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 :** | **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 the phenomena of Aero-Elastic effects in aircraft. | CO1 | 20 |
| (OR) | | | | |
| 2. |  | Discuss the Historical Background of Aero-Elastic Instabilities. | CO1 | 20 |
| 3. |  | Derive Wing torsional divergence speed for two-dimensional case. | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Derive the influence coefficients for cantilever beam with multiple forces. | CO1 | 20 |
| 5. | a. | Define Divergence speed. | CO2 | 4 |
| b. | Derive the critical divergence speed of the Aircraft. | 16 |
| (OR) | | | | |
| 6. |  | Explain in detail the effect of Sweep angle of aircraft wing in static Aero-Elastic condition. | CO2 | 20 |
| 7. |  | How do you predict the speed of Flutter for binary model? | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Derive Wing panel Flutter equations in Supersonic Regime. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Explain in detail the Dynamic responses of the Aircraft and its effects in Stability. | CO3 | 20 |