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 :** | **VII / ODD** |
| **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. | An ISLB 300 @ 369.8 N/m transmits an end reaction of 300 kN, under factored load, to the web of ISMB 450 @ 710.2 N/m. Design a bolted framed connection. Steel is of grade Fe 410 and bolts are of grade 4.6. Assume relevant data if required. | CO1 | **20** |
| **(OR)** | | | | |
| 2. | a. | Write the step by step procedure for the design of bolted connection under axial load condition. | CO1 | **10** |
| b. | Sketch a neat diagram of Fink type truss and mark the parts of the roof truss. | CO 3 | **5** |
| c. | List out the advantages of Bolted connection | CO1 | **3** |
| d. | Define Bolt Value | CO1 | **2** |
| 3. | a. | Design a stiffened seat connection for ISMB 350 @ 514 N/m transmitting an end reaction of 315 kN due to factored loads to a column section ISHB 300 @ 576.8N/m. The steel is of grade FE 410 and bolts of grade 4.6. Assume relevant data if required. | CO1 | **20** |
| **(OR)** | | | | |
| 4. | a. | Write the step by step design procedure for unstiffened seat connection with a neat sketch. | CO1 | **10** |
|  | b. | Write short note on Bracings of industrial Building frames with neat sketches. | CO 3 | **5** |
|  | c. | Write short note on Structural steel and its properties. | CO 3 | **5** |
| 5. | a. | Design a purlin for an industrial building of following data.  c/c spacing of truss - 7 m  Span of the truss -15 m  Self-weight of the purlin – 318 N/m  D.L due to self-weight – 171 N/m2  Live Load - 3 kN/m2  The building is located in industrial area of Allahabad and both ends of the truss are hinged. Assume relevant data if required. | CO 2 | **20** |
| **(OR)** | | | | |
| 6. | a. | Explain the major components of an industrial building with the help of neat sketches. | CO 2 | **10** |
|  | b. | Briefly explain web buckling with neat sketches | CO 2 | **6** |
|  | c. | Differentiate web buckling and web crippling | CO 2 | **4** |
| 7. | a. | Write the step by step procedure for analysis of lattice Tower subjected to wind load. | CO 3 | **10** |
| b. | Briefly explain steel Chimney , types and various components of self supporting chimney with neat sketches. | CO 3 | **10** |
| **(OR)** | | | | |
| 8. | a. | Write the codal provisions for composite construction of structural members in steel and concrete. | CO 3 | **12** |
|  | b. | Write short note on shear connectors . | CO 3 | **8** |
|  | | **Compulsory:** |  |  |
| 9. | a. | Design a simply supported composite beam with 10 m span and spaced at 3 m. The thickness of the slab is 125 mm. The floor is to carry an imposed load of 3 kN/m2 and floor finish load of 0.5 kN/m2. Take construction load as 0.75 kN/m2. fck = 30 N/mm2 and fy= 250 N/mm2. Assume relevant data if required. | CO 2 | **20** |

**Course Outcome:**

Students at the end of the course will be able to:

CO1: Classify different types of bolted and welded joints

CO 2: Design the steel beam and columns

CO3: Plan, analyse and design the industrial building

ALL THE BEST