

These are sample MCQs to indicate pattern, may or may not appear in examination

**University of Mumbai**  
**Online Examination 2020**

Program: BE Automobile Engineering

Curriculum Scheme: Revised 2016

Examination: Final Year Semester VII

Course Code: AEDLO7034 and Course Name: Computational Fluid Dynamics

Time: 1hour

Max. Marks: 50

**Note to the students:- All the Questions are compulsory and carry equal marks .**

Q CFD is the third approach for fluid flow analysis. What are the other two approaches?

A Theoretical and experimental

B Physical and Mathematical

C Numerical and experimental

D Experimental and physical

Q Which of these will not come under the three main elements of CFD packages?

A Pre-processor

B Post-processor

C Code creator

D Solver

Q The region of interest for analysis in CFD is called as \_\_\_\_\_

A Cell

B Domain

C Mesh

D Grid

Q Which of these will fall into the post-processing category?

A Definition of boundary conditions

B Grid generation

C Flow visualization

D Discretization

Q Which is the input part of a CFD problem?

- A Post-processing
- B Flow visualization
- C Pre-processing
- D Solving
- Q CFD is based on fundamental three governing equations
- A Mass, Momentum & Energy equations
- B Momentum, Mass, & Continuity equations
- C Mass, Momentum & Navier stokes equations
- D Mass, Energy & Continuity equations
- Q Equations of state provide the linkage between \_\_\_\_\_ and \_\_\_\_\_
- A Conservative, non-conservative equation
- B Eulerian, Lagrangian equations
- C Energy equation, mass and momentum equations
- D Differential, Integral equations
- Q The final equation of Reynolds transport theorem can be used to drive \_\_\_\_\_ form of the cor
- A Euclidian
- B Lagrangian
- C Eulerian
- D Cartesian
- Q Initial conditions are used for \_\_\_\_\_ problems.
- A time-dependent problems
- B boundary value problems
- C control volume problems
- D finite difference problems
- Q The velocity components in the nodes which are not at the boundary are found using \_\_\_\_\_
- A energy equation
- B continuity equation
- C equations of state
- D momentum equation
- Q Which of these does not come under partial differential equations?
- A Laplace's equation
- B Equations of motion
- C 1-D wave equation

- D Heat equation
- Q Under which condition does the inviscid steady flow become elliptic?
- A M=1
- B M<1
- C M>1
- D M>5
- Q \_\_\_\_\_ expressions are used when data on both sides of the desired point are available.
- A Forward difference
- B Backward difference
- C Central difference
- D End difference
- Q The number of discretized equations is equal to the number of \_\_\_\_\_
- A Discretized cells
- B Boundary conditions
- C Unknowns
- D Boundary-side elements
- Q The ratio of longest edge length to shortest edge length is called
- A Aspect ratio
- B Skewness
- C Smoothness
- D Orthogonality
- Q The error occurred by approximating the infinite sum by finite sum is called
- A Finite error
- B Infinite error
- C Truncation error
- D Zero error
- Q Skewness is equal to
- A (optimal cell size- cell size)/ cell size
- B (optimal cell size- cell size)/ optimal cell size
- C (cell size- optimal cell size)/ optimal cell size
- D (optimal cell size- cell size)
- Q CFD packages solve the algebraic equations of flow using \_\_\_\_\_ method.

- A Direct
- B Iterative
- C Analytical
- D Trial and error

Q Consider the general discretized equation  $a_P\Phi_P = a_W\Phi_W + a_E\Phi_E + S$ . Which of these will become zero

- A  $\Phi_E$
- B  $a_E$
- C  $\Phi_W$
- D  $a_W$

Q TDMA is consists of a

- A Forward Elimination
- B Backward Elimination
- C Downward Elimination
- D Upward Elimination

Q A generalised version of the TDMA, known as the

- A Penta-Diagonal Matrix Algorithm
- B Diagonal Matrix Algorithm
- C Penta Matrix Algorithm
- D Penta-Diagona Algorithm

Q Which of these is not stored at the cell centres in the staggered grids?

- A Density
- B Pressure
- C Temperature
- D Velocity

Q The pressure equation for the incompressible equation is

- A Eulerian equation
- B Divergence equation
- C Lagrangian equation
- D Poisson equation

Q The advantage of the upwind scheme over the central-difference scheme is

- A accuracy
- B stability
- C high convergence rate

- D consistency
- Q Which of these is related to the transportiveness?
- A Courant number
- B Reynolds number
- C Nusselt number
- D Peclet number