



KALLAM HARANADHAREDDY INSTITUTE OF TECHNOLOGY  
 DEPARTMENT OF CIVIL ENGINEERING  
 SUB: DESIGN AND DRAWING OF STEEL STRUCTURES  
 TUTORIAL - VI A.Y:2018-19  
 Date:2-03-2019



1. Design a welded plate girder of 20 m span using the tension field action for the following factored forces. Maximum moment,  $M_z = 5000$  KNm Maximum shear force = 900 KN The girder is laterally restrained. Connections need not be designed. Draw to scale the longitudinal and cross section for the welded plate girder showing all the details.
2. Design a welded plate girder 24 m in span and laterally restrained throughout. It has to support a uniform load of 100 KN/m throughout the span exclusive of self weight. Design the girder without intermediate transverse stiffeners. The steel for the flange and web plates is of grade Fe 410. Design the cross section, the end load bearing stiffener and connections. Also draw to scale the Elevation and cross section
3. List out the recommendations as per IS:800-2007 the design of welded plate girder.
4. Design a gantry girder to be used in an industrial building carrying a manually operated overhead travelling crane, for the following data: Crane capacity 200 KN Self-weight of crane girder excluding trolley 200 KN Self-weight of the trolley, electric motor, hook, etc. 40 KN Approximate minimum approach of the crane hook to the gantry girder 1.2 m Wheel base 3.5 m c/c distance between gantry rails 16 m c/c distance between columns (span of gantry girder) 8 m Self-weight of rail section 300 N/m Diameter of crane wheels 150 mm Steel is of grade Fe 410. Design only the section and check for moment capacity. Draw to scale the longitudinal section and cross section.
5. Design a gantry girder to carry an overhead electrically operated crane for the following data: Span of gantry girder=6.0m, span of crane girder =18m, crane capacity =200kN, self weight crane girder=180kN, self weight of trolley=75 kN, Minimum hook approach=1.0 m, Distance between wheels=3.5m, self weight of rails=0.3kN/m, Draw to scale the cross section and longitudinal section.
6. List out the recommendations as per IS:800-2007 the design of gantry girder.