Program: BE Civil Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VII

Course Code: DLO 7041 Course Name: prestressed concrete

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carries equal marks .

Q1.	A prestressed concrete beam span 10m of rectangular section, 120mm wide & 300mm deep is axially prestressed on effective force of 180kN, uniformly distributed load of 5kN/m include the self weight of member. The maximum shear stress at support is
Option A:	20.5 N/mm2
Option B:	1.05 N/mm2
Option C:	15.08 N/mm2
Option D:	4.05 N/mm2
Q2.	The web shear cracks generally start from :
Option A:	Interior point
Option B:	Exterior point
Option C:	Edge
Option D:	Mid span
Q3.	Ranges of stresses at top and bottom fibres are inversely proportional to
Option A:	Section moduli of top and bottom fibre
Option B:	Self weight and live load moment
Option C:	Efficiency of the section
Option D:	Amount of prestressing force
Q4.	If $Z = 14*10^6$ mm^3 and superior and inferior stresses are -5.9N/mm^2 and 22N/mm^2 respectively, area of the section is $150*10^3mm^2$ then the minimum prestressing force would be
Option A:	1207KN
Option B:	120.7KN
Option C:	1.27KN
Option D:	130kN
Q5.	If $Z = 14*10^6$ mm^3 and superior and inferior stresses are -5.9N/mm^2 and 22N/mm^2 respectively area of the section is $150*10^3mm^2$ the corresponding

	eccentricity would be
Option A:	165mm
Option B:	148mm
Option C:	161mm
Option D:	142mm
Q6.	The stress in the concrete must not exceed 17N/mm^2 in compression and 0 N/mm^2 in tension and the loss of prestress may be assumed to be 15 percent the corresponding range of stresses at top and bottom fibres are
Option A:	14.45 N/mm^2, 17 N/mm^2
Option B:	-14.45 N/mm^2, 17 N/mm^2
Option C:	14.45 N/mm^2, -17 N/mm^2
Option D:	17 N/mm^2, 14.45 N/mm^2
Q7.	When the resultant compression force is acting at upper kern points the stress at the bottom most fibre of a beam is
Option A:	zero
Option B:	positive
Option C:	Negative
Option D:	Equal to bending stress
Q8.	A rectangular beam is subjected to pre-stressing force of 180KN acting concentrically if the beam is subjected to a moment of 25KNm then the pressure line is located at
Option A:	158.8
Option B:	148.8
Option C:	138.8
Option D:	168.8
Q9.	A concrete beam subjected to an eccentric prestressing force of magnitude P located at an eccentricity e. The stress developed at the top fibers of the beam will be.(A and Z are the cross sectional area and sectional modulus respectively)
Option A:	$\frac{P}{A}+\frac{Pe}{Z}$
Option B:	$\frac{P}{A}-\frac{P}{Z}$
Option C:	$\frac{P}{A}-\frac{Pe}{Z}$
Option D:	$\frac{P}{A}+\frac{P}{Z}$
Q10.	A prestressed concrete beam of width 150mm and depth 300mm is subjected to a force of 180KN with a straight cable an an eccentricity of 55mm. The corresponding stress in concrete at level of steel fc would be
Option A:	13.33
Option B:	4.33

Option C:	1.33
Option D:	5.61
Q11.	If stress in concrete at level of steel fc = 5.45 Ec = 35KN/mm^2 and Es = 210KN/mm^2 and ϕ= 1.4. The percentage loss of stress would be creep of concrete is
Option A:	3270
Option B:	32.7
Option C:	45.78
Option D:	0.327
Q12.	The relaxation of steel stress is defined as
Option A:	Change in deflection at constant strain
Option B:	Change in strain at constant stress
Option C:	Change in deflection at constant stress
Option D:	Change in stress at constant strain
Q13.	The deformation of prestressed members change with time as a result of:
Option A:	Creep and shrinkage
Option B:	Friction and torsion
Option C:	Deformation and flexibility
Option D:	Cracking moment
Q14.	Which type of deflections is solved by Mohr's theorem?
Option A:	Instantaneous
Option B:	Long
Option C:	Middle span
Option D:	End span
Q15.	The upward deflection induced in a prestressed concrete beam subjected to a prestressing force P of a straight cable at an eccentricity e can be expressed as
Option A:	Pel^2/48EI
Option B:	5Pel^2/48EI
Option C:	Pel^2/8EI
Option D:	Pel^2/EI
Q16.	The creep strain due to the transverse loads is directly computed as a function of:
Option A:	Strain coefficient
Option B:	Creep coefficient
Option C:	Stress coefficient
Option D:	Bending
Q17.	If fck = 40 N/mm^2 then the maximum principal tensile stress would be
Option A:	1.51
Option B:	1.2

Option C:	2.5
Option D:	2.2
Q18.	The maximum shear stress at support is 1.5N/mm^2, the magnitude of principal tension developed without axial prestressing is
Option A:	2.5 N/mm^2
Option B:	1.5N/mm^2
Option C:	1 N/mm^2
Option D:	2 N/mm^2
Q19.	Vertical prestressing is generally avoided because
Option A:	Loss of prestress due to shrinkage is high
Option B:	Loss of prestress due to creep is high
Option C:	Loss of prestress due to friction is high
Option D:	Loss of prestress due to anchorage slip is high
Q20.	For type1 member at service load the permissible tensile stress is
Option A:	Zero
Option B:	$0.5\sqrt{fck}$
Option C:	$0.24\sqrt{fck}$
Option D:	$0.75\sqrt{fck}$
Q21.	In the method of post tensioning
Option A:	The tendons are stretched then concrete units are cast
Option B:	Both concrete casting and tendon stretching done simultaneously
Option C:	The concrete units are cast then through duct tendons passed
Option D:	Only tendons are stretched no concrete units casted
Q22.	In Lee mccall system the forces are transferred by
Option A:	Shearing at centre
Option B:	Shearing at ends
Option C:	Bonding at ends
Option D:	Bearing at the ends
Q23.	A prestressed concrete beam is loaded with uniformly distributed loading. The profile of the cable is laid based on the load balancing concept, the shape of the profile is
Option A:	Parabolic
Option B:	Triangular
Option C:	Trapezoidal
Option D:	sloping
Q24.	A prestressed concrete beam is subjected to UDL and bottom fiber stress is zero. The pressure line at the center of span will be located at a distance of
Option A:	h/6

Option B:	h/20
Option C:	h/4
Option D:	h/3
Q25.	The shift of pressure line e’ can be expressed as where a = lever arm distance and e = eccentricity
Option A:	e’ = a-e
Option B:	e’ = a+e
Option C:	e’ = a*e
Option D:	e’ = a/e

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Question	**Correct Option** **(Enter either 'A' or 'B' or 'C' or 'D')**
Q1.	B
Q2.	A
Q3.	A
Q4	A
Q5	C
Q6	A
Q7	A
Q8.	C
Q9.	C
Q10.	D
Q11.	C
Q12.	D
Q13.	A
Q14.	A
Q15.	C
Q16.	C
Q17.	A
Q18.	B

Q19.	D
Q20.	A
Q21.	C
Q22.	D
Q23.	A
Q24.	A
Q25.	A