

Program: BE --CIVIL Engineering
Curriculum Scheme: Revised 2012
Examination: Final Year BE

Course Code: CEE804 and Course Name: Bridge Design Engineering

Time: 1 hour

Max. Marks: 50

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Note to the students: - 1) All the Questions are compulsory and carry equal marks.
2) IRC-5, IRC-6, IRC-18, IRC-21 and IRC-112 are allowed.

Q1.	A cross drainage structure having a total length of 6 m or less between inner faces of drift walls or extreme ventway boundaries measured at right angle thereto is called.....
Option A:	minor bridge
Option B:	major bridge
Option C:	culvert
Option D:	high level bridge
Q2.	A site plan, to a suitable scale, showing details of site selected and extending not less than upstream and downstream from center line of crossing and covering the approaches to a sufficient distance, which in the case of major bridge, shall not be less than ----- on either side of channel.
Option A:	200 m, 1000 m
Option B:	500 m, 1000 m,
Option C:	100 m, 200 m
Option D:	100 m, 500 m
Q3.	Pot bearing is suitable for bridge girders of span
Option A:	highway and 51 m and above
Option B:	highway and 61 m and above
Option C:	railway and 51 m and above
Option D:	railway and 61 m and above
Q4.	Bridges designed for should be checked for IRC-Class-A loading also as under certain conditions, heavier stresses may occur under Class A loading.
Option A:	IRC Class 70R and IRC Class B loading
Option B:	IRC Class AA tracked loading and IRC Class B loading
Option C:	IRC Class AA Wheeled loading and IRC B loading
Option D:	IRC Class 70R and IRC Class AA tracked loading
Q5.	IRC Class 70R or IRC Class AA loading is applicable for bridge having carriage width of

Option A:	4.25 m
Option B:	5 m
Option C:	5.3 m only
Option D:	5.3 m and above
Q6.	Minimum clearance between the outer edge of wheel or track of passing or crossing IRC Class-A vehicles for multilane bridge shall be, when carriage width is 7.5 m.
Option A:	0.4 m
Option B:	0.15 m
Option C:	1.2 m
Option D:	0.4 m to 1.2 m
Q7.	Which of the following is not a method to rectify tilt of well foundation?
Option A:	Excavation under cutting edge
Option B:	Pulling the well
Option C:	Excavation on lower side
Option D:	Water jetting
Q8.	All members of standard steel bridge girders for railways should be designed for cycles of stresses produced under minimum and maximum of design load.
Option A:	12 million
Option B:	10 million
Option C:	1 million
Option D:	7 million
Q9.	A RC bridge of span 8 m is to be designed to carry IRC Class-A vehicle. By what percentage live load is to be increased to account its dynamic effect?
Option A:	25
Option B:	32.15
Option C:	13.75
Option D:	10
Q10.	Nose to tail distance between two successive IRC Class AA Tracked vehicles shall not be less than
Option A:	18.5 m
Option B:	30 m
Option C:	90 m
Option D:	74.8 m
Q11.	Determine effective length of load for LLBM. If effective span of bridge is 6.6 m, thickness of RC deck slab is 500 mm, thickness of wearing coat is 80 mm and live load is IRC Class 70R tracked vehicle.
Option A:	5730 mm
Option B:	5750 mm
Option C:	4760 mm
Option D:	4780 mm

Q12.	Determine LLBM for RC deck slab, if c/c span with bearings is 6.4 m, effective length of imposed load is 5.55 m, net effective width of imposed load is 7.515 m and live load is IRC class 70R tracked vehicle.
Option A:	90.51 kN-m
Option B:	101.10 kN-m
Option C:	199.15 kN-m
Option D:	106.02 kN-m
Q13.	Sliding plate bearing can be used when the bridge span is smaller than and for the bridges experiencing
Option A:	15 m & horizontal movement
Option B:	10 m & rotational movement
Option C:	15 m & rotational movement
Option D:	10 m & horizontal movement
Q14.	Determine Maximum Shear Force due to live load on longitudinal girder of a 25 m span bridge considering impact factor, due to IRC Class 70R tracked vehicle. Clear carriage width is 7.8 m, four longitudinal girders are provided at 2.6 m c/c.
Option A:	438.46 kN
Option B:	422.46 kN
Option C:	285.34 kN
Option D:	277.22 kN
Q15.	LLBM 190.78 kN-m & DLBM 264.6 kN-m corresponding to service loads is acting on a simply supported post-tensioned prestressed concrete deck slab bridge. Ultimate moment under severe environmental conditions will be
Option A:	708.96 kN-m
Option B:	807.7 kN-m
Option C:	873.85 kN-m
Option D:	1568.63 kN-m
Q16.	A simply supported post-tensioned prestressed concrete deck slab bridge is 500 mm deep. Determine ultimate moment of resistance, if it behaves as an under reinforced section. 'f _p ' of prestressing steel is 1500 MPa. Area of prestressing steel for 1 m wide slab is 2900 mm ² which is located at 100 mm from soffit of the slab at mid span.
Option A:	807.7 kN-m
Option B:	1163.5 kN-m
Option C:	1566 kN-m
Option D:	1689.6 kN-m
Q17.	A tilt of and a shift of shall be considered in the design of well foundation.
Option A:	1 in 150, 80 mm
Option B:	1 in 100, 100 mm
Option C:	1 in 80, 150 mm

Option D:	1 in 10, 10 mm
Q18.	In the Incremental method of the launching of concrete girders, how many days cycle per girder is preferred?
Option A:	10 days cycle per launch
Option B:	14 days cycle per launch
Option C:	7 days cycle per launch
Option D:	3 days cycle per launch
Q19.	In a PSC girder bridge of span 24 m, determine reaction due to cross girder on main girder whereas area of cross girder is 70% of area of main girder, area of main girder is $645 \times 10^3 \text{ mm}^2$. Longitudinal girders are provided at 2.6 m c/c.
Option A:	22.82 kN
Option B:	29.35 kN
Option C:	32.82 kN
Option D:	38.23 kN
Q20.	Self-weight of different elements per meter span per track of a lattice girder bridge are as under: Stringers, Stock rail and Guard rails: 3.9 kN/m, cross beams, bracings and fasteners: 6 kN/m, PSC sleepers are spaced 400 mm c/c and are of size 2.8 m x 250 mm x 250 mm Take self-weight of each girder (top chord, bottom chord, diagonals and vertical members): 18 kN/m. Intensity of dead load on each girder is
Option A:	22.42 kN/m
Option B:	25.22 kN/m
Option C:	28.42 kN/m
Option D:	35.29 kN/m
Q21.	For a lattice girder bridge of 40 m span, the Coefficient of Dynamic Augment (CDA) for single track span of broad gauge loading will be
Option A:	0.345
Option B:	0.324
Option C:	0.307
Option D:	0.293
Q22.	The impact factor used in the design of bridge decks is always inversely proportional to
Option A:	the width of bridge deck
Option B:	the span length
Option C:	the type of bridge deck
Option D:	the IRC loading
Q23.	The computation of loads in the design of bridges, the IRS bridge rules recommends the use of
Option A:	Wheel Load

Option B:	Tracked Load
Option C:	Bogie Load
Option D:	EUDL
Q24.	Width of carriageway shall not be less than for single lane bridge.
Option A:	3.25 m
Option B:	3.75 m
Option C:	4.25 m
Option D:	4.75 m
Q25.	The medium to transfer loads from superstructure to substructure is called
Option A:	Abutment
Option B:	Bed block
Option C:	Bearing
Option D:	Pier

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

Q17.	C
Q18.	C
Q19.	B
Q20.	C
Q21.	B
Q22.	B
Q23.	D
Q24.	C
Q25.	C