Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **14AE2001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **INTRODUCTION TO 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. | Write the reasons for Wright brothers’ success. | CO1 | 4 |
| b. | Describe the first supersonic and hypersonic flights. | CO1 | 4 |
| c. | Derive the hydrostatic equation and obtain the relation between the geopotential and geometric altitudes. | CO1 | 12 |
| **(OR)** | | | | |
| 2. | a. | Write an essay on breaking the Sonic Barrier. | CO1 | 5 |
| b. | Write in detail the anatomy of aeroplane. | CO1 | 15 |
|  |  |  |  |  |
| 3. | a. | Explain the flow mechanism associated with stall in detail. | CO1 | 6 |
| b. | With illustration, describe in detail the Blown flap with a figure. | CO1 | 6 |
| c. | Write a note on Slats and explain its functioning with a figure. | CO1 | 8 |
| **(OR)** | | | | |
| 4. | a. | Describe in detail the working principle of Turbojet Engine. | CO2 | 10 |
| b. | Illustrate the working principle of the Reciprocating engine in an elaborate manner by drawing different strokes in detail. | CO2 | 10 |
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| 5. | a. | State the materials used for aircraft fabrication and describe them in detail. | CO1 | 6 |
| b. | Write in detail the three main groups of composite materials. | CO1 | 8 |
| c. | State the basic requirement of aircraft materials. | CO1 | 6 |
| **(OR)** | | | | |
| 6. | a. | Derive Bernoulli’s equation. | CO2 | 14 |
| b. | An aeroplane is flying with velocity of 60 m/s at an altitude at which the pressure is 70101 Pa and the density is 0.09093 kg/m3. At a point on the wing, airflow velocity is 70m/s. Calculate the pressure at this point. Assume the flow is incompressible. | CO2 | 6 |
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| 7. | a. | Describe the propeller of an aircraft engine and compare its characteristics and purpose with the wing of the aircraft. | CO2 | 14 |
| b. | State the classification of chemical rocket propulsion. | CO1 | 6 |
| **(OR)** | | | | |
| 8. |  | Write an essay on aircraft instruments. | CO1 | 20 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Derive continuity equation. | CO2 | 7 |
| b. | Derive the governing equation for gradient layer of standard atmosphere. | CO2 | 13 |