

## DEPARTMENT OF CIVIL ENGINEERING



### MINOR II:CEL727 DESIGN OF INDUSTRIAL STRUCTURES (2013-14)

**Time allowed:** 60 minutes  
**Venue** : V 216

**Date** : 22 March 2014  
**Max marks** : 20

**NOTE:** (a) This question paper contains one question and one page only. (b) All parts of question are compulsory. (c) **Assume any data which you deem is necessary but not supplied.** (d) Draw neat and clear sketches wherever required.

#### Question 1

An industrial trussed shed structure located in Chennai is 21x72m in plan and has a steel column height of 6m (above RC pedestal) up to the truss bottom. The frame to frame spacing is 6m. The truss has a slope of 1 in 3.

- (a) Determine the maximum moment at the top of the RC pedestal resulting from **wind flowing along the ridge (only) assuming medium permeability**. Assume  $k_1=k_2=k_3=1$ .
- a) Check if two rows of three **M30** bolts of grade **5.8** are sufficient to resist the bending moment calculated above. Assume the base plate to be 400x800 and distance between the two bolt lines to be 650mm. **You may ignore tensile force in the column for simplicity.**

(10+ 10 =20 marks)