## Program: BE CIVIL Engineering

## Curriculum Scheme: Revised 2016

## Examination: Third Year Semester VI

Course Code: CEC602 and Course Name: Design and Drawing of Steel Structures

Time: 1 hour

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Max. Marks: 50

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

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Q1.	For the steel of grade Fe 410, 410N/mm <sup>2</sup> is –		
Option A:	Yield Stress		
Option B:	Design stress		
Option C:	Ultimate tensile stress		
Option D:	Failure stress		
option D.			
Q2.	A tie member ISA 100 x 75 x 8 with $A_g = 16.50 \text{ cm}^2$ connected with longer leg		
	using 5-M16 black bolts. Approximate rupture strength of member will be		
	nearly-		
Option A:	313 KN		
Option B:	320 KN		
Option C:	305 KN		
Option D:	330 KN		
-			
Q3.	Which of the following type of tension member is not mainly used in modern		
	practice		
Option A:	open section such as angles		
Option B:	Flat bars		
Option C:	Double angles		
Option D:	Circular section		
Q4.	What is the effective length when both the end of compression member are		
	Hinged?		
Option A:	0.65 L		
Option B:	0.80 L		
Option C:	1.00 L		
Option D:	2.00 L		
Q5.	The value of imperfection factor for a compression member for buckling class		
	"d" member is-		
Option A:	0.34		
Option B:	0.45		
Option C:	0.21		
Option D:	0.76		

to too isOption A:S+2gOption D:S-2gOption D:SQ7.In case of Fillet Weld to calculate Size of weld, if the value of "k is 0.55" then the Angle of Fusion will beOption A: $60-90$ degreesOption B:91-100 degreesOption C:101-106 degreesOption D:107-113 degreesQ8.Under exactly identical conditions, battened column as compared to laced column isOption A:Equal in strengthOption D:50% strongerQ9.For very short compression member the design compressive stress $f_{cd}$ for Fe410 grade steel isOption B:250 N/mm²Option D:227 N/mm²Q10.Depth of intermediate batten = of depth of end batten Option D:Q11.Lacing shall be designed to resist transverse shear (Vt) equals to Option D:Q12.In case of Plate Girder when there is second longitudinal stiffeners provided at neutral axis to meet serviceability criteria then, $d/t_w$ should be, Option D:Q12.In case of Plate Girder, If Elastic Critical Stresses ( $\tau_{cr,e}$ ) =75 N/mm² fyw=250	Q6.	Width of end batten in built-up column, when two channel sections are placed		
Option B:       S-2g         Option C:       SHC <sub>yy</sub> Option D:       S         Q7.       In case of Fillet Weld to calculate Size of weld, if the value of "k is 0.55" then the Angle of Fusion will be         Option A:       60-90 degrees         Option B:       91-100 degrees         Option D:       107-113 degrees         Option D:       107-113 degrees         Option A:       Equal in strength         Option A:       Equal in strength         Option D:       Stronger in strength         Option B:       Stronger in strength         Option B:       250 N/mm <sup>2</sup> Option C:       240 N/mm <sup>2</sup> Option C:       3/2         Option C:       3/2 <th< td=""><td></td><td></td></th<>				
Option B:       S-2g         Option C:       SHC <sub>yy</sub> Option D:       S         Q7.       In case of Fillet Weld to calculate Size of weld, if the value of "k is 0.55" then the Angle of Fusion will be         Option A:       60-90 degrees         Option B:       91-100 degrees         Option D:       107-113 degrees         Option D:       107-113 degrees         Option A:       Equal in strength         Option A:       Equal in strength         Option D:       Stronger in strength         Option B:       Stronger in strength         Option B:       250 N/mm <sup>2</sup> Option C:       240 N/mm <sup>2</sup> Option C:       3/2         Option C:       3/2 <th< td=""><td>Option A:</td><td colspan="2">S+2g</td></th<>	Option A:	S+2g		
Option C: $S + C_{vv}$ Option D:       S         Q7.       In case of Fillet Weld to calculate Size of weld, if the value of "k is 0.55" then the Angle of Fusion will be         Option A:       60-90 degrees         Option D:       101-106 degrees         Option D:       107-113 degrees         Option A:       Equal in strength         Option B:       Weaker in strength         Option C:       Stronger         Option C:       Stronger         Option C:       Stronger         Option A:       Equal in strength         Option C:       Stronger         Option A:       166 N/mm <sup>2</sup> Option B:       250 N/mm <sup>2</sup> Option B:       220 N/mm <sup>2</sup> Option B:       221 N/mm <sup>2</sup> Option B:       4/3         Option A:       1/2         Option C:       3/4         Q11.       Lacing shall be designed to resist transverse shear (Vt) equals to         Option B:       2.5 % of column load         Option C:       5.0 % of column load         Option C:       5.0 % of column load         Option A:       0.5 % of column load         Option B:       2.5 % of column load				
Option D:       S         Q7.       In case of Fillet Weld to calculate Size of weld, if the value of "k is 0.55" then the Angle of Fusion will be         Option A:       60-90 degrees         Option B:       91-100 degrees         Option D:       101-106 degrees         Option D:       107-113 degrees         Q8.       Under exactly identical conditions, battened column as compared to laced column is         Option A:       Equal in strength         Option B:       Weaker in strength         Option D:       50% stronger         Q9.       For very short compression member the design compressive stress fed for Fe410 grade steel is         Option B:       250 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option A:       1/2         Option A:       1/2         Option A:       1/2         Option C:       3/2         Option C:       3/2         Option B:       2.5 % of column load         Option B:       5.0 % of column load         Option A:       0.5 % of column load				
Q7.       In case of Fillet Weld to calculate Size of weld, if the value of "k is 0.55" then the Angle of Fusion will be         Option A:       60-90 degrees         Option B:       91-100 degrees         Option D:       101-106 degrees         Option D:       101-113 degrees         Q8.       Under exactly identical conditions ,battened column as compared to laced column is         Option A:       Equal in strength         Option D:       50% stronger         Q9.       For very short compression member the design compressive stress f <sub>cd</sub> for Fe410 grade steel is         Option C:       240 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Q10.       Depth of intermediate batten = of depth of end batten         Option B:       4/3         Option D:       3/4         Q11.       Lacing shall be designed to resist transverse shear (Vt) equals to         Option B:       2.5 % of column load         Option D:       5.0 % of column load         Option D:       2.5 % of column load         Option D:       2.5 % of column load         Option D:       8.0 % of column load         Option D:       5.0 % of column load         Option D:       5.0 % of column load         Option D:       8.0 % of column load				
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Option A: $60-90$ degrees         Option B:       91-100 degrees         Option C:       101-106 degrees         Option D:       107-113 degrees         Q8.       Under exactly identical conditions ,battened column as compared to laced column is         Option A:       Equal in strength         Option D:       50% stronger in strength         Option D:       50% stronger         Q9.       For very short compression member the design compressive stress $f_{cd}$ for Fe410 grade steel is         Option B:       230 N/mm <sup>2</sup> Option D:       240 N/mm <sup>2</sup> Option D:       240 N/mm <sup>2</sup> Option B:       4/3         Option D:       3/4         Q10.       Depth of intermediate batten = of depth of end batten         Option D:       3/2         Option D:       3/2         Option D:       3/4         Q11.       Lacing shall be designed to resist transverse shear (Vt) equals to         Option A:       0.5 % of column load         Option C:       5.0 % of column load         Option D:       8.0 %	Q7.			
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Option C:       101-106 degrees         Option D:       107-113 degrees         Q8.       Under exactly identical conditions ,battened column as compared to laced column is         Option A:       Equal in strength         Option D:       Stronger in strength         Option D:       Stronger in strength         Option D:       50% stronger         Q9.       For very short compression member the design compressive stress $f_{cd}$ for Fe410 grade steel is         Option A:       166 N/mm <sup>2</sup> Option B:       250 N/mm <sup>2</sup> Option C:       240 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option C:       240 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option D:       23/2         Option A:       1/2         Option A:       1/2         Option B:       4/3         Option D:       3/4         Q11.       Lacing shall be designed to resist transverse shear (Vt) equals to         Option B:       2.5 % of column load         Option D:       3/4         Q12.       In case of Plate Girder when there is second longitudinal stiffeners provided at neutral axis to meet serviceability criteria then, $dt_w$ should be,         Option B: $\leq 230 \ \varepsilon_w$				
Option D:       107-113 degrees         Q8.       Under exactly identical conditions ,battened column as compared to laced column is         Option A:       Equal in strength         Option B:       Weaker in strength         Option D:       50% stronger         Q9.       For very short compression member the design compressive stress $f_{cd}$ for Fe410 grade steel is         Option B:       250 N/mm <sup>2</sup> Option D:       240 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option C:       240 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option D:       227 N/mm <sup>2</sup> Option C:       3/4         Q10.       Depth of intermediate batten = of depth of end batten         Option A:       1/2         Option D:       3/4         Q11.       Lacing shall be designed to resist transverse shear (Vt) equals to         Option D:       3/4         Q12.       In case of Plate Girder when there is second longitudinal stiffeners provided at neutral axis to meet serviceability criteria then, $d/t_w$ should be,         Option D: $\leq 240 \ \varepsilon_w$ Option C: $\leq 230 \ \varepsilon_w$ Option D: $\leq 240 \ \varepsilon_w$ Option D:	<u> </u>			
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$ \begin{array}{cccc} Option B: & 4/3 \\ Option C: & 3/2 \\ Option D: & 3/4 \\ \hline \\ Q11. & Lacing shall be designed to resist transverse shear (Vt) equals to \\ Option A: & 0.5 \% of column load \\ Option B: & 2.5 \% of column load \\ Option C: & 5.0 \% of column load \\ Option D: & 8.0 \% of column load \\ \hline \\ Q12. & In case of Plate Girder when there is second longitudinal stiffeners provided at  neutral axis to meet serviceability criteria then, d/tw should be, \\ Option A: & \leq 230 \varepsilon_w \\ Option B: & \leq 400 \varepsilon_w \\ Option C: & \leq 340 \varepsilon_w \\ Option D: & \leq 200 \varepsilon_w \\ \hline \\ Q13. & In case of Plate Girder, If Elastic Critical Stresses (\tau_{cr,e}) =75 N/mm^2 fyw=250 \\ \hline \end{array} $	Q10.	Depth of intermediate batten = of depth of end batten		
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Option D: $3/4$ Q11.Lacing shall be designed to resist transverse shear (Vt) equals toOption A: $0.5 \%$ of column loadOption B: $2.5 \%$ of column loadOption C: $5.0 \%$ of column loadOption D: $8.0 \%$ of column loadQ12.In case of Plate Girder when there is second longitudinal stiffeners provided at neutral axis to meet serviceability criteria then, $d/t_w$ should be,Option A: $\leq 230 \varepsilon_w$ Option B: $\leq 400 \varepsilon_w$ Option C: $\leq 340 \varepsilon_w$ Option D: $\leq 200 \varepsilon_w$ Q13.In case of Plate Girder, If Elastic Critical Stresses ( $\tau_{cr,e}$ ) =75 N/mm <sup>2</sup> fyw=250	Option B:	4/3		
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$\begin{array}{ll} & \text{neutral axis to meet serviceability criteria then, } d/t_w \text{ should be,} \\ \hline \text{Option A:} & \leq 230 \ \varepsilon_w \\ \hline \text{Option B:} & \leq 400 \ \varepsilon_w \\ \hline \text{Option C:} & \leq 340 \ \varepsilon_w \\ \hline \text{Option D:} & \leq 200 \ \varepsilon_w \\ \hline \text{Q13.} & \text{In case of Plate Girder, If Elastic Critical Stresses } (\tau_{cr,e}) = 75 \ \text{N/mm}^2 \ \text{fyw} = 250 \end{array}$	_	8.0 % of column load		
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$\begin{array}{ll} \hline \text{Option B:} & \leq 400 \ \epsilon_w \\ \hline \text{Option C:} & \leq 340 \ \epsilon_w \\ \hline \text{Option D:} & \leq 200 \ \epsilon_w \\ \hline \end{array}$ $\begin{array}{ll} \hline \text{Q13.} & \text{In case of Plate Girder, If Elastic Critical Stresses } (\tau_{cr,e}) = 75 \ \text{N/mm}^2 \ \text{fyw} = 250 \\ \hline \end{array}$	Q12.	5		
$\begin{array}{ll} \hline \text{Option C:} & \leq 340 \ \epsilon_w \\ \hline \text{Option D:} & \leq 200 \ \epsilon_w \\ \hline & & \\ \hline \hline & & \\ \hline & & \\ \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline & & \\ \hline \hline \hline & & \\ \hline \hline \hline & & \\ \hline \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \hline$	Option A:	$\leq 230 \varepsilon_{\rm w}$		
$\begin{array}{ll} \hline \text{Option C:} & \leq 340 \ \epsilon_w \\ \hline \text{Option D:} & \leq 200 \ \epsilon_w \\ \hline & & \\ \hline \hline & & \\ \hline & & \\ \hline & & \\ \hline \hline \\ \hline & & \\ \hline \hline & & \\ \hline \hline \hline & & \\ \hline \hline \hline & & \\ \hline \hline \hline \\ \hline \hline \hline \\ \hline \hline \hline \hline$	Option B:			
Option D: $\leq 200 \varepsilon_w$ Q13.In case of Plate Girder, If Elastic Critical Stresses ( $\tau_{cr,e}$ ) =75 N/mm² fyw=250	· ·			
Q13. In case of Plate Girder, If Elastic Critical Stresses ( $\tau_{cr,e}$ ) =75 N/mm <sup>2</sup> fyw=250	· ·			
	·			
$N/mm$ , then the snear stress corresponding to the buckling ( $\tau_b$ ) is	Q13.	In case of Plate Girder, If Elastic Critical Stresses ( $\tau_{cr,e}$ ) =75 N/mm <sup>2</sup> fyw=250 N/mm <sup>2</sup> , then the shear stress corresponding to the buckling ( $\tau_b$ ) is		
Option A: 65.50 N/mm <sup>2</sup>	Option A:			

Option B:	50.59 N/mm <sup>2</sup>		
Option C:	75.79 N/mm <sup>2</sup>		
Option D:	55.89 N/mm <sup>2</sup>		
Q14.	Which of the following is advantage of HSFG bolts over bearing type bolts?		
Option A:	Joints are not rigid		
Option B:	Bolts are subjected to shearing and bearing stresses		
Option C:	High fatigue strength		
Option D:	Low static strength		
Q15.	Which of the following type of weld is suitable for butt joints?		
Option A:	Fillet weld		
Option B:	Groove weld		
Option C:	Slot weld		
Option D:	Plug weld		
016			
Q16.	Which of the following is the reason for beams, plate girders and columns		
	being spliced?		
Option A:	Full length is available from the mill		
Option B:	For aesthetic appearance		
Option C:	For easy transportation		
Option D:	For frictional resistance		
017	In a given connection if the holts are subjected to combined shoon & tension		
Q17.	In a given connection, if the bolts are subjected to combined shear & tension then the sofety of critical bolt is ensured by setisfying		
Ontion A:	then the safety of critical bolt is ensured by satisfying- (V - (V - ) + (T - ) = 1		
Option A:	$ \frac{(V_{sb} / V_{db}) + (T_b / T_{db}) \le 1}{(V_{sb} / V_{db})^2 + (T_b / T_{db})^2 \le 1} $		
Option B:			
Option C:	$\frac{(V_{sb} / V_{db}) + (T_b / T_{db}) \ge 1}{(V_{sb} / V_{db})^2 + (T_b / T_{db})^2 \ge 1}$		
Option D:	$(\mathbf{v}_{sb} / \mathbf{v}_{db}) + (1_{b} / 1_{db}) \geq 1$		
Q18.	For 20 mm diameter black bolt of grade 4.6, 240 N/mm <sup>2</sup> is		
Option A:	Ultimate tensile stress		
Option B:	Design yield stress		
Option C:	Design shear stress		
Option D:	Design bearing stress		
-			
Q19.	The live load for a sloping roof with slope 15°, where access is not provided to		
	roof, is taken as		
Option A:	$0.75 \text{ kN/m}^2$		
Option B:	$0.55 \text{ kN/m}^2$		
Option C:	$0.40 \text{ kN/m}^2$		
Option D:	$0.65 \text{ kN/m}^2$		
Q20.	As per IS 875 the mean probable design life span for a hospital building is		
	taken as		
Option A:	5 years		
Option B:	25 years		
Option C:	50 years		
Option D:	100 years		

Q21.	Generally the purlins are placed at the panel points so as to allow only-	
Option A:	Axial force in rafter	
Option R:	Shear force in rafter	
Option D:	Deflection of rafter	
Option D:		
Option D.	Bending moment in rafter	
Q22.	The self-weight of a roof truss of span 30 m can be taken as	
Option A:	75 N/m <sup>2</sup>	
Option B:	$100 \text{ N/m}^2$	
Option C:	$150 \text{ N/m}^2$	
Option D:	$4000 \text{ N/m}^2$	
Q23.	The beam said to be laterally supported if-	
Option A:	Tension flange is supported throughout	
Option B:	Supported at both the ends only	
Option C:	Compression flange is supported throughout	
Option D:	Supported laterally at mid-span	
Q24.	For a single I-section as a beam, the web buckling should be checked-	
Option A:	At the junction of flange and web	
Option B:	At the root of fillet of web	
Option C:	At mid-point of flange	
Option D:	At mid-depth of web	
025	When $V < 0.6Vd$ then the design handing strength of become is given by	
Q25.	When $V \le 0.6Vd$ , then the design bending strength of beams is given by	
Option A:	$\frac{\beta_b / Z_p f_y \gamma_{m0}}{\rho_{m0}}$	
Option B:	$\beta_b Z_p f_y / \gamma_{m0}$	
Option C:	$\beta_b Z_p / f_y \gamma_{m0}$	
Option D:	$\beta_b Z_p f_y \gamma_{m0}$	

Program: BE CIVIL Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: CEC602 and Course Name: Design and Drawing of Steel Structures

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Time: 1 hour

Max. Marks: 50

\_\_\_\_\_

Question	<b>Correct Option</b>
	(Enter either 'A' or
	<b>'B' or 'C' or 'D')</b>
Q1.	C A
Q2.	Α
Q2. Q3. Q4.	В
Q4.	С
Q5.	D
Q5. Q6. Q7.	D
Q7.	D
Q8. Q9. Q10.	В
Q9.	D
Q10.	D
Q11.	В
Q12.	В
Q13.	C C
Q14.	С
Q15.	B C
Q16.	С
Q17.	В
Q18.	В
Q18. Q19.	D
Q20.	D
Q21.	Α
Q20. Q21. Q22.	A C C
Q23.	С
Q24.	D
Q25.	В