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TF - Sem - VI - Civil - CBSE - DDSS

22/11/17

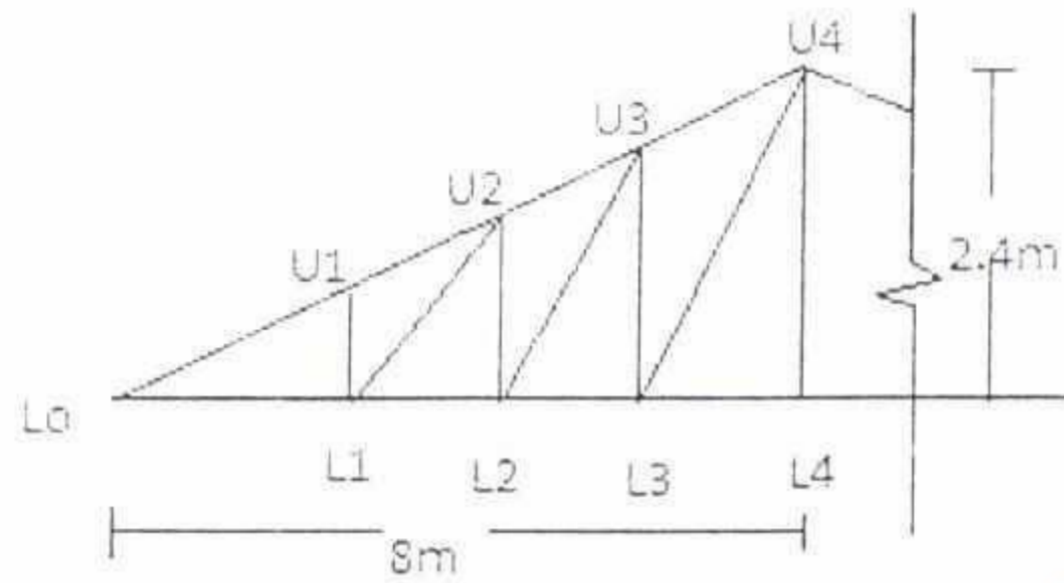
Q. P. Code: 25406

Time: 4 Hours

Marks: 80

- N.B.
- 1 Question No. 1 is compulsory attempt Three from remaining questions
 - 2 Use of IS 800 and steel table is permitted
 - 3 Assume data if required and justify same

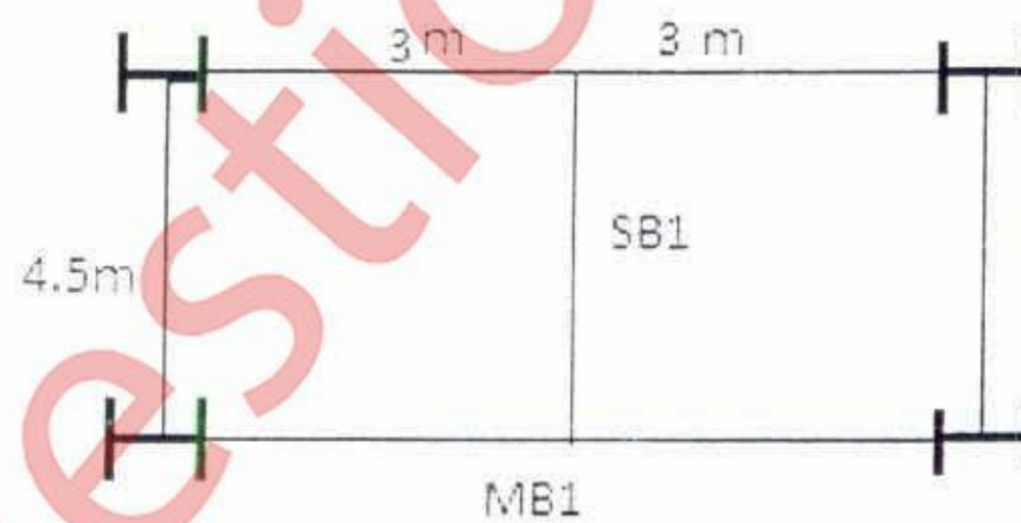
Q.1 A truss as shown in fig. is used for an industrial shed situated in Pune. The truss is covered with GI sheet. Calculate panel point dead load, live load and wind load. Design the members LoL1, LoU1 and U1L1 and draw the design details Assume $K_1 = 1$, $K_2 = 0.98$, $(C_{pe} - C_{pi}) = -0.8$ 32



OR

The flooring system of an industrial shed is planned as shown in fig Design Beam SB1 And MB1 And a beam to beam connection between them with top flange of beam at same level. Use ISMB section to design beam assuming beam to be laterally supported throughout. For following data 32

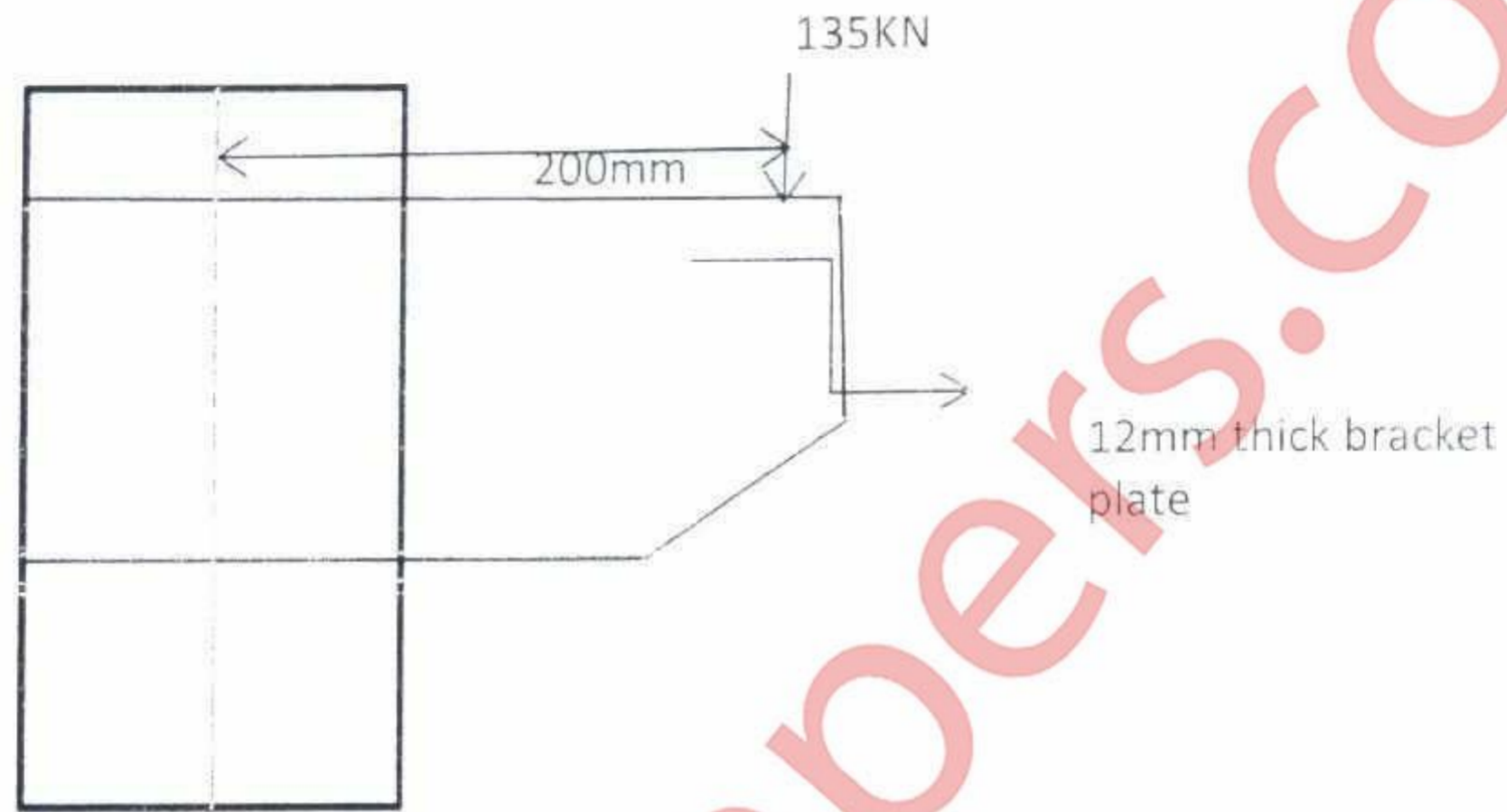
Thickness of slab - 150mm
Thickness of wall 230mm
Height of parapet wall 1m
live load - 2.1 kN/m²
Unit weight of concrete and wall 25kN/m³ and 20kN/m³ resp.



- Q.2 A Design a built up column 9m long to carry a factored axial compressive load of 1100kN. The column is restrained in position but not in direction at both ends. Design the column with connecting system as battens with bolted connection Use channels back to back. Use steel of grade Fe410 12
- B Discuss various failure modes of compression member 4
- Q.3 A A column ISHB 350 at 661.2 N/m subjected to a compressive factored load of 1800kN. Design suitable bolted gusseted base. The base rests on M15 grade concrete pedestal. Use 24mm diameter bolts of grade 4.6 for making the connection between gusset plate and column flanges. 12
- B Explain 1) Shear Lag Effect 2) Block Shear Failure 4
- Q.4 A Draw stress distribution diagram for plastic, compact, semi compact and slender section 4

B Determine the design bending strength of ISLB 350 at 486 N/m considering the beam to beam a) Laterally supported b) Laterally unsupported. Design shear force V is less than the design shear strength. The unsupported length of the beam is 3.0m. Assume steel is grade Fe 415 12

Q.5 A Design a bracket connection using 4.6 black bolt of suitable size to transmit a factored load of 135kN to the flange of a column ISHB225 The load eccentricity is 200 mm measured from the column axis 10



B Explain web buckling and web crippling 6

Q.6 Design a welded plate girder 24 m in span and laterally restrained throughout. It has to support a uniform load of 100kN/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. 16
