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 – April / May – 2017**

|  |  |  |  |
| --- | --- | --- | --- |
| **Code :** | **14CE3009** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **ADVANCED DESIGN OF METAL STRUCTURES** | **Max. marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. |  | Questions | Course  Outcome | Marks |
| 1. |  | Design a laterally restrained simply supported beam of span 5.5m carrying dead load of 15 kN/m and live load of 10kN/m from RCC slab. Use Fe 410 grade steel. Assume the relevant design data. | CO2 | 20 |
| (OR) | | | | |
| 2. |  | Design a welded stiffened seat connection to join ISMB 400 @ 61.5kg/m with a column section ISHB 450@ 92.5kg/m. The beam transmits an end reaction of 400kN due to factored loads. Bending moment due to eccentricity – 50kNm, Use Fe 410 grade steel. Assume the relevant design data. | CO2 | 20 |
| 3. |  | Check the moment carrying capacity of laterally unrestrained beam section ISMB 400 @ 61.5kg/m | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Design a laterally restrained column in a building frame of 4.5m height, Column subjected to the following loads. Assume the relevant design data.  Factored Axial load in Tension = 800 kN  Factored Moment in Z-Direction = 150 kN-m | CO2 | 20 |
| 5. |  | Analyse the truss for the following data  Span - 20m, Rise – 3.5m, Spacing of the truss – 4.5m, Assume the relevant data | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Design the Z – Purlin (280x75x20x3.15) to bear the weight of GI sheets and the wind intensity of 39m/s for the following data. span of purlin 4m, spacing of the purlin 1.6m, roof angle 12deg, Zp – 109x103mm3, Iz – 1530x104mm4. | CO2 | 20 |
| 7. |  | Discuss the behaviour of different types of steel joints in frames and its failure with neat sketches. | CO3 | 20 |
| (OR) | | | | |
| 8. |  | Design the tension member for the load 200kN and check its load carrying capacity in compression. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Design the slab base for the following data. Column section ISHB 400, Compressive force due to DL+LL is 300kN, Tensile force due to DL+WL is 175kN, Assume Fe410 grade steel. | CO2 | 20 |