention of dampness of these statement

A : 1 and 2 are correct

B : 2 and 3 are correct

C : 1, 2 and 3 are correct

D : None of the above are correct

Q : 40) Web crippling in beams generally occur at the point where

A : Concentrated loads acts

B : Bending moment is maximum

C : Shear force is maximum

D : Deflection is maximum

Q : 41) The toughness index of clayey soils is given by

A : Plasticity index / flow index

B : Liquid limit / plastic limit

C : Liquidity index / Plastic limit

D : Plastic limit / liquidity index

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Q : 42) The maximum number of steps in a flight should NOT be more than

A : 12

B : 15

C : 10

D : 8

Q : 43) Percentage of steel for balanced section of a singly reinforced rectangular section by limit state method does NOT depend on

A : Characteristic strength of concrete

B : Yield strength of concrete

C : Modulus of elasticity of steel

D : Geometry of the section

Q : 44) In a compaction test, as the compactive effort is increased the optimum moisture content

A : Decreases

B : Remain same

C : Increases

D : Increase first and thereafter decrease

Q : 45) The change in shearing force between two points on the beam is equal to the area of

A : Loading diagram between two points

B : Shear force diagram between two points

C : Bending moment diagram between two points

D : $\frac{M}{EI}$ diagram between two points

Q : 46) Which combination is NOT considered in the design of steel structure?

A : Dead load + Imposed load

B : Dead load + Imposed load + Wind load

C : Dead load + Erection load

D : Dead load + Imposed load + Wind load + Earthquake load

Q : 47) Moment of inertia of a square of side ‘b’ about an axis through its centre of gravity is

A : $b^3/3$

B : $b^4/3$

C : $b^4/12$

D : $b^4/8$

Q : 48) The Mullar Breslar principal in structural analysis is used for

A : Writing virtual work equation

B : Superimposition of load effect

C : Drawing influence line diagram of any force function

D : None of the above

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Q : 49) A course of stone provided just below a cornice is known as

A : Frieze

B : Toothing

C : Pilaster

D : Carbell

Q : 50) Maximum area of tension reinforcement in beam of size b × D, shall NOT exceed

A : 0.04bD

B : 0.02bD

C : 0.08bD

D : 01.10bD

Where b is width and D is depth of beam.

Q : 51) The constant of proportionality between seepage velocity and hydraulic gradient is called

A : Seepage coefficient

B : Coefficient of transmissibility

C : Coefficient of percolation

D : Modified coefficient of permeability

Q : 52) In air conditional building, the glass recommended for use, is

A : Plate glass

B : Wired glass

C : Form glass

D : Glass wool

Q : 53) The slow setting cement will have higher percentage of

A : Tri calcium aluminate

B : Tri calcium silicate

C : Gypsum

D : Di-calcium silicate

Q : 54) The short-term modulus of elasticity of concrete (in N/mm2) as per IS 456 : 2000 is given by

A : 5000 $\sqrt{f_{cu}}$

B : 5700 $\sqrt{f_{cu}}$

C : 3000 $\sqrt{f_{cu}}$

D : 3700 $\sqrt{f_{cu}}$

Where f_{cu} is characteristic strength of concrete

Q : 55) Coefficient of curvature (Cc) is given by

A : $C_c = \frac{(D_{30})^2}{D_{10} \times D_{20}}$

B : $C_c = \frac{(D_{20})^2}{D_{10} \times D_{60}}$

C : $C_c = \frac{(D_{30})^2}{D_{10} \times D_{40}}$

D : $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

Q : 56) A borrow soil has a dry density of 1.76 t/m^3. How many cubic meters of this soil will be required to construct an embankment (with dry density 1.68 t/m^3) of 100 m^3?

A : 95 m^3

B : 100 m^3

C : 105 m^3

D : 110 m^3

Q : 57) Pick the incorrect statement.

A : On a principal plane. Only normal stress acts.

B : Isotropic state of stress is independent of frame of reference.

C : On the plane which carries maximum shear stress, the normal stress is zero.

D : On the plane which carries maximum normal stress, the shear stress is zero.

Q : 58) Which of the following is the most correct method of estimate?

A : Building cost index estimate

B : Analysis of rate estimate

C : Cube rate estimate

D : Plinth area estimate

Q : 59) A column of unsupported length L gas both the ends fully restrained. The effective length of column will be

A : 0.55 L

B : 0.65 L

C : 0.80 L

D : 2.0 L

Q : 60) A singly reinforced rectangular concrete beam of width 300 mm and effective depth 400 mm, is to be designed using M 25 grade concrete and Fe 500 grade steel. For the beam to be under reinforced, the maximum number of 16 mm diameter reinforcing bars that can be provided is

A : 3

B : 4

C : 5

D : 6

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Q : 61) Horizontal web stiffener are used in plate girders if depth to thickness ratio of web is greater than

A : 100

B : 180

C : 200

D : 300

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