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 :** | **14AE2032** | **Duration :** | **3hrs** |
| **Sub. Name :** | **AERO-ELASTICITY** | **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 in detail Collar’s Trianglewith its Elements. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Define Stability. | CO1 | 2 |
| b. | Different Types of Stability. | 4 |
| c. | Explain in detail the Aero-Elastic instabilities of the aircraft and its responses. | 12 |
| 3. |  | Discuss the prevention techniques of Aero-Elastic instability. | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Derive the Stiffness and Influence coefficient for Two dimensional wing. | CO1 | 20 |
| 5. |  | Derive the derivatives for aileron effectiveness and reversal speed. | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Derive Wing torsional divergence speed for finite wing. | CO2 | 20 |
| 7. |  | Derive the general Dynamic Aero-elastic Equation of motion for a binary model. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Explain in detail Types of Gust. | CO2 | 4 |
| b. | Derive the equation of motion for time domain gust response for rigid Aircraft. | 16 |
|  | | **Compulsory:** |  |  |
| 9. |  | Explain in detail any one the solution method and its steps to slove the Two degrees of freedom flutter . | CO3 | 20 |

ALL THE BEST