Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering Curriculum Scheme: Rev2012 (CBSGS) Examination: Final Year, Semester VII

Course Code: MEE7015 and Course Name: Computational Fluid Dynamics

Time: 1 hour

Max. Marks: 50

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

Option A: fourth-order accurate Option B: third-order accurate Option D: first-order accurate Q2. For which of these problems is the Crank-Nicolson scheme unconditionally stable Option A: Compressible flows Option D: Diffusion problems Option D: Convection-Diffusion problems Option A: Quadratic interpolation profile Option A: Quadratic interpolation profile Option D: Geometric mean Q4. The hybrid differencing scheme is Option A: New elybrid differencing scheme is Option D: Geometric mean Q4. The hybrid differencing scheme is Option C: bounded unconditionally Option B: bounded in the low Peclet number Option C: bounded in the high Peclet number Q5. Which scheme of the following ensure conservativeness? Option A: Central differencing Option A: Central differencing Option A: Central differencing Option B: bounded in the high Peclet number Q5. Which scheme of the following ensure conservativeness?	Q1.	The Crank-Nicolson scheme is	
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Option C: Three-dimensional fluctuations	Option B:	Rapid mixing	
	Option C:	Three-dimensional fluctuations	

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Option D:	Instability	
Q8.	Represent the velocity of turbulent flow using Reynolds decomposition.	
Option A:	Steady velocity + Mean velocity	
Option B:	Steady velocity + Fluctuating component of velocity	
Option C:	Variation in velocity + Fluctuating component of velocity	
Option D:	Mean variation + Fluctuating component of velocity	
Q9.	The Reynolds stress term arises in the turbulent equation only when	
Option A:	two quantities are correlated	
Option B:	two quantities are uncorrelated	
Option C:	the flow is steady	
Option D:	the flow is unsteady	
Q10.	Consider the general discretized equation $a_P \Phi_P = a_W \Phi_W + a_E \Phi_E + S$. Which of these	
	will become zero for the left boundary node?	
Option A:	$\Phi_{\rm E}$	
Option B:	a _E	
Option C:	$\Phi_{\rm W}$	
Option D:	a,	
1	W	
011.	TDMA is consists of a	
Option A:	Forward Elimination	
Option B:	Backward Elimination	
Option C:	Downward Elimination	
Option D:	Upward Elimination	
^	^	
Q12.	A generalised version of the TDMA, known as the	
Option A:	Penta-Diagonal Matrix Algorithm	
Option B:	Diagonal Matrix Algorithm	
Option C:	Penta Matrix Algorithm	
Option D:	Penta-Diagona Algorithm	
Q13.	Which ONE of the following schemes is stable and second order accurate in both	
	time and space for the unsteady diffusion equation?	
Option A:	FTCS-explicit	
Option B:	Crank-Nicolson's scheme	
Option C:	FTCS-implicit	
Option D:	FTCS-Dynamics	
Q14.	CFD is the third approach for fluid flow analysis. What are the other two	
	approaches?	
Option A:	Theoretical and experimental	
Option B:	Physical and Mathematical	
Option C:	Numerical and experimental	
Option D:	Experimental and physical	

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Q15.	CFD packages solve the algebraic equations of flow using	
	method.	
Option A:	Direct	
Option B:	Iterative	
Option C:	Analytical	
Option D:	Trial and error	
Q16.	Computational investigation is experimental investigation.	
Option A:	Faster than	
Option B:	At the same speed of	
Option C:	Slower than	
Option D:	Cannot be compared	
Q17.	Energy conservation equation is necessary to solve this property of fluid flow.	
Option A:	Pressure	
Option B:	Temperature	
Option C:	Density	
Option D:	Velocity	
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Q18.	What are the two major types of boundary conditions?	
Option A:	Wall and symmetry	
Option B:	Inlet and outlet	
Option C:	Dirichlet and Neumann	
Option D:	Initial and physical	
- F	F=5,5.5.5.5	
Q19.	While applying the constant pressure boundary condition, which of these is done?	
Option A:	When there is an impermeable boundary	
Option B:	When there is constant pressure	
Option C:	When we do not know the flow distribution but we know the pressure at the	
-	boundaries	
Option D:	When we do not know the pressure at the boundaries	
-		
Q20.	Which of these does not come under partial differential equations?	
Option A:	Laplace's equation	
Option B:	Equations of motion	
Option C:	1-D wave equation	
Option D:	Heat equation	
•	•	
O21.	The finite volume method the governing equations in each cell.	
Option A:	Discretizes	
Option B:	Sums up	
Option C:	Integrates	
Option D:	Multiplies	
-pron D.		
022	expressions are used when data to the left of a point at which a	
×	derivative is desired are not available	
Option A.	Forward difference	
Ontion R.	Backward difference	
option D.	Duck wild difference	

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Option C:	Central difference
Option D:	End difference
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Q23.	Which of these properties limit the time-step size in the explicit schemes?
Option A:	Convergence
Option B:	Stability
Option C:	Consistency
Option D:	Error
Q24.	The ratio of logest edge length to shortest edge length is called
Option A:	Aspect ratio
Option B:	Skewness
Option C:	Smoothness
Option D:	Orthogonality
Q25.	Triangular element is commonly used in
Option A:	Structured grid
Option B:	Unstructured grid
Option C:	Static grid
Option D:	Dynamic grid

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering Curriculum Scheme: Rev2012 Examination: Final Year Semester VII Course Code: MEE7015 and Course Name: Computational Fluid Dynamics

Time: 1 hour

Max. Marks: 50

Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	С
Q2.	С
Q3.	В
Q4	В
Q5	А
Q6	D
Q7	А
Q8.	В
Q9.	А
Q10.	D
Q11.	А
Q12.	А
Q13.	В
Q14.	А
Q15.	В
Q16.	А
Q17.	В
Q18.	С
Q19.	С
Q20.	В
Q21.	С
Q22.	А
Q23.	В
Q24.	Α
Q25.	В