

Program: Civil Engineering
Curriculum Scheme: Rev 2016
Examination: Second Year Semester IV
Course Code: CE-C 403 and Course Name: Structural Analysis I

Time: 1-hour

Max. Marks: 50

For the students: - All the Questions are compulsory and carry equal marks.

Q1.	For a Frame consist of 1 column (AB= 4m) and 1 beam (BC= 8m) where A is hinge and C is roller supported. AB is loaded with a UDL of 30 kN/m and a point load of 30 kN at C. What will be the horizontal reaction at point A
Option A:	90 kN
Option B:	120 kN
Option C:	110 kN
Option D:	150 kN
Q2.	For a cantilever frame fixed at A and free at C AB (4m) is a vertical member and BC (6m) is horizontal member towards right of B. Point C is loaded with a point load of 15 kN vertically downward. What will be BM at B
Option A:	75 kN-m
Option B:	60 kN-m
Option C:	90 kN-m
Option D:	120 kN-m
Q3.	Internal shear force generated in a three hinged arch is always: -
Option A:	0
Option B:	Infinite
Option C:	Varies
Option D:	Non zero value but remains constant
Q4.	A three hinged Parabolic arch span of 30 m with rise of 5 m is loaded with a UDL of 10kN/m of left half span. Calculate the horizontal thrust.
Option A:	112.5 kN
Option B:	75 kN
Option C:	150 kN
Option D:	50 kN
Q5.	Three hinged Parabolic arch loaded with a UDL W kN/m of span L m. BM at quarter span is.....
Option A:	$WL^2/8$
Option B:	0
Option C:	$WL^2/4$
Option D:	$WL/4$
Q6.	Beam loaded with a UDL w kN/m with span L. Maximum deflection is
Option A:	$((wL^4)/(384EI))$
Option B:	$((wL^4)/(72EI))$
Option C:	$((wL^4)/(36EI))$
Option D:	$((wL^3)/(48EI))$

Q7.	Beam loaded with a UDL w kN/m with span L . Slope at midspan is
Option A:	$((wL^4)/(384EI))$
Option B:	$((wL^4)/(72EI))$
Option C:	0
Option D:	$((wL^3)/(48EI))$
Q8.	Macaulay's method is used to determine _____
Option A:	deflection
Option B:	strength
Option C:	toughness
Option D:	all of the above
Q9.	Macaulay's method equation is
Option A:	$EI(d^2y/dx^2)= M$
Option B:	$EI(d^2y/dx^2)= V$
Option C:	$EI(d^2y/dx^2)= W$
Option D:	$EI(d^2y/dx^2)= T$
Q10.	In this Conjugate beam method, shear in Conjugate beam isin real beam
Option A:	Bending Moment
Option B:	Deflection
Option C:	Slope
Option D:	Shear Force
Q11.	In this Conjugate beam method, Bending moment in Conjugate beam isin real beam
Option A:	Bending Moment
Option B:	Deflection
Option C:	Slope
Option D:	Shear Force
Q12.	Fixed joint in Real beam is replaced by in Conjugate beam
Option A:	Fixed
Option B:	Free
Option C:	Hinged
Option D:	Roller
Q13.	Internal Hinge in Real beam is replaced by in Conjugate beam
Option A:	Fixed
Option B:	Internal Hinge
Option C:	Hinge
Option D:	Free
Q14.	Which is the following term is associated with Unit load method
Option A:	mM/EI
Option B:	M/mEI

Option C:	E/mI
Option D:	I/Em
Q15.	What will be equation used to calculate deflection in truss using Unit Load Method
Option A:	$(PKL)/(AE)$
Option B:	$(1/4)((PKL)/(AE))$
Option C:	$(1/2)((PKL)/(AE))$
Option D:	$(1/3)((PKL)/(AE))$
Q16.	In general t_A/B implies
Option A:	Vertical deflection of tangent at B wrt that at A
Option B:	Vertical deflection of tangent at A wrt that at B
Option C:	Vertical deflection of extended tangent at B wrt tangent at A
Option D:	Vertical deflection of tangent at A wrt extended tangent at B
Q17.	The slenderness ratio is the ratio of
Option A:	Length of column to least radius of gyration
Option B:	Moment of inertia to area of cross-section
Option C:	Area of cross-section to moment of inertia
Option D:	Least radius of gyration to length of the column
Q18.	The Rankine formula holds good for
Option A:	Short column
Option B:	Long column
Option C:	Medium column
Option D:	Both short and long column
Q19.	For a column with Both end Fixed $L_{eff} = \dots\dots\dots L$
Option A:	1
Option B:	2
Option C:	4
Option D:	1/2
Q20.	For a column with one end Fixed and other end free $L_{eff} = \dots\dots\dots L$
Option A:	4
Option B:	1
Option C:	1/2
Option D:	2
Q21.	in influence line diagrams (ILD)
Option A:	Points remain fixed, position of load changes
Option B:	Points change, position of loads remain fixed
Option C:	Both of them changes
Option D:	Neither of them changes
Q22.	For a cantilever beam what will be the value of ILD @ R_A at mid span
Option A:	1/2

Option B:	1
Option C:	$\frac{3}{4}$
Option D:	$\frac{1}{4}$
Q23.	<p>What will be the work done during additional application of dp_1?</p> <p>Δ = displacement caused when force is increased by a small amount P = external force applied N = internal force in the member force applied L = length of member A = cross-sectional area of member E = Modulus of elasticity</p>
Option A:	a) $p_1 d\Delta_1 + p_2 d\Delta_2 + dp_1 d\Delta_1$
Option B:	b) $p_1 d\Delta_1 + p_2 d\Delta_2 + \frac{1}{2} dp_1 d\Delta_1$
Option C:	c) $p_1 d\Delta_1 + \frac{1}{2} p_2 d\Delta_2 + dp_1 d\Delta_1$
Option D:	d) $\frac{1}{2} p_1 d\Delta_1 + p_2 d\Delta_2 + dp_1 d\Delta_1$
Q24.	The shape of cable under transverse uniformly distributed load is
Option A:	Parabolic
Option B:	Catenary
Option C:	Circular
Option D:	Triangular
Q25.	Unsymmetrical bending occurs due to _____
Option A:	The Beam cross section is unsymmetrical
Option B:	The shear Centre does not coincide with the neutral axis
Option C:	The Beam is subjected to trust in addition to bending moment
Option D:	The bending moment diagram is unsymmetrical