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



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

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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. | Elucidate the contributions of Sir George Cayley to the development of Aeronautics. | CO1 | 15 |
| b. | Explain the construction and working of whirling arm apparatus. | CO2 | 5 |
| **(OR)** | | | | |
| 2. | a. | Explain the a) principle and construction of Baloons invented by the Montgolfier brothers  b) features of Aerial Steam Engine proposed by Samuel Henson. | CO1 | 15 |
| b. | What is meant by wing tip vortices and how is it reduced in modern aircrafts? | CO1 | 5 |
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| 3. | a. | Draw the outline of a typical aircraft and detail its parts and functions. | CO2 | 15 |
| b. | Draw an aerofoil and explain its nomenclature. | CO1 | 5 |
| **(OR)** | | | | |
| 4. | a. | Briefly explain the pitot tube-based and gyroscope-based instruments used in aircrafts. | CO2 | 15 |
| b. | Depict the four basic forces acting on an aircraft using a line diagram. | CO1 | 5 |
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| 5. | a. | Explain the use of non-metallic materials used for the construction of aircraft structures over the years. | CO2 | 15 |
| b. | Illustrate the theories stating how lift is generated in an aerofoil with a neat sketch. | 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 use of high lift devices in an aircraft wing and its functions with a neat sketch. | CO2 | 15 |
| b. | With a neat skectch explain the different stages of a rocket and its functions. | CO2 | 5 |
| **(OR)** | | | | |
| 8. | a. | Explain the principal axes of an aircraft and its related maneuvers with a neat sketch. | CO2 | 15 |
| b. | Explain the use of high temperature materials used in the construction of materials. | CO2 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Explain the working of an internal combustion engine with a neat sketch. | CO1 | 15 |
| b. | Illustrate briefly about; i) Polar orbit and ii) Geostationary orbit. | CO1 | 5 |