

Master of Civil Engineering examination , 2017
 (1th year , 2nd semester)
 Analysis and Design of Tall Structures

Time: 3 hours

Full marks : 100

Use separate answer-scripts for each part
 The figures in the margin indicate full marks

Part – I

(65marks)

IS 875 – Part III- 1987 ,IS1893-2002 and any paper containing formulae duly signed by faculty are allowed in the examination hall

Assume reasonable values of any data if required

Answer any two questions

- $32\frac{1}{2}$
1. A 120 m high RCC chimney has to be constructed in Kolkata on pile foundation in medium soil. Outside diameter is 5m . Thickness of chimney shell is 500 mm. Calculate bending moment and shear force at base level due to earthquake forces , considering effect of first and second mode only. Apply 'Modal Analysis approach' considering four lumped mass model. Grade of concrete – M40.
- $32\frac{1}{2}$
2. A 135m high RCC chimney has to be constructed in Kolkata at a place where no major obstructions exist. Calculate the design wind pressure at 10m, 50m, 90m and 135m level of the chimney using " Gust Factor method " of IS875 – Part III - 1987. External and internal diameter of the chimney are 5m and 4m respectively. Grade of concrete M40. Calculate also approximate bending moment and shear force at base level.
- $10+10+8+4\frac{1}{2} = 32\frac{1}{2}$
3. (a) Discuss with examples the merits and demerits of the methods recommended in IS875 – Part III based on different concepts.
 (b) Discuss different aspects and importance of "Wind Tunnel Testing" . illustrate your answer with examples and sketches.
 (c) Discuss the concept and importance of "Probabilistic Dynamic Analysis"
 (d) Discuss "Across Wind response"

Form A: Paper Setting Blank

Ref. No EX/PG/CE/T/127A/2017

M. C. E. FIRST YEAR SECOND SEMESTER EXAMINATION, 2017

SUBJECT – Analysis and Design of Tall Structures
(Name in full)

Time: Three hours

Full Marks 100

(35 marks for this part)

Use a separate Answer-Script for each part

PART II

1. Design and detail a concrete shear wall (4000mm X 300mm) as per IS 13920 with the following data

Factored axial load = 4000 kN , factored shear force = 400 kN, factored bending moment = 2000 kN-m.

Assume M30 concrete and Fe500 steel.