

R09

Code No: 56070

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, November/December - 2020

COMPUTATIONAL AERODYNAMICS

(Aeronautical Engineering)

Time: 2 hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

1. Explain how CFD plays an important role as research tool. [15]
2. Explain briefly finite control volume approach and infinitesimal fluid element approach of models of fluid flow. [15]
3. Discuss the Boundary layer Approximation using Practical examples. Justify with partial differential equations. [15]
4. What are the different discretization Schemes? Explain each in brief with mathematical equation. [15]
- 5.a) What is the cell-centered scheme in finite volume discretization? Explain.
b) What is reflection boundary condition? Explain the midpoint leap frog method. [7+8]
6. Explain about Poisson's equation on a Cartesian - two dimensional mesh. [15]
7. Explain in detail about Lax-Wendroff schemes for the linear convection equation with mathematical expressions. [15]
8. Explain the differences between Pressure correction method and density based solution of finite volume discretization of the Euler's equation. [15]

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