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20/12/13 FN

Reg. No. :

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Question Paper Code : 82319

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Elective

Structural Engineering

ST 9255/ST 955/UST 9155/10211 SEE 32 – DESIGN OF TALL BUILDINGS

(Regulation 2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you understand by limit state design philosophy?
2. What are the applications of light weight concrete?
3. What are the factors influencing the structural forms of high rise buildings?
4. What is outrigger structure?
5. State the purpose of doing preliminary analysis
6. State the assumptions made in the analysis of high rise buildings
7. What are the effects of differential movements?
8. What do you mean by thermal effects on tall buildings?
9. Mention the potential modes of overall buckling analysis
10. What do you understand by second order effects of gravity loading?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is the significance of sequential loading with respect to tall buildings? (8)
- (ii) Describe about the characteristics of the materials to be considered for the construction of tall buildings. (8)

Or

- (b) Explain in detail about the various loads to be considered in the design of tall buildings.

12. (a) Discuss about the various types of structural systems to be considered for the design and construction of tall structures.

Or

- (b) Discuss about the structural action and behaviour of
- (i) in filled — frame structures (6)
 - (ii) shear wall structures and (5)
 - (iii) tubular structures. (5)

13. (a) (i) Discuss about the modelling of structures for approximate analysis.
(ii) Explain about the reduction techniques adopted in the analysis of tall structures.

Or

- (b) How do you analyse the tall buildings for vertical forces and lateral forces? Explain the procedure in detail.

14. (a) (i) Discuss the effects of creep, shrinkage and temperature effect on tall RC buildings. (8)
(ii) Discuss about the stiffness and drift limitations on tall buildings. (8)

Or

- (b) (i) Outline the procedure of design for differential movement. (8)
(ii) Write a detailed note on fire resistance of tall buildings. (8)

15. (a) (i) Describe the methods for overall buckling analysis of frames. (8)
(ii) Explain about the second order effects of gravity loading on tall structures. (8)

Or

- (b) (i) What are the effects of foundation rotation on the stability of tall buildings? (8)
(ii) Write a detailed note on torsional instability of tall buildings. (8)