Total pages=02

End Semester Examination (ESE), 2021

Semester: 6TH

Subject: DESIGN OF STEEL STRUCTURES

Subject Code: CV-603

NEW SYLLABUS

Total Marks: 56 Marks

Time: 2Hr 30 minutes

(Use of steel table & IS: 800 – 2007 are permitted)

Assume any missing data

Q. No	Description	Marks
1	**FILL IN BLANKS**	**10x1 = 10**
a)	The junction between the flange & web of channel is called _____.	
b)	The partial factor of safety for load is _____.	
c)	The centre to centre distance between any two consecutive rivets measured parallel to the direction of force is called _____ of rivets.	
d)	The minimum of design shearing & design bearing strength of a bolt is called _____.	
e)	When a beam is connected to a column by an angle at the bottom, the connection is called _____ connection.	
f)	For finding effective throat thickness of a fillet weld, value of 'K' for 70°angle between fusion faces is _____.	
g)	The maximum slenderness ratio for a tension member in which reversal of direct stress due to loads other than wind or seismic forces occurs is _____.	
h)	For angle section used as compression member, buckling class is _____	
i)	The deflection of steel beam in buildings other than residential building is limited to span divided by _____.	
j)	Slab base is used for columns carrying _____ loads.	
2	**ANSWER ANY FIVE QUESTIONS**	**5x3 = 15**
a)	Write three advantages of steel structures over R.C.C structures.	
b)	Write three differences between lap joint & butt joint.	
c)	Write three advantages of welded connection.	

d)	Name three factors on which strength of tension member depends.	
e)	Name three modes of failure of riveted connection.	
f)	Name three modes of failure of axially loaded compression member.	
g)	Name three rolled steel sections used in design of various steel structures.	
3	**ANSWER ANY FOUR QUESTIONS**	**4x4 = 16**
a)	A single riveted butt joint is to connect two plates 10mm thick each by one cover plate 8mm thick on top. Find nominal & gross diameter of rivet for connection.	
b)	Two plates 250mmX18mm & 200mmX16mm are connected butt weld (shop fabrication). Calculate maximum load that can be transmitted through single V-butt weld. f_y = 250 Mpa.	
c)	A single angle ISA 100mmX65mmX8mm is used as a tie in a roof truss. Find net effective area of angle if longer leg is connected to a gusset plate of 8mm thickness by 5-20mm diameter bolt	
d)	Determine the bending strength of a laterally supported beam ISMB300@433.6N/m. Assume factored shear force is less than design shear strength. The beam section is plastic section	
e)	Find total design shearing strength of bolts of a double bolted double cover butt joint connecting two plates 10mm thick each with 18mm diameter 4.6 grade bolt at a pitch of 50mm. Take thickness of each cover plate as 8mm.	
3	**ANSWER ANY THREE QUESTIONS**	**3x5 = 15**
a)	A double riveted lap joint is used to connect two plates 6mm thick each by 16mm power driven shop rivet at a pitch 60mm. Find strength of riveted joint.	
b)	Find the size of slab base for a column ISHB250@536.6N/m to carry a factored load of 1250Kn. Grade of concrete M20	
c)	A secondary beam ISLB400@558.2N/m transmits an end reaction of 200Kn to web of a main beam ISLB550@846.6N/m. Find the number of 20mm diameter of 4.6 grade bolts required to connect cleat angles to the web of secondary beam. Use cleat angle 2ISA110mmx110mmx10mm	
d)	Determine design axial load on a column ISHB400@806.4N/m if length of column is 4metre with both ends restrained against rotation & translation	

.

xxxxxxxxxxxx-----xxxxxxxxx