UNITED COLLEGE OF ENGINEERING & RESEARCH		Department of Computer Science & Engineering/ Information Technology	
First Sessional Examination	SEMESTER: Fourth	SECTION : A, B, B1, G, H	Date:- 17.05.21
TIME: 75 min.	SUBJECT: Mathematics IV	Paper code: KAS 402	MM. 30

READ ALL INSTRUCTIONS AND QUESTIONS VERY CAREFULLY

		SECTION A (Attempt ALL questions) Very short answer	**[10]**	**CO**	**Bloom's Taxonomy Level**
1	a	Solve partial differential equation $xp + yq = z$.	[1]	1	Remember (L1)
1	b	The complementary function of $(D^2 - 6DD' + 9D'^2)z = 0$ is……	[1]	1	Remember (L1)
1	c	Particular integral of $(D^2 - D'^2)z = cos(x + y)$ is……	[1]	1	Understand (L2)
1	d	Solve $(D + D')(D - D' + 2)z = 0$	[1]	1	Understand (L2)
1	e	Solve $\frac{1}{(D-2D')} e^{-2x-y}$	[1]	1	Remember (L1)
1	f	Classify the following partial differential equation $9u_{xx} - 6u_{xt} + u_{tt} = 0$.	[1]	2	Remember (L1)
1	g	Solution of the one dimensional wave equation $a^2 \frac{\partial^2 u}{\partial t^2} = \frac{\partial^2 u}{\partial x^2}$ is……	[1]	2	Remember (L1)
1	h	Solve the pde using method of separation of variables $u_x = u_y$	[1]	2	Understand (L2)
1	i	Classify the following partial differential equation $Z_{xx} + x^2 Z_{yy} = 0$.	[1]	2	Remember (L1)
1	j	Write the boundary and initial condition for vibration of string having length 2 released from rest having initial velocity y_0.	[1]	2	Remember (L1)
		SECTION B (Attempt Any two questions) Short answer	**[10]**		
2		Solve the following partial differential equation $(y^2 + z^2 - x^2)p - 2xyq + 2zx = 0$	[5]	1	Analyze (L4)
3		Solve the following partial differential equation $(D^3 - 3DD'^2 + 2D'^3)z = (x + 2y)^{1/2}$	[5]	1	Apply (L3)
4		Solve the following partial differential equation $x^2 \frac{\partial^2 z}{\partial x^2} - y^2 \frac{\partial^2 z}{\partial y^2} + x \frac{\partial z}{\partial x} - y \frac{\partial z}{\partial y} = x^2 y^4$	[5]	1	Remember (L1)
		SECTION C (Attempt ANY ONE question) Long answer	**[10]**		
5		Solve the following equation by method of separation of variables $\frac{\partial u}{\partial x} = 2\frac{\partial u}{\partial t} + u$ given that $u(x, 0) = 8e^{-3x}$.	[10]	2	Understand (L2)
6		A string is stretched and fastened to two points l apart. Motion is started by displacing the string into the form $y = kx(l - x)$ from which it is released at the time $t = 0$. Find the displacement of any point on the string at a distance of x from one end at time t.	[10]	2	Apply (L3)
		#### END OF PAPER ####			

Bloom's Taxonomy Level: 1- Remembering,2. Understanding, 3.Applying, 4.Analyzing, 5.Evaluating, 6. Creating

CO -Course Outcome