School of Basic and Applied Sciences

Mathematics ETE - May 2023

Time: 3 H

1.

2.

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9.

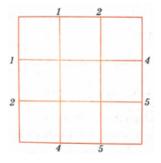
e : 3 Hours			,				Marks
		Your answer s	hould be specifi	d Numerical An ic to the question wherever neces	asked		
Round off the numbers 865250 and compute relative error.						K2 CO1	(2)
Find a root of the equation $x^3 - 2x - 5 = 0$ using Secant method correct to three decimal places upto 2 iteration.							(2)
Compute two iterations of the power method to approximate a largest eigenvector of						K3 CO3	(2)
$A = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$	-12 -5						
What do you mean by interpolation and also write Lagrrange's interpolation formula.						K3 CO4	(2)
Write Milne's predictor- corrector formula.						K4 CO5	(2)
Find the absolute error and relative error in $\sqrt{6}+\sqrt{7}+\sqrt{8}$ correct to 4 significant digits.						K3 CO1	(5)
	$M = \begin{bmatrix} 1\\ 2\\ 3 \end{bmatrix}$	$\begin{bmatrix} 2 & 3 \\ 2 & 1 & -1 \\ 3 & -1 & 1 \end{bmatrix}$				K4 CO2	(5)
						K6 CO6	(6)
Consider $\frac{\partial u}{\partial t}$	$\frac{\partial^2 u}{\partial x^2}$ in $0 < x < 0$	5, $t \ge 0$ given the	$\operatorname{hat} u(x,0) = 20,$	u(0,t)=0,u(5,t)	t) = 100.	N0 000	(0)
Compute <i>u</i> i	for the time step wi	th $h = 1$ by Cran	k –Nicolson metł	10d.			
Find the value of cos(1.74) from the following table :						K4 CO3	(8)
x	1.7	1.74	1.78	1.82	1.86		
Sin(x)	0.9916	0.9857	0.9781	0.9691	0.9584		

10.

$$\operatorname{Given}_{(a,b)} 2\frac{dy}{dx} = (1+x^2)y^2 : y(0) = 1, y(0.1) = 1.06, y(0.2) = 1.12, y(0.3) = 1.21.$$
evaluate

y(0.4) by Milne's predictor corrector method.

Solve the equation $u_{xx} + u_{yy} = 0$ for the square mesh with boundary values as shown in following figure 11. K5 CO5 (8)



ks : 50

K4 CO4 (8)