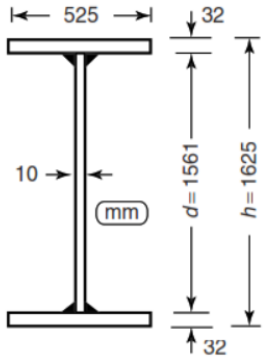
B..E. 7th Semester Civil Engineering.
Course Name: Design of Steel Structures (3170618)

Extra Assignment for Low Attendance students

Last Date of submission: 17 / Sept. / 2024

Qs.	Description	RBT	Cos
Q.1	A 50kN hand-operated crane is provided in a building and has the following data: • Centre-to-Centre distance of the gantry beam (width of the building): 16m • Longitudinal spacing of columns (span of gantry): 7.5m • Weight of the crane: 40kN • Wheel Spacing :3m • Weight of the crab:10kN • Minimum hook aprroach:1m • Yield stress of steel: 250MPa Design a simply supported gantry girder assuming lateral support to it.	AP, E, C	3
Q.2	Design gantry girder of Q.2 by assuming lateral unsupported to it. What is the total weight of Steel sections in Q.1 and Q.2. Give your comments.	AP, E, C, AN	3, 4
Q.3	The preliminary section of a welded plate girder carrying factored shear of 1700 kN is shown in Fig. 1. Ignoring tension field action, determine the spacing of intermediate stiffeners, if required. What shall be the thickness of the web to carry the load without intermediate stiffeners? For the plates used in construction, the design strength is 250 MPa.  Fig.-1	U, AN	2
Q.4.	If the welded plate girder of Q.3 is provided with intermediate stiffeners at a spacing of 1135 mm, determine its shear capacity including the tension field action in the presence of a factored bending moment of 4250 kN/m.	AP, AN, E	3
Q.5	Refer the book "Vazirani, V. N.. Design and Analysis of Steel Structures. India, Khanna Publishers, 2000." From central library and draw A3 size drawing sheet showing details of 24m span of welded plate girder.	U, C	4

Nomenclature: CO – Course Outcome; RBT – Revised Bloom's Taxonomy {R – Recall (Remembering), U – Understanding, AP – Applying, AN – Analysing, E – Evaluating, C – Creating}