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**

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| **Code :** | **14CE2030** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ADVANCED STRUCTURAL ANALYSIS** | **Max. marks :** | **100** |

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

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| Q. No. |  | Questions | Course  Outcome | Marks |
| 1. |  | A three hinged parabolic arch, hinged at the crown and springing, has a horizontal span of 15m with a central rise of 3m. It carries a uniformly distributed load of 32kN/m over the left hand half of the span. Calculate the normal thrust, radial shear and bending moment at 5m from the left hand hinge. | CO1,  CO3 | 20 |
| (OR) | | | | |
| 2. |  | A three hinged circular arch of span 16 m and rise 4 m is subjected to two point loads of 100kN and 80kN at the left and right quarter span points respectively. Find the reactions at the supports. Find also the bending moment, radial shear and normal thrust at 6 m from left support. | CO1,  CO3 | 20 |
| 3. |  | Determine reaction components at A and B, tension in the cable and the sag YB and YE of the cable shown in Figure. Neglect the self-weight of the cable in the analysis | CO1,  CO3 | 20 |
| (OR) | | | | |
| 4. |  | A suspension bridge with a three hinged girder has a span of 110 m, a central dip of cable 10 m and weighs 3000 kN. It has to carry a live load of 50 kN/m all over the span. Calculate the sectional area of cables required if the permissible stress of the cable is 150 kN/mm2. | CO1,  CO3 | 20 |
| 5. |  | Analyse the continuous beam shown in figure using force method. | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Determine the slopes at A and B and Deflection under the load for the beam shown in fig, using flexibility method  Image result for simply supported beam with point load | CO2 | 20 |
| 7. |  | Analyze the portal frame shown in figure using Stiffness matrix method | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Draw the BMD for the given continuous beam using stiffness method.  Image result for continuous beam | CO2 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Determine the forces in the members EF, EG, EH and FH using tension coefficient method, for the truss shown below. The horizontal load of 4kN acting at the joint C. | CO1,CO3 | 20 |

ALL THE BEST