	Questi	on Paper	Code: 4	0814	
I salming at	B.E./B.Tech. DE CE 6603 –	GREE EXAMIN Sixth Sem Civil Engin DESIGN OF ST (Regulation	ester eering FEEL STRUC		
Time: Three	Hours			Maximum	: 100 Marks
		Answer ALL	questions		
		PART -	- A	(10×	2=20 Marks)
1. Formula	ate the equation f	or calculating the	e effective thro	at thickness of	weld.
2. Illustrat	te the advantages	of HSFG bolts.			
3. When g	usset plates are u	ased?			
4. Classify	the modes of fail	lure in Tension m	ember.		
5. State th	ne purpose of colu	mn base.			
6. Evaluat	te the effective ler	ngth of column ba	ased on end co	nditions.	
7. What is	laterally unsupp	oorted beam ? Giv	e an example.		
8. Write th	he formula for cal	culating the thic	kness of beam	bearing plate.	
9. What is	s the purpose of th	he purlin in a roo	f truss?		
10. Calcula	te the Design wir	nd speed for Dehr	adun and Che	nnai.	

40814 .2. PART - B (5×13=65 Marks)

 a) Find the dimensions of a doubly bolted lap joint for plates 16 mm thick to carry its full load. Take permissible axial tension in plate 150 N/mm².

(OR)

- b) Find the safe load and efficiency of a double cover butt joint. The main plates are 12 mm thick connected by 18 mm diameter bolts at a pitch of 100 mm. Design the cover plate also. What is the percentage reduction in the efficiency of the joint if the plates are lap jointed?
- 12. a) A double angle ISA 75 mm \times 75 mm \times 8 mm back to back welded to one side of a 12 mm gusset have allowable stress 150 MPa. Predict the allowable tensile load on the members, and weld length and overlap length of gusset plate.

(OR)

- b) Design a tension member to carry a factored force of 340 KN. Use 20 mm diameter black bolts and a gusset plate of 8 mm thick.
- 13. a) Find the suitable design for a built-up column consisting of two channels connected by batten to carry an axial load of 800 KN; the effective length of the column is 6 m.

(OR)

- b) Find the suitable design for a rolled steel beam section column to carry an axial load 1100 KN. The column is 4 m long and adequately in position but not in direction at both ends.
- 14. a) Find the suitable design for a simply supported steel joist with a 4.0 m effective span carries a udl of 40 kN/mover its span inclusive of self-weight. The beam is laterally unsupported. Take fy = 250 N/mm².

(OR)

b) Design a simply supported beam of effective span 1.5 m carrying a factored concentrated load of 360 KN at mid span.

40814 15. a) Design a purlin for a roof truss having the following data: Span of the truss = 6.0 m, Spacing of truss = 3 m c/c, Inclination of roof = 30° spacing of Purlin = 2 m c/c, Wind pressure = 1.5 kN/m^2 , Roof coverage = A.C Sheeting weighing 200 N/m², Provide a channel section Purlin. (OR) b) Calculate the dead load, live load and wind load on a 'Fink' type truss for the following data and mark the loads on the nodes of the truss. Span = 12 m, Pitch = 1/4 of span, Height at eves level = 10 m from the ground Spacing of truss = 5 m c/c.(1×15=15 Marks) PART - C 16. a) Design a suitable slab base for a column section ISHB 400@ 822 N/m. Supporting an axial load 500 KN. The base plate is to rest on a concrete pedestal of M20 grade concrete. (OR) b) A plate girder of span 15 m is made-up of web plates of 1600 mm \times 8 mm flange angles 150 mm \times 115 mm \times 10 mm and two flange plates 480 mm \times 10 mm it carries a uniformly distributed load of 100 kN/m including its own weight. Identify the suitable design and sketch the web splices at 5 m from one end.