Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14CE3015** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Design of Tall Buildings** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Discuss the necessity for tall buildings | CO1 | 5 |
| b. | List the structural forms available for design of tall buildings. Briefly explain the behavior on any three structural form. | CO1 | 15 |
| (OR) | | | | |
| 2. | a. | Find the total lateral drift of the braced building shown in Fig.No. The storey drift due to shear for the double braced member can be expressed as  The storey height is 4 m each.  Ac = 100 cm2  Ad = 60 cm2  Ag = 200 cm2  12 kN  18 kN  Ac = 200 cm2  Ad = 100 cm2  Ag = 200 cm2  20 kN  Ac = 280 cm2  Ad = 120 cm2  Ag = 200 cm2 | CO2 | 20 |
| 3. | a. | Discuss in detail the approximate modelling of the slabs | CO2 | 10 |
|  | b. | Explain how plane shear walls are modeled for accurate analysis. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | For the rigid frame shown in figure calculate the moments and shear . Assume bay width as 4m and column height as 3.5m  Ac = 100 cm2  Ag = 180 cm2  15 kN  22 kN  Ac = 150 cm2  Ag = 200 cm2  28 kN  Ac = 200 cm2  Ag = 200 cm2 | CO2 | 20 |
| 5. | a. | Describe briefly the failure modes of Infill frames | CO2 | 10 |
|  | b. | Mention the components of drift of a rigid frame. Elaborate the procedure for calculation of drift. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Discuss on the methods of analysis for P-Delta effect for tall buildings | CO3 | 10 |
|  | b. | Explain why out-of plumb and foundation rotation are termed as second order effects. | CO3 | 10 |
| 7. | a. | The layout of shear wall in a building is shown in figure  20m  W1  W2  50m  Wall 1 has inertia of 9 m4 in the top region and 15 m4 in the bottom region.  Wall 2 has inertia of 3m4 in the top region and 5 m4 in the bottom region.  The structure is 12 storey high with each floor 3m. The change of Inertia is after 6 stories. Consider uniform wind pressure of 1.5kN/m2 (30kN/m) and calculate the bending moments and shear force in the walls | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Discuss on the mode of behavior of bundled tube structures | CO1 | 10 |
|  | b. | When do we prefer to go for coupled shear wall? Explain the forces acting on the coupled shear wall. | CO1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | 12m  12m  12m  12m  3m  3m  Shear wall size - 5 x 0.3 m  Column-0.4 5 x0.45 m  Girders- 0.35 x 0.6 m  E= 2.5 x 107kN/m2  Figure shows symmetric plan 20m building with floor height of 3 m, RCC structure consisting of shear walls and frames. Determine the magnitude of gravity load that causes lateral and torsional buckling | CO3 | 20 |

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