	DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE			
	Supplementary Examination – Summer 2022			
	Course: B. Tech. Branch: Electrical Semester: IV			
	Subject Code & Name: BTEEC404(Numerical Methods and Programming)			
	Max Marks: 60Date:Duration: 3 Hr.			
	<ul> <li>Instructions to the Students: <ol> <li>All the questions are compulsory.</li> <li>The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.</li> <li>Use of non-programmable scientific calculators is allowed.</li> <li>Assume suitable data wherever necessary and mention it clearly.</li> </ol> </li> </ul>			
		(Level/CO)	Marks	
Q. 1	Solve Any Two of the following.			
A)	Write array handling functions and its example with explanation.	CO1	06	
<b>B</b> )	Explain basic mathematics expressions and examples of element to element division and power.	CO1	06	
C)	Write all output commands in MATLAB and write a program for plotting a circle.	CO1	06	
Q.2	Solve Any Two of the following.			
A)	Round off the number 75462 to four significant figures and then calculate absolute error and percentage error.	CO2	06	
<b>B</b> )	If $u = \frac{4x^2y^3}{z^4}$ and error in <i>x</i> , <i>y</i> , <i>z</i> be 0.001. Calculate the relative max error in <i>u</i> when $x = y = z = 1$	CO2	06	
C)	Using the series $sinx = \frac{x-x^3}{3!} + \frac{x^5}{5!} - \cdots$ Evaluate $sin25^0$ with an accuracy of 0.001.	CO2	06	
Q. 3	Solve Any Two of the following.			
A)	Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using i) Trapezoidal Rule ii) Simpson's one-third rule and compare with actual value.	CO3	06	
<b>B</b> )	Given the value of $\bar{x} = 2.5$ with an error $\Delta \bar{x} = 0.01$ . Estimate the resulting error in the function $f(x) = x^3$	CO3	06	
C)	Explain MATLAB functions for integration.	CO3	06	
Q.4	Solve Any Two of the following.			
A)	Using Bisection method find approximate roots of $x^3 + 2x - 1 = 0$ upto three iterations	CO4	06	

<b>B</b> )	Using LU decomposition method solve the equations	CO4	06
	3x + y + z = 4, x + 2y + 2z = 3, 2x + y + 3z = 4		
C)	Using Gauss Seidel method to solve equations	CO4	06
	27x + 6y - z = 85, x + y + 54z = 110, 6x + 15y + 2z = 72		
Q. 5	Solve Any Two of the following.		
A)	Explain lsqcurvefit function with example.	CO3	06
B)	Find y(2.2) using Euler's method from the equation $\frac{dy}{dx} = -xy^2$ with y(2) = 1	CO3	06
C)	Using Runge -Kutta second order method, find approximate value	CO3	06
	of y when $x = 1.1$ , given $\frac{dy}{dx} = 3x + y^2$ and $y = 1.2$ when $x = 1$		
	*** End ***		

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