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 – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **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. | Questions | | Course  Outcome | | Marks | |
| 1. | Using the Method of joints, Determine the member forces of the plane pin-jointed truss of fig.1.    Fig.1 | | CO1 | | 20 | |
| (OR) | | | | | | |
| 2. | Calculate the vertical deflection of the Joint B and The horizontal movement of the support D in the truss shown in Fig. 2. The cross-sectional area of each member is 1800mm2 and Young’s modulus, E, for materials of the members is 200 000 N/mm2 .    Fig.2 | | CO1 | | 20 | |
| 3. | A continuous beam, 12m long supported over spans AB=BC=CD=4m, Carries a uniformly distributed load of 3 kN/m run over span AB, a concentrated load of 4 kN at a distance of 1 m from point B on support BC and a load of 3kN at the centre of span CD, Draw the B.M. and S.F. Diagram for the continuous beam. | | CO1 | | 20 | |
| (OR) | | | | | | |
| 4. | A continuous beam ABCD , 20m long is loaded as shown in fig. 3. If the support B sinks by 10mm below A & C. Evaluate the bending moment and shear force diagram.    Fig.3 | | CO1 | | 20 | |
| 5. | Derive and obtain an expression for the bending stress in an unsymmetrical section subjected to bending, using the generalized ‘k’ method . | | CO1 | | 20 | |
| (OR) | | | | | | |
| 6. | A Z- section with 12 cm x 3 cm flanges and 20 cm x 3 cm web is subjected to Mx=10 kN-m and My=10 kN-m . Determine the maximum bending stress. | | CO1 | | 20 | |
| 7. | A C-section subjected to shear loads is 100N on shear center. The C-section dimensions are: Flanges- 25 cm x 3 cm , web 30cm x 3cm. Draw the shear flow diagram and determine distance between shear center and center of the web. | | CO2 | | 20 | |
| (OR) | | | | | | |
| 8. | Find the shear flow for the closed section shown in fig.4. Subjected to a vertical force V passing through the shear center. Thickness t for the entire wall.  3  Fig.4 | | CO2 | | 20 | |
| **Compulsory:** | |  | |  | |
| 9. | Derive the governing equation of thin plate subject to the compressive laod. | | CO2 | | 20 | |

ALL THE BEST