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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **16CE3028** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SEISMIC RESPONSE CONTROL OF STRUCTURES** | **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 importance of ductility in seismic response of structures | CO1 | 10 |
| b. | Explain the provisions given in IS13920 : 2016 for ductile detailing of beams, columns and footing. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Briefly elaborate the significance of performance based design in the design of structures. | CO1 | 10 |
| b. | Explain the push over analysis as a methodology for carryout performance base design | CO1 | 10 |
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| 3. | a. | Differentiate quasi static method and shake table tests for seismic testing of structures bringing out its advantages and disadvantages | CO1 | 10 |
| b. | “High frequency earthquakes affect buildings with low time period and the viceversa” Justify the statement with suitable case studies | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | “Effective force method has the ability to perform real-time earthquake simulation on large-scale structures” Discuss briefly | CO1 | 12 |
| b. | Differentiate hybrid simulation and real time hybrid simulation for testing of seismic resistance of structures | CO1 | 8 |
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| 5. | a. | Enumerate the necessity for structural control systems to be implemented in structures. | CO2 | 10 |
| b. | Discuss on the working principle of tuned mass damper. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Explain the technique used to provide alternate route path for lateral loads in structural systems. | CO2 | 10 |
| b. | “The provision of base isolation increase the time period of the structure” Explain the concept. | CO2 | 10 |
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| 7. | a. | Differentiate semi-active and active control of systems. | CO2 | 8 |
| b. | Discuss any one semi-active control system briefly. | CO2 | 12 |
| (OR) | | | | |
| 8. | a. | Write a brief note on control algorithms and its importance in the design of active control algorithm. | CO2 | 12 |
| b. | Explain with a case study an active control system. | CO2 | 8 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Enumerate the various retrofitting strategies available for reinforced concrete structures. | CO3 | 8 |
| b. | Discuss on MR fluids, ER fluids and shape memory alloy | CO3 | 12 |