

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,
LONERE – RAIGAD – 402 103
Summer Semester Examination, May 2018

Branch: M. Tech. (Structural Engineering)
Subject with Subject Code: Design of Tall Buildings
[CVSE-E4-A]

Semester: II
Marks: 60

Date: 21 / 05 / 2018

Time: 3 Hrs.

Instructions to the Students

1. Each question carries 12 marks.
2. Attempt any five questions of the following.
3. Illustrate your answers with neat sketches, diagram etc., wherever necessary.
4. If some part or parameter is noticed to be missing, you may appropriately assume it and should mention it clearly.

Q.1. Solve any three.

- (i) Write a short note on gravity loads acting on the structure. (04)
- (ii) Explain when dynamic analysis is needed to be carried out for structure as per IS 875 Part III (1987). State different methods to perform dynamic wind analysis of structure. (04)
- (iii) Explain in brief seismic load acting on structure. Hence explain why vertical component is not considered generally for design of structures. (04)
- (iv) Distinguish between working stress method and limit state method of design of structure. (04)

Q.2. Solve any three.

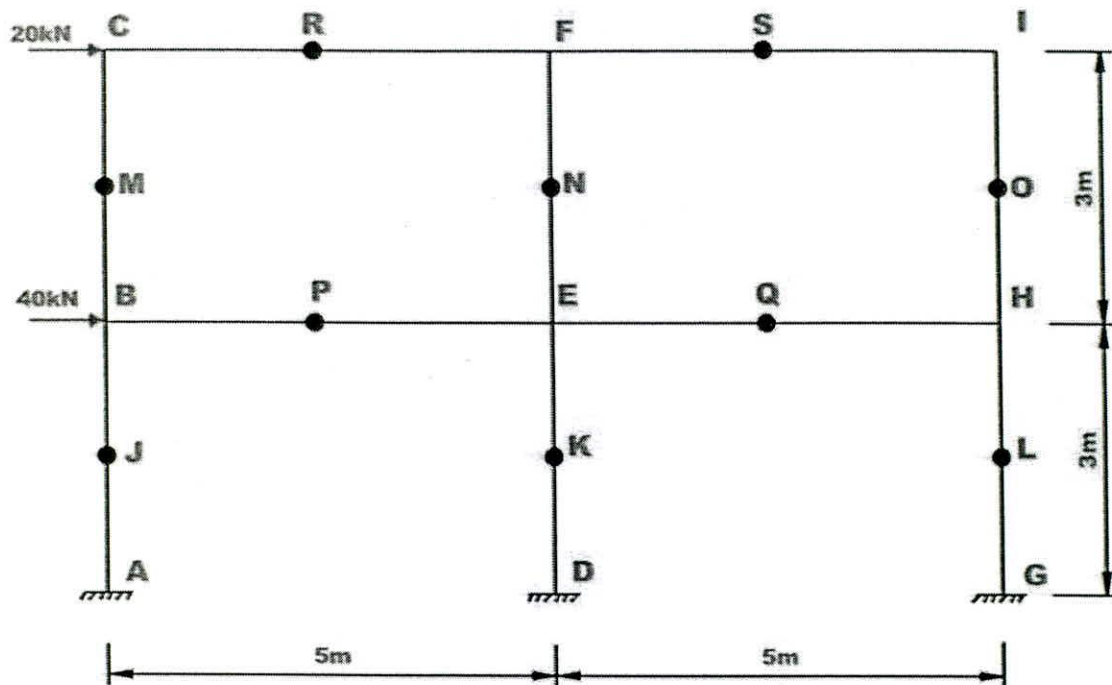
- (i) Write a short note on flat slab-column structural system. (04)
- (ii) Explain shear wall-column interaction in shearwall framed structure. (04)
- (iii) Explain load transfer mechanism in braced rigid frame structure. (04)
- (iv) Explain with figure working of outrigger truss structural system. (04)

Q.3. Solve any one.

- (i) Analyze the frame shown in following figure by portal frame method to get the column end moments, beam end moments and reactions. (Note that black dots are midpoints of corresponding member not internal hinges.) (12)

OR

- (ii) (a) Write a short note on P-Delta analysis of structure. (04)
- (b) Write a short note on creep in concrete. (04)
- (c) Write a short note on tuned mass damper for response control of structure. (04)



- Q.4. (i) Draw schematic diagram of chimney showing major components of chimney.
(ii) Derive expression for stresses in steel and concrete due to temperature difference in chimney walls.
(iii) A circular RC chimney has a constant shell thickness of 300 mm and an external diameter of 4m. The section is reinforced with one percent steel located at 50mm from outer face. The temperature difference between the inside and outside face of concrete is 70°C .
Modulus of elasticity of steel = 210 kN/mm^2
Modulus of elasticity of concrete = 19 kN/mm^2
- Q.5. (i) Why hyperboloid structure is used for cooling tower design? (4)
(ii) Describe the role of cold water basin in cooling tower. (4)
(iii) Describe counter flow design of the cooling tower. (4)
- Q.6. (i) Draw schematic diagram of transmission tower and show following parts in that. (6)
(a) peak
(b) cross arm
(c) cage and
(d) body of transmission tower. Also state its purpose.
(ii) Describe loadings to be considered while designing of transmission tower. (6)