Name. _____	**Printed Pages:01**
Student Admn. No.: _____	

School of __Mechanical_____

Backlog Examination, June 2023

[Programme: Btech ME] [Semester: 6] [Batch:]

Course Title: Computational Fluid Dynamics	**Max Marks: 100**
Course Code: BTME3053	**Time: 3 Hrs.**

Instructions:

1. *All questions are compulsory.*
2. *Assume missing data suitably, if any.*

		K Level	COs	Marks
	SECTION-A (15 Marks) 5 Marks each			
1.	Write all the three conservation laws with their equation.		CO1	5
2.	What is numerical stability.		CO1	5
3.	Explain Continuity equation		CO3	5
	SECTION-B (40 Marks) 10 Marks each			
4.	What is advantage and disadvantage of CFD over analytical method and experimental methods? Describe in detail with example.		CO1	10
5.	If we expand $f(x_0 + 3\Delta x)$ about the point x_0 in Taylor series, then find the fourth term in the expansion.		CO2	10
6.	Write central finite difference approximation for first order derivative.		CO2	10
7.	Explain finite differencing and taylor series OR Explain numerical errors		CO4	10
	SECTION-C (45 Marks) 15 Marks each			
8.	Derive $d2f/dx2 = (- f_{i+2} - 16f_{i+1} + 30fi - 16f_{i-1} - f_{i-2})/(12\Delta x^2)$		CO3	15
9.	Derive third-order one-sided approximations for the first derivative on a uniform grid.		CO5	15
10	Derive the momentum equation for a viscous flow. OR Explain advantage and disadvantage of CFD		CO6	15