Assignment-1 Loads & Loading Standards	
1.	Enlist various types of loads expected to act on a structure and discuss wind load.
2.	Enlist various types of imposed loads on structure and describe anyone.
3.	Explain effect of earthquake load on structure.
4.	Explain effect of wind load on structures.
5.	Discuss various load combinations for the design of steel structures.
Assignment-2 Connections	
1.	Design a suitable web cleat connection between main beam ISWB 500 @ 95.2 kg/m and secondary beam ISWB 400 @ 66.7 kg/m connected on one side of the web of the main beam. Secondary beam has to transmit an end reaction of 200 kN, due to factored loads, use grade 8.8 bolts of 20 mm diameter, steel grade 410 MPa.
2.	Design a suitable bolted web cleat connection for main beam ISMB 600 and two secondary beams (Copped beams) of size ISMB 400 (300 kN reaction due to factored loads) and ISMB 300 (150 kN reaction due to factored loads) use 20 mm diameter bolts of 8.8 grade and steel grade 410 MPa.
3.	A beam ISLB 300 is connected to a flange of column ISHB 300 to transmit end reaction of 150 kN due to factored loads. Design web angle connection using M 20 bolts of 4.6 grade and steel Fe 410.
4.	A beam ISLB 350 @ 49.5 kg/m spanning 5 m is carrying a total factored u.d.l. of 200 kN. The beam is connected with the flange of column if ISHB 200 @ 40 kg/m. Design suitable seat angle unstiffened connection using M 16 bolts of 4.6 grade and steel grade of Fe 410.
5.	A beam ISMB 500 transmit an end reaction of 250 kN to the flange of column ISHB 250 @ 51.0 kg/m. Design a stiffened seat angle connection using 20 mm bolts of grade 4.6.
Assignment-3 Design of Industrial Building	
1.	Write and describe the components Roof Truss.
2.	Determine Dead Load, Live Load and Wind Load per panel point for the roof truss of a workshop shed constructed at Ahmedabad for the following requirements: i) Span of Truss = 15 m. ii) Spacing of Truss = 4 m c/c. iii) Rise of Truss = 3 m. iv) Height of Truss above G.L. = 20 m. v) A.C.C. sheets @ 150 N/m^2 are used as roof covering. vi) Assume weight of Purlin and other fixtures = 120 N/m^2 per plan area. vii) Total nos. of Panels = 8. viii) Opening of wall area = 10 %. ix) Probable life of roof truss = 25 years, Terrain Category = 3 and Class = A structures. x) Topography = Plain horizontal ground and upwind slope less than 3°.

3.	Design an angle section for a purlin having 3.0 m span. It carries design load (working) of 2.5 kN/m and supported on four supports. Angle of roof truss is 26°. Take f_y = 250 MPa.
4.	Design a purlin with sag rod at mid span on slopping roof truss with the following data: Dead Load = 0.15 kN/m^2 Live Load = 2 kN/m^2 Wind Load = 0.5 kN/m^2 The span of purlin is 4 m and spacing of purlin is 2 m c/c. Purlin is continuous over the supports. Angle of roof truss = 20°. Use channel section as purlin.
5.	Design a steel roof truss for the following data: Location: Ahmedabad Span of roof truss: 14 m Spacing of roof truss: 5 m Pitch: ¼ (a) Fix the configuration of Truss. (b) Compute DL, LL and WL at panel points. (c) Design Purlin. (d) Design Principal Rafter. (e) Design Main Tie. Assume suitable data if necessary.

Assignment-4 Design of Plate Girder

1.	Write the applications, advantages and disadvantages of Plate girder.
2.	Write the elements of Plate Girder.
3.	Write the types of plate girder and draw sketches of each.
4.	Design a welded plate girder for a simply supported bridge deck beam with clear span 24 m, subjected to dead load 20 kN/m (excluding self-weight), live load 10 kN/m and two concentrated loads of 200 kN each at 6 m from each end. Assume that the top compression flange of plate girder is restrained laterally and prevented from rotating. Use Fe 415 grade steel. Design as an unstiffened plate girder with thick web.
5.	Redesign the plate girder in example-10 with intermediate stiffeners and not using tension field action.
6.	Redesign the plate girder in example-10 with intermediate stiffeners utilizing tension field action.

Assignment-5 Design of Gantry Girder

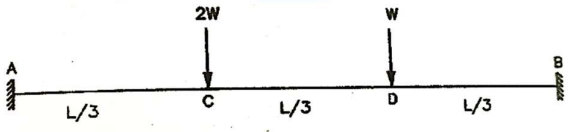
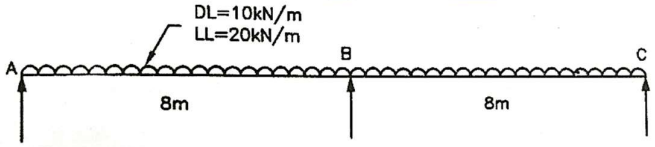
1.	Write and explain the loads acting on gantry girder.
2.	Design a gantry girder for the following data: Carne capacity = 200 kN Span of Gantry girder = 7.5 m Span of Crane girder = 15 m

	Self-weight of the crane girder excluding trolley = 200 kN Self-weight of trolley (crab) = 40 kN Minimum hook approach = 1.2 m Wheel base of crane = 3.5 m Self-weight of rail section = 300 N/m Take yield stress of steel = 250 MPa Assume no lateral restraints along the span.

Assignment-6 Design of Foot Over Bridge

1.	Design a steel foot over bridge for the following data: Span of bridge = 24 m Width of walkway = 4 m Flooring = R.C.C. slab 110 mm thick Live Load = 5 kN/m^2 Floor Finish = 0.75 kN/m^2 Use N-type lattice girder Assume suitable data if necessary. Rakers are provided at alternate top chord joints. Take f_y=250 N/mm^2.

Assignment-7 Plastic Design

1.	What is Plastic Hinge? Give the locations of Plastic Hinge occurrence.
2.	Explain the advantages and disadvantages of Plastic Design.
3.	A beam AB of span L fixed at both ends carries a point load W at a distance $\frac{L}{3}$ from the left end. Find value of the load at collapse condition if the plastic moment of resistance of the left half od the beam is $2M_p$ and the right half has a plastic moment M_p.
4.	Find the value of W at collapse for the fixed beam loaded as shown in fig. 
5.	A two-span continuous beam is loaded as shown in fig. Design the beam using plastic method. Take f_y=250 N/mm^2. 
6.	A continuous steel beam consists of three equal span 10 m each carries an u.d.l. of 50 kN/m under working conditions. Using plastic method, design the beam which shall consist of I-section without any flange plate. (uniform beam section).
7.	Design beam for data of example-6 considering beam section as non-uniform section.