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– 2017**

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| **Code :** | **14AE2030** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BASICS OF AEROSPACE ENGINEERING** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | | **Marks** |
| 1. | a. | Enumerate the contributions of Otto Lilienthal to the early developments of aircrafts. | CO1 | | 10 |
| b. | Differentiate monoplane and biplane. Explain why a monoplane is aerodynamically more efficient than a biplane. | CO2 | | 10 |
| (OR) | | | | | |
| 2. | a. | What is the principle of a lighter-than-air aircraft? | CO1 | | 5 |
| b. | Differentiate “Airmen approach” and “Chauffeurs approach”. | CO1 | | 5 |
| c. | Write a short note on Sir George Cayley’s fixed wing concept to produce lift. | CO1 | | 5 |
| d. | What are Ornithopters? | CO1 | | 5 |
|  |  |  |  | |  |
| 3. | a. | Explain the parts and functions of a typical aircraft with aneat sketch. | CO2 | | 10 |
|  | b. | Draw an aerofoil and explain its nomenclature. | CO1 | | 5 |
|  | c. | Draw the four basic forces acting on an aircraft. | CO2 | | 5 |
| (OR) | | | | | |
| 4. | a. | Briefly explain the basic six pack of an aircraft with its principle and working. | CO2 | | 15 |
|  | b. | Explain how lift is generated in an aerofoil with a line diagram. | CO1 | | 5 |
|  |  |  |  | |  |
| 5. | a. | Explain the use of different materials used for the construction of aircraft structures over the years. | CO2 | | 15 |
|  | b. | Write a note on the different types of rockets and its applications. | CO2 | | 5 |
| (OR) | | | | | |
| 6. | a. | Explain the different fuselage types with its merits and demerits. | CO2 | | 15 |
|  | b. | Write the use of spoilers and thrust reversers in aircrafts. | CO2 | | 5 |
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| 7. | a. | Explain the principle and working of control surfaces in an aircraft wing with a neat sketch. | CO2 | | 15 |
|  | b. | How is thrust developed in a solid propellant rocket engine? | CO2 | | 5 |
| (OR) | | | | | |
| 8. | a. | Explain the principal axes of an aircraft and its related maneuvers with a neat sketch. | | CO2 | 15 |
|  | b. | Draw the stress-strain curve of a typical composite material. | | CO2 | 5 |
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|  | | **Compulsory**: | |  |  |
| 9. | a. | Explain the working of a turbofan engine with a neat sketch. | | CO1 | 15 |
|  | b. | Why is the efficiency of a turbojet engine less than a turbofan engine? | | CO1 | 5 |

ALL THE BEST