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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **14AE2012** | **Duration :** | **3hrs** |
| **Sub. Name :** | **AIRCRAFT STRUCTURES** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Determine the resultant force in the member of truss shown in fig.1 .    **Fig.1** | CO1 | 20 |
| (OR) | | | | |
| 2. |  | A continuous beam ABC consists of two consecutive spans AB and BC 4 meters each and carries a distributed load of 60 kN per meter run from A to C. The end A is fixed and the end C is simply supported. Find support moments, support reactions and draw the B.M. and S.F. Diagram using three moment method. | CO1 | 20 |
|  |  |  |  |  |
| 3. |  | Determine the vertical displacement of joint C of the steel truss shown in fig.2. The cross sectional area of each member is A=300 mm2 and E = 2.1 x 105 N/mm2.    Fig.2 | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Obtain the shear flow and shear center location for the cannel section subjected to a vertical shear load of 750N(Downward). The height of the vertical web is 30mm and width of the flanges is 20mm. Thickness of flanges and web is 1mm. | CO2 | 20 |
|  |  |  |  |  |
| 5. |  | A two cell tube shown in fig.3 subjected to torque T=100 kN. Calculate the shear flow and angle of twist.    Fig.3 | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Derive the governing equation of a thin plate subjected to a pure bending load. | CO2 | 20 |
|  |  |  |  |  |
| 7. |  | Calculate the distribution of stiffener loads and the shear flow distribution in the web panels shown in fig.5. Assuming that the latter are effective only in shear.    **Fig.5** | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | Briefly explain the different types of load acting on wing and fuselage. | CO1 | 10 |
|  | b. | Describe the Complete tension field beam and Incomplete tension field beam. | CO1 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | Briefly explain the types of composite materials and its applications. | CO3 | 20 |