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 :** | **14CE3019** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Design of Composite 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. |  | Explain the behaviour of composite material also write the benefits of using composite construction. | CO1 | **20** |
| **(OR)** | | | | |
| 2. |  | Analyse the interaction between shear connector and solid slab, also explain the load bearing mechanism of the shear connector. | CO2 | **20** |
| 3. |  | Design a simply supported composite beam with 10m span. The thickness of the slab is 125mm. The floor is to carry a imposed load of 3kN/m2, partition load of 1.5kN/m2 and floor finish load of 0.5kN/m2. Take Construction load as 0.75kN/m2. fck= 30N/mm2. | CO2 | **20** |
| **(OR)** | | | | |
| 4. |  | Design a profiled deck slab of 4.5m span. The thickness of the slab is 125mm. The floor is to carry a imposed load of 2.5kN/m2, partition load of 1kN/m2 and floor finish load of 1kN/m2. Take Construction load as 1kN/m2. fck= 30N/mm2. Moment of Inertia of the section – 0.7x106 mm4, Plastic Moment of Resistance – 6 kNm, Area of cross section – 1185mm2, Depth of the profile – 100mm. | CO2 | **20** |
| 5. |  | Analyse the plastic resistance of a concrete filled square composite column having size of 350x350mm. The height of the column is 3m and is pin ended. Assume M30 grade concrete. Assume the structural steel section as ISHB250@54.7kg/m | CO2 | **20** |
| **(OR)** | | | | |
| 6. |  | Design the composite truss for the following data  Span – 9m, Spacing of truss – 4m, Slab thickness – 200mm, Profile depth – 100mm, Self wt of deck slab – 3kN/m2, Grade of concrete – M20, Max axial tensile force – 600kN, Max axial compressive force – 750kN | CO2 | **20** |
| 7. |  | Examine the key factors which affects the strength of shear connectors in composite structures? | CO3 | **20** |
| **(OR)** | | | | |
| 8. |  | Write the tests to be conducted to check the strength of the shear connectors. | CO3 | **20** |
|  | | **Compulsory:** |  |  |
| 9. |  | Briefly explain the construction or failure of composite structure with example. | CO3 | **20** |

ALL THE BEST