DEPARTMENT OF HUMANITIES & APPLIED SCIENCES

I Year II Semester

2FY2-01: ENGINEERING MATHEMATICSI - II

Note: *Each Assignment of 10 marks*
All questions carry equal marks

ASSIGNMENT-I

Q.No.	Question	BLT	CO
1	State cayley Hamilton theorem & verify it for the matrix & find A $A = \begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 3 & 1 & 1 \end{bmatrix}$	**5**	1
2	Check the consistency of system if possible, the find the solution. $x + y + z = 6$ $2x + y + 3z = 13$ $5x + 2y + z = 12$ $2x - 3y - 2z = -10$	**3**	1
3	Find eigen values & Eigen vectors $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$	**3**	1
4	Find the rank by normal form. $A = \begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$	**5**	1
5	Determine the rank of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 2 \\ 1 & 6 & 5 \end{bmatrix}$	**5**	1

*BLT: BLT shows the **Bloom's taxonomy** levels

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ASSIGNMENT-II

Q.No.	Question	BLT	CO
1	$(1+y^2)+(x-e^{-tan^{-1}}y)\ \frac{dy}{dx}=0$	**5**	2
2	$y(2xy+e^x)dx-e^x dy=0$	**1**	2
3	$(1+e^{x/y})\ dx+e^{x/y}\left(1-\frac{x}{y}\right)dy=0$	**3**	2
4	$p^2-7p+12=0$	**3**	2
5	$p=\tan(px-y$	**1**	2

ASSIGNMENT-III

Q.No.	Question	BLT	CO
1	$(D^2-4D+4)y=e^{2x}+\sin 2x$	1	3
2	$(D^2+2D+1)y=e^x+x^2-\sin x$	5	3
3	$D^2x+m^2y=0\ \&\ D^2y-m^2x=0, where\ D=\frac{d}{dt}$	5	3
4	$(1+x)^2\frac{d^2y}{dx^2}+(1+x)\frac{dy}{dx}+y=4\cos\log(1+x)$	1	3
5	Solve in series $x\frac{d^2y}{dx^2}+\frac{dy}{dx}+xy=0$	5	3

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ASSIGNMENT-IV

Q.No.	Question	BLT	CO
1	Solve $x(y^2-z^2)p-y(z^2+x^2)q=z(x^2+y^2)$	**3**	4
2	Solve $(y^2+z^2-x^2)p-2xyq=-2xz$	**5**	4
3	$z(xp-qy)=y^2-x^2$	**5**	4
4	Write the charpit's equations for the first order partial differential equation.	**3**	4
5	Find the partial differential equation from $Z=ax+by+ab$.	**5**	4

ASSIGNMENT-V

Q.No.	Question	BLT	CO
1	Use method of separation of variables to solve the following $\frac{\partial^2 z}{\partial x^2}=\frac{1}{k}\frac{\partial z}{\partial t}$ $where\ z=z(x,t) with\ condditions\ z(o,t)=z(1,t)=0\ for\ all\ t$	**1**	5
2	Solve by method of separation of variables $\frac{\partial^2 z}{\partial x^2}-2\frac{\partial z}{\partial x}+\frac{\partial z}{\partial y}=0$ $When\ z(0,y)=0$ & $\frac{\partial z}{\partial x}(0,y)=\bar{e}^{3y}$	**3**	5
3	Classify the following PDE as to type in second quadrant of $xy-plane.$ $\sqrt{x^2+y^2}\,U_{xx}+2(x-y)U_{xy}+\sqrt{x^2+y^2}\,U_{yy}$	**5**	5
4	Write the Heat, wave & Laplace equation.	**5**	5
5	Classify the Heat & wave equation of one dimensional & Laplace equation of two variables.	**5**	5

*BLT: BLT shows the **Bloom's taxonomy** levels