**6th Sem / Branch : Civil**

**Sub.: Steel Structures Drawing**

Time : 3Hrs.                                              M.M. : 100

**SECTION-A**

**Note:** Attempt any four questions                    (4x25=100)

Q.1  Draw the front elevation and other detail of joint in a single fink Roof truss showing the following design detail of various elements like.                    (CO1)

Clear Span = 6 mt.

Pitch of truss = 30 degree

Top chord member = Double ISA 60 x 60 x 8 mm

Bottom chord member = Double ISA 60 x 60 x 8 mm

Upper tie member = Single angle ISA 60 x 60 x 8 mm

Central chord member = single angle ISA 60x60x8mm

Cleat and purlin angle = Single ISA 60 x 60 x 10 mm

Shoe angle = Double ISA 60 x 60 x 6mm

Bearing plate 300 mm x 300 mm x 15 mm

Rag bolts 15 mm Ø 150 mm long

Rivets = 220 mm Ø

Cement concrete block (1:1.5:3) 300mm x300mm x200 mm

Thickness of Wall = 400 mm

Gusset plate 8 mm

Roof covering materials : Corrugated A.C. sheets

Q.2 Draw the front and side elevation of two unequal column splicing arrangement with the following data: (CO2)

Lower column = ISHB 300 @ 618.1 N/m

Upper Column = ISHB 250 @ 500.3 N/m

Cover Plates = 400mm x 250mm x 20mm

Distribution plate = 300mm x 250 mm x 20 mm

Thickness of packing plate = 25mm

Cleat angle = ISA 75 x 75 x 8 mm

Nominal diameter of rivets = 20 mm

Use steel Table for other details

Q.3 Draw the plan, front elevation and side elevation of a Column with gusseted base from the following data : (CO2)

Column = ISHB 300 @ 618.0 N/m

Base Plate = 800mm x 600 mm x 20 mm

Gusset plates = 600mm x 300mm x 15mm

Flange cleat angle = 2-ISA 150 x 115 x 10 mm

Web cleat angle = 2 ISA 150 x 115 x 10mm

RCC base slab = 1000mm x 800mm x 400mm

Reinforcement in base slab = 12 mm Ø @ 150 mm c/c both ways

Holding down bolts = 4 no's 18 mm Ø 300 mm long

Nominal diameter of rivets = 20 mm

Q.4 Draw to a suitable scale front elevation and side elevation of a column and beam seated connection from the following data when the beam is connected to the flange of the column. (CO3)

Column = ISHB 400 @ 806.4 N/m

Beam = ISLB 300 @ 369.8 N/m

Top cleat angle = ISA 60 x 60 x 10mm

Bottom cleat angle = ISA 60 x 60 x 10 mm

Nominal Diameter of rivets = 20 mm

Use steel table for other details

Q.5 Draw front elevation, sectional plan of a plate Girder from the following design data (CO4)

Clean span of plate girder = 8 m

Web Plate = 1000 mm x 8mm

Flange angled = 2 ISA- 150 x 115 x 8 mm

Bearing plate = 300 x 400 x 12mm

Thickness of filler plate = 8mm

End bearing stiffeners = ISA 150 x 115 x 8 mm

Intermediate stiffeners = ISA 100 x 75 x 8mm @ 1000 mm c/c

Size of concrete block = 300 x 400 x 200 mm