

R09

Code No: 56070

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, March/April - 2021

COMPUTATIONAL AERODYNAMICS

(Aeronautical Engineering)

Time: 3 hours

Max. Marks: 75

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

1. Derive an expression for divergence of velocity. [15]
2. Explain the difference between conservative and non-conservative equation. [15]
3. Differentiate between Forward, Backward and Central finite difference scheme with mathematical expressions and examples. [15]
4. Explain in brief about the CFL condition with mathematical expression. [15]
5. Explain in brief about the upwind scheme. [15]
- 6.a) Explain with example about the O-type grid and C-type grid.
b) Explain in brief about the algebraic grid generation. [8+7]
- 7.a) What is alternating direction implicit (ADI) technique? Explain.
b) Explain explicit scheme and Crank Nicholson form using one-dimensional heat equation. [6+9]
- 8.a) Explain in brief about the SIMPLE, SIMPLER AND SIMPLEC numerical procedure.
b) What is the need for a staggered Grid? Explain in brief about PISO Algorithm. [9+6]

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