JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION-2016

M.Tech 2nd Semester

COURSE CODE: 12M1WCE212   MAX. MARKS: 25

COURSE NAME: Design of Steel Structures

COURSE CREDITS: 3   MAX. TIME: 1 HR 30 MINS

Note: All questions are compulsory. Carrying mobile phone during examinations will be treated as case of unfair means. Illustrate your answers with neat sketches wherever necessary. Preferably, write the answers in sequential order. IS 800 and IS 808 is allowed.

Q.1 The arrangement for a friction grip bolt connection provided for a tie carrying a force of 300 kN as shown in **Fig # 1**. Check the adequacy of the con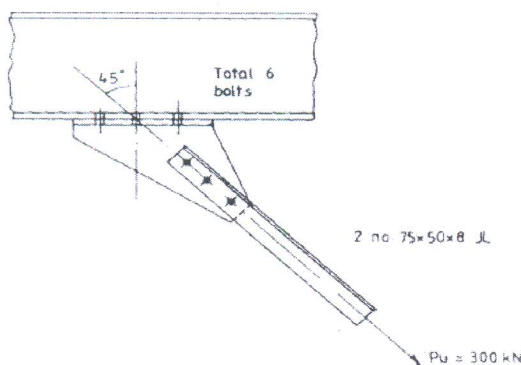nection if all the bolts provided here are M20 of class 8.8.   [5]
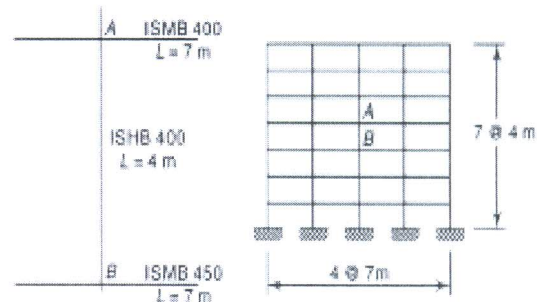

Fig # 1   Fig # 2

Q.2 Check the adequacy of the tension member shown in **Fig # 1**.   [6]

Q.3 An ISHB 400 section is used for the interior column of the building frame shown in **Fig # 2**. The column carries axial compression only of magnitude 1200 kN. Assume that the column is oriented in such a way that major axis buckling occurs in the plane of the frame. Also assume that the columns are braced at each story level by floor beams for out of plane buckling. All the floor beams have size of ISMB 400. Determine whether the column is safe to carry this load.   [8]

Q.4 Design a single angle strut for a roof truss carrying a factored compressive load of 250 kN with length between centre-to-centre of connection as 2.5m.   [6]