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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14CE2037** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED DESIGN OF STEEL 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. | Highlight the advantages of bolted connection. | CO1 | 5 |
| b. | A tie member of a roof truss consists of 2 ISA 150x150x10mm, the angles are connected to either side of the gusset plate of 8mm thick and is subjected to a tensile force of 180kN. Design the welded connection, assume the connections are shop welded. | CO1 | 15 |
| **(OR)** | | | | |
| 2. | a. | Discuss the following  i) Limit state design concepts of steel structures.  ii) Buckling of beam and column. | CO2 | 15 |
| b. | Illustrate the beam to beam web connection and mark the components. | CO1 | 5 |
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| 3. |  | Design an unstiffened seat connectionfor the beam section of ISMB 350 with a column section of ISHB 450 subjected to a end reaction of beam 150kN, use M20 bolts of property class 4.4. Assume Fe 410 grade steel. | CO1 | 20 |
| **(OR)** | | | | |
| 4. |  | Explain the components of roof truss and write the loads to be considered for the analysis of truss. | CO2 | 20 |
|  |  |  |  |  |
| 5. | a. | Design the purlin for the following data:  The purlins are simply supported on the rafer at a slope of 30o. Dead load of 3kN/m2, Live load of 1kN/m2 and wind load of 3kN/m2. Span of purlin 4m and spacing b/w purlin 2m c/c. | CO2 | 20 |
| **(OR)** | | | | |
| 6. |  | Discuss the design loads and conceptual design of self supporting chimney with neat sketches. | CO2 | 20 |
|  |  |  |  |  |
| 7. | a. | Categorize the different bracings systems used in towers with neat sketches. | CO2 | 10 |
| b. | Highlight the advantages and disdvantages of steel and composite structures. | CO3 | 10 |
| **(OR)** | | | | |
| 8. |  | Estimate the load carrying capacity of microwave towers based on relevant code provisions. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Analyse the bending capacity of simply supported composite beam with 6m span and spaced at 3m. The thickness of the slab is 100 mm. The floor is to carry an imposed load of 2kN/m2, floor finish load of 1kN/m2 and partition load of 1kN/m2. fck = 30N/mm2 and fy= 500 N/mm2. | CO3 | 20 |