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 :** | **14AE3004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FLIGHT PERFORMANCE AND STABILITY** | **Max. marks :** | **100** |

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

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. |  | How do you achieve maximum thrust by using propellers? State answer with suitable equations and diagrams. | CO1 | 20 |
| (OR) | | | | |
| 2. |  | Derive Breguet Range and Endurance Equation for Propeller driven airplane and compare it to jet driven flight with neat sketch. | CO1 | 20 |
| 3. | a. | Explain the procedure of airplane design. | CO1 | 10 |
|  | b. | Draw the mission profile of various airplane. | CO1 | 10 |
| (OR) | | | | |
| 4. |  | Explain in deatail about Thrust required of jet driven airplanes with neat sketch. | CO1 | 20 |
| 5. | a. | State Rate of Climb with suitable Sketch. | CO1 | 15 |
|  | b. | Differentiate the maneuver Power required and Thrust required of the flight. | CO1 | 5 |
| (OR) | | | | |
| 6. |  | How do you achieve directional and roll stability of the flight by using control surfaces? | CO3 | 20 |
| 7. | a. | Derive the Longitudinal stability equation for flight with respect to lateral axis of airplane with proper diagram. | CO2 | 15 |
|  | b. | State the rudder Requirements. | CO3 | 5 |
| (OR) | | | | |
| 8. |  | Derive the equation of motion for dynamic longitudinal stability of airplane. | CO2 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Explain the following with neat sketch. |  |  |
|  | a. | Phugoid motion. | CO2 | 10 |
|  | b. | Ruth’s Stability criterion. | CO2 | 10 |