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## theory classes

*- Recorded Class *- Duration 250 Hours w Validity 4 Months
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| List-I | List-II |
| :---: | :---: |
| i. Preliminary estimate | 1. Probable variation for quantity rate <br> and amount for each items |
| ii. Revised estimate | 2. Material deviation of a structural |
| nature |  |

Codes:
A: 4, 1, 2, 3
B: 4, 2, 1, 3
C: 3, 1, 2, 4
D: 3, 2, 1, 4

Q : 2) The total number of grades of ordinary concrete stipulated in IS: 4562000 are
A: 10
B: 8
C: 3
D: 6

Q : 3) Two shafts of same length and material are jointed in series. If the ratio of their diameters is 2 , then the ratio of their angles of twist will be A: 2
B: 4
C: 8
D: 16

Q : 4) The mortar used for masonry construction are classified based on strength. In IS : 2950 and IS : 1905 according to their designations $L_{1}, L_{2}, H_{1}$, $H_{2}, M_{1}$ and $M_{2}$. The correct sequence of increasing order of their strength is
$A: L_{1}, L_{2}, H_{1}, H_{2}, M_{1}$ and $M_{2}$
$B: L_{2}, L_{1}, M_{2}, M_{1}, H_{2}$ and $H_{1}$
$C: L_{1}, L_{2}, M_{1}, M_{2}, H_{1}$ and $H_{2}$
D: $M_{1}, M_{2}, L_{1}, L_{2}, H_{1}$ and $H_{2}$

Q : 5) A prismatic bar in compression has a cross-sectional area $A=1200 \mathbf{m m}^{2}$ and carries a load $\mathbf{P}=90 \mathrm{kN}$. Normal and shear stresses acting on a plane cut through the bar at $\boldsymbol{\theta}=\mathbf{2 5}$, are
respectively
A: 61.6 MPa and 28.7 MPa
B: 49.5 MPa and 23.8 MPa
C: 78.2 MPa and 20.7 MPa
D: 73.4 MPa and 29.2 MPa residential building shall be A: 150 mm
B: 190 mm
C: 200 mm
D: $\mathbf{3 0 0}$ mm

Q : 7) A cast iron column of external diameter of $\mathbf{3 0 0} \mathbf{~ m m}$ is $\mathbf{2 0 ~ m m}$ thick. Find safe compressive load on column with factor of safety of 5 , if the crushing strength of material is $550 \mathrm{~N} / \mathrm{mm}^{2}$ A: 1925.21 kN
B: 1935.21 kN
C: 1945.21 kN
D: 1955.21 kN

Q : 8) The water-cement ratio for ferrocement mix should be
A: Less than 0.35
B: Between 0.35 to 0.40
C: Between 0.40 to 0.50
D: Greater than 0.60

Q : 9) A simply supported beam of length 6 m carries a point load at the beam such that the maximum bending moment there is $12 \mathrm{kN}-\mathrm{m}$, if ' El ' is the flexural rigidity of the ebam, the deflection at the centre is
A: $\frac{9}{E I}$
B: $\frac{18}{E I}$
C: $\frac{36}{E I}$
D: $\frac{45}{E I}$

Q:10) The minimum depth of the reinforced bond provided as strengthing arrangement in masonry building is
A: 75 mm
B: 60 mm
C: 50 mm
D: 40 mm

Q : 11) When a body is subjected to a direct tensile stress ( $p$ ) in one plane accompanied by a simple shear stress
(q), the maximum normal stress is
$\mathrm{A}: \frac{p}{2}+\frac{1}{2} \sqrt{p^{2}+4 q^{2}}$
B: $\frac{p}{2}-\frac{1}{2} \sqrt{p^{2}+4 q^{2}}$
C: $\frac{p}{2}+\frac{1}{2} \sqrt{p^{2}-4 q^{2}}$
D: $\frac{p}{2}-\frac{1}{2} \sqrt{p^{2}-4 q^{2}}$

A: The apex line of the sloping roof Surface
B: Sloped triangular surface formed at the end of the roof
C: Sloped triangular surface formed at the end of a roof
D: The ridge formed by the intersection of two sloping surfaces before fracture
A: Is smaller than the elastic deformation
B: Vanishes
C: Is equal to the elastic deformation
D: Is much larger than elastic deformation

B: Compaction factor test
C: Vee-bee consistometer test
D: Vicat test

Q : 15) The first moment of area of a rectangular section of width ' $b$ ' and depth ' $h$ ' about centre of gravity is A: $\frac{h^{2}}{2}$
B: $\frac{b . h^{2}}{4}$
C: Zero
D: b. $\mathbf{h}^{\mathbf{2}}$ building shall NOT exceed

## A: 1 in 12

B: 1 in 10
C: 1 in 18
D: 1 in 6 beam at the near end when the far end is hinged, to the stiffness of the beam at the near end when the far end is fixed A: $\frac{4}{3}$

B: $\frac{3}{4}$
C: 1
D: $\frac{1}{2}$

Q : 18) A property fetch a net annual income of 80,000/- after deducting all outgoings. Rate of interest is $6 \%$ per annum. What is capitalized value of the property?
A: 13,33,600/-
B: 9,30,000/-
C: 16,63,500/-
D: 9,33,900/-

Q : 19) The deflection at the free end of a cantilever beam subjected to a couple ' $M$ ' at the free end and having an uniform flexural rigidity 'EL' throughout its length ' $L$ ' is equal to
A: $\frac{M L^{2}}{2 E I}$
B: $\frac{M L^{2}}{3 E I}$
$\mathrm{C}: \frac{M L^{2}}{6 E I}$
D: $\frac{M L^{2}}{8 E I}$ the correct answer using the codes given below the lists.

| List-I | List-II |
| :--- | :--- |
| i. Index plan | 1. Details of plumbing service, water supply and sewage <br> disposal system |
| ii. Key plan | 2. Relative position of all the different units |
| iii. Service plan | 3. General layout of a new town showing the position of roads, <br> Market, hospital, parks etc. |
| iv. Layout plan | 4. Details of the particular building |

Codes:
A: 4, 3, 2, 1
B: 3, 4, 1, 2
C: 3, 1, 2, 4
D: 4, 1, 2, 3

Q : 21) A three hinged arch ABC has a span of 20 m and central rise of 4 m . The arch has hinged at the end and at the centre. A train of two point loads of 20 kN and $10 \mathrm{kN}, 5 \mathrm{~m}$ apart crosses this arch from left to right with 20 kN load leading. The maximum thrust induced at the support is
A: $\mathbf{2 5} \mathbf{k N}$
B: 32.81 kN
C: 28.13 kN
D: 31.25 kN

Q : 22) Base of a paint is
A: Linseed oil
B: Poppy oil
C: Sulphates of zinc and manganese
D: White lead

Q:23) Influence line for redundant structures can be obtained by
A: Castigliano's theorem
B: Unit load theorem
C: Muller-Breslau principle
D: Maxwell Betti's reciprocal theorem

Q : 24) Part of brick which has halfheader face and half-stretcher face is known as
A: Bevelled closer
B: King closer
C: Queen closer
D: Bat

Q : 25) A single bay portal frame of height ' $h$ ' fixed at the base is subjected to a horizontal displacement ' $\Delta$ ' at the top. The base moment developed is proportional to all members are prismatic.
A: $\frac{1}{h}$
B: $\frac{1}{h^{2}}$
C: $\frac{1}{h^{3}}$
D: None of these

Q : 26) In a 'PERT' analysis, if the probability factor is negative, the chances of completing the project in time is
A: Less than 50\%
B: Fifty-fifty \%
C: More than 50\%
D: Zero matrix in the following?

$$
\begin{aligned}
& \text { A: }\left[\begin{array}{lll}
1.0 & 0.0 & 1.0 \\
0.0 & 1.0 & 0.0 \\
1.0 & 0.0 & 1.0
\end{array}\right] \\
& \text { B: }\left[\begin{array}{lll}
1.0 & 0.0 & 0.0 \\
1.0 & 0.0 & 0.0 \\
1.0 & 0.0 & 0.0
\end{array}\right] \\
& \mathrm{C}:\left[\begin{array}{lll}
0.0 & 1.0 & 0.0 \\
0.0 & 1.0 & 0.0 \\
0.0 & 1.0 & 0.0
\end{array}\right] \\
& \text { D: }\left[\begin{array}{lll}
1.0 & 0.0 & 0.0 \\
0.0 & 1.0 & 0.0 \\
0.0 & 0.0 & 1.0
\end{array}\right]
\end{aligned}
$$

1. Deflection
2. Repairable damage or crack due to fatigue
3. Vibration
4. Fire

A: Only 1 and 3
B: Only 1 and 4
C: Only 1, 3 and 4
D: 1, 2, 3 and 4

Q : 29) Neglecting axial changes in lengths, determine the kinematic indeterminacy of the following frame 'ABC'.
A: 3
B: 2
C: 1
D: 9
 determined from the A: Flexural strength of plate B: Shear strength of plate
C: Bearing strength of concrete pedestal
D: Punching criteria

A: Compatibility condition
B: Constitutive relationship
C: Equilibrium equations
D: Strain displacement relations correct answer using the codes given below the list.

| List-I | List-II |
| :--- | :--- |
| 1. Building lease | 1. The lease holder does not have right to <br> spend money on construction |
| 2. Occupational lease | 2. The lease holder can erect holder can erect a <br> building |
| 3. Sub-lease | 3. Duration of lease is given until death |
| 4. Life lease | 4. The lease holder may render lease hold <br> property |

Codes:
A: 1, 2, 4, 3
B: 2, 1, 4, 3
C: 3, 1, 2, 4
D: 3, 2, 1, 4 reaction $R_{C}$ for the beam shown in figure will be as

(a)

(b)

(c)

concentrated load acting at mid span. The plastic moment of the section is MP. The magnitude of collapse load will be A: $8 \mathrm{M}_{\mathrm{p}} / \mathrm{L}$
B: $6 \mathrm{M}_{\mathrm{p}} / \mathrm{L}$
C: $4 \mathrm{M}_{\mathrm{p}} / \mathrm{L}$
D: $\mathbf{2} \mathrm{M}_{\mathrm{p}} / \mathrm{L}$

Q : 35) A horizontal beam is shown below. The distance of the point of contraflexure from the end ' $A$ ' is
A: 0.333 m
B: 0.666 m
C: 1.50 m
D: 0.50 m


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