S. B. Roll. No.....

STEEL STRUCTURE DRAWING
6th Exam/Civil/8516/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

Note: Calculator/Scientific Calculators and Steel table are allowed in this paper.
Attempt any three questions (25 marks each), at least one from each section. Assume any suitable data that is not given. Use of steel table is permitted. **3x25=75**

SECTION-A

Q1. Draw front elevation, sectional plan of a plate girder from following data:

Clear span	= 8m
Web plate	= 1000 mm x 8mm
Flange angles	= 2-ISA 150x115x8 mm
Bearing plate	= 300x400x12 mm
Thickness of filler plate	=8mm
End bearing stiffeners	= ISA 150x115x8 mm
Intermediate stiffeners	= ISA 100x75x8 mm @ 1000 mm c/c
Flange plates	= 400x10 mm one at top and one at bottom

Q2. Draw front and side elevations of a framed beam to beam connection from the following data:

Main beam	= ISMB 500@ 852.5 N/m
Secondary beam	= 2 ISLB 250 @ 273.7 N/m
Web cleat angles	= ISA 80 x 80 x 10 mm
Nominal diameter of rivets	= 18 mm

For ISMB 500@ 852.5 N/m (used as main beam)
b = 180 mm t_f = 17.2 mmtw= 10.2 mm
ISLB 250 @ 273.7 N/m (used as secondary beam)
b = 125 mm tw =6.1 mm t_f = 8.2 mm

Q3. Draw front and side elevations of an equal column splicing arrangement from following data:

Column	= ISHB 350@ 710.2N/m
Cover plate	= 400x250x15 mm

Use 20 mm diameter of rivets

SECTION B

Q4. Draw the plan and front elevation of column base from the following data:

Column	= ISHB 250@ 500.3N/m
Cover plate	= 12 mm thick
Base plate	= 600mm x 600mm x 20mm
Web cleat angles	= ISA 90mm x 60mm x 10mm
Flange cleat angles	= ISA 90mm x 90mm x 10mm
Holding down bolts	= 18mm dia – 4 Rag bolts
Diameter of rivets	= 20mm
RCC base slab	= 900mm x 800mm x 500mm
Reinforcement in base slab	= 12mm dia @ 100mm c/c both ways.

Q5. Draw front and side elevations of a stiffened seated connection of a beam and column from the following data:

Column	= ISHB 350 @ 661.2N/m

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Beam = ISMB 225 @ 306.1 N/m
Top Cleat angle ISA 75 x75 x10 mm.
Seat angle ISA 100x 75x 10 mm
Vertical stiffeners ISA 75x75x10 mm and 200 mm long
Thickness packing plate= 10mm
Use 20 mm diameter of rivets

Q6. Draw to a suitable scale the plan and section of a heel joint (Toe joint) for a steel roof Truss with roof drainage arrangement from the following data:

Principal rafter = 2- ISA 60x 60 x 6mm inclined at 30° to the horizontal
Bottom chord = 2- ISA 60x 60 x 6mm
Bearing plate = 300 mm x 400mm x 12 mm
Cement concrete bed block = 300 mm x 400mm x 200 mm
Rag bolts = 4 – 18 mm Ø
Shoe angles = 2-ISA 80x 80 x 8mm
Gusset plate = 8mm thick
Thickness of Wall = 400 mm
Diameter of rivets = 16 mm

Assume any missing data