

(DME 424 D)

B. Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Final Year)

MECHANICAL ENGINEERING

Paper - IV : Computational Fluid Dynamics

Time : 3 Hours

Maximum Marks : 75

Answer question No. 1 compulsory

(15)

Answer ONE question from each unit

(4 x 15 = 60)

- 1) a) Explain how CFD use as a design tool.
- b) What are the modern developments of grid generation?
- c) Explain about the ADI.
- d) Write any two applications of CFD.
- e) Write Navier-stokes equation.
- f) What is discretization?
- g) Define mesh points and grid points.

Unit - I

- 2) a) Discuss in detail about, momentum and energy equations in 3 Dimensions.
- b) Explain Navier stokes equation in differential form.

OR

- 3) a) Enumerate the applications of CFD in heat transfer.
- b) Write about single generic Integral form equations for continuity, momentum and energy equations.

Unit – II

4) Explain the advantages and disadvantages of explicit and implicit approaches.

OR

5) Explain the finite volume discretisation and cell centre scheme.

Unit – III

6) a) Explain the governing equations suitable for CFD.

b) Explain any one concept of co-ordinate transformation in CFD.

OR

7) Explain the boundary fitted co-ordinate systems of adaptive grid generation.

Unit – IV

8) a) Explain in detail LAX-WEN droff Technique and their significance.

b) Explain about ADI Technique.

OR

9) a) Explain Mac cormark Technique.

b) Explain in detail about different aspects of numerical dissipation and dispersion and mention their applications.

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