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Code No. : 16104 N

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. (Civil Engg.: CBCS) VI-Semester Main Examinations, May-2019**

**Design of Steel Structures**

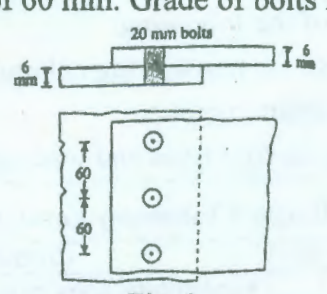
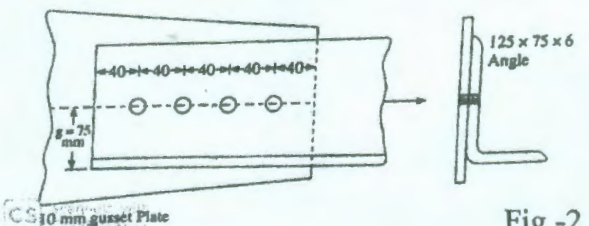
Time: 3 hours

Max. Marks: 70

Note: i) Answer ALL questions in Part-A and any FIVE from Part-B

ii) Use of IS:800-2007 and Steel Tables is permitted

iii) Answer all questions of Part-A in one place and in the same order as they appear in the question paper.

Q. No.	Stem of the question	M	L	CO	PO
<b>Part-B (10 × 2 = 20 Marks)</b>					
1.	Explain the differences between the limit state method and working stress method.	2	1	1	1,2,4
2.	List the different types of bolts. What is meant by a bolt of property class 4.6	2	1	1	1,2,4
3.	What is Shear lag? How its effects are accounted for in the design calculations?	2	1	2	1,2,4
4.	What are the functions of Lacings and Battening?	2	1	3	1,2,4
5.	Explain the types of column splices with neat sketches.	2	1	3	1,2,4
6.	Draw a neat sketch showing the parts of a Gusseted base.	2	1	3	1,2,4
7.	Classify the section ISHB400@77.4kg/m.	2	1	4	1,2,4
8.	What is meant by laterally unsupported beam?	2	1	4	1,2,4
9.	Find the design wind pressure on a roof truss if basic wind speed at a site is 47m/sec, $k_1=1$ , $k_2=1$ , $k_3=1.054$ .	2	1	1	1,2,4
10.	What is meant by economical spacing of roof trusses?	2	1	4	1,2,4
<b>Part-B (5 × 10 = 50 Marks)</b>					
11. a)	Find the efficiency of a single bolted lap joint connecting two plates of 6mm thickness with 20mm diameter bolts at a pitch of 60 mm. Grade of bolts is 4.6 and Grade of steel plates is Fe410. Refer Fig. 1.	5	1	1	1,2,4
					
	Fig. 1				
b)	A tie member consisting of an ISA 80mm x 50mm x 8mm is welded to a 12mm thick gusset plate at site. Design welds to transmit a load equal to 220kN.	5	1	1	1,2,4
12.	The longer leg of a single angle ISA 125 × 75 × 6mm is connected to a 10mm thick gusset plate by four bolts of 16mm diameter as shown in fig. 2. Determine the design tensile strength of the angle. $f_y= 250\text{MPa}$ and $f_u=410\text{MPa}$ .	10	3	2	1,2,4
					
	Fig.-2				



