

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech II Semester Supplementary Examinations, Dec-2023/Jan-2024

STRUCTURAL ENGINEERING - II

(CIVIL ENGINEERING)

Time: 3 Hours**Max.Marks:75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. Mention any four rolled steel sections.	CO1	L1	2M
2. List out the disadvantages of welded connections.	CO1	L2	3M
3. Draw a neat sketch a tension member connected using Lug angle.	CO2	L2	2M
4. A single angle ISA 60 X 60 X 8 mm, 3.0 m long is used as a strut. The ends are welded to the gusset plate. Calculate the slenderness ratio.	CO2	L2	3M
5. Mention the types of lateral systems used in built up columns.	CO3	L1	2M
6. Draw a neat sketch of column base plate connections.	CO3	L2	3M
7. What is meant by stiffened seated connection? Where is it required?	CO4	L1	2M
8. Differentiate laterally restrained and unrestrained beam with example.	CO4	L2	3M
9. List the different modes of failure of plate girder.	CO5	L1	2M
10. Draw a neat sketch of plate girder and indicate the vertical and horizontal stiffeners.	CO5	L2	3M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Explain in detail the various loads acts on a steel structure.	CO1	L2	10M
OR			
B) An ISA 100mmx100 mmx10mm carries a factored tensile force of 100 kN. It is to be joined with 12mm thick gusset plate. Design a high strength bolted joint when (i) no slip is permitted (ii) when slip is permitted. Steel is of grade Fe 410.	CO1	L3	10M
12. A) Design a tension member to carry a load of 300 kN. The two angles placed back-to-back with long leg outstanding are desirable. The length of the member is 2.9 m.	CO2	L3	10M
OR			
B) Explain about available forms of tension and compression members.	CO2	L2	10M
13. A) Design a stanchion 3.5 m long in a building subjected to a factored load of 350 kN. Both the ends of the stanchion are effectively restrained in direction and position. Use steel of grade Fe 410.	CO3	L3	10M
OR			
B) Design a built-up column 8 m long to carry an axial load of 400 kN. The column is restrained in position but not in direction at both the ends.	CO3	L3	10M
14. A) Design a welded seat angle connection between a beam ISMB 300 and column ISHB 200 for a reaction of beam 100 kN assuming Fe 410 grade steel and site welding.	CO4	L3	10M

OR

- B) A beam is simply supported over a span of 6 m. It supports one Iron beam at mid span exerting 90 kN. Design the beam with ISWB section with flange plates. Assume the beam is not supported laterally. CO4 L3 10M
15. A) Design a welded plate girder of span 24 m to carry a superimposed load of 35 KN/m. Avoid use of bearing and intermediate stiffeners. Use Fe 415 steel. CO5 L3 10M
- OR**
- B) Write the step-by-step procedure for design of vertical and horizontal stiffeners in a plate girder. CO5 L2 10M