Model Question Paper-I with effect from 2022 (CBCS Scheme)

USN

First Semester B.E Degree Examination

Mathematics-I for Electrical Engineering Stream (BMATE101)

TIME: 03 Hours **Max. Marks: 100**

Note:

1. Answer any **FIVE** full questions, choosing atleast **ONE** question from each **MODULE**
2. VTU Formula Hand Book is Permitted
3. M: Marks, L: RBT levels, C: Course outcomes.

		Module - 1	M	L	C
Q.1	a	With usual notations prove that $\tan\phi = r\frac{d\theta}{dr}$.	6	L2	CO1
	b	Find the angle between the curves $r = a(1+\cos\theta)$ and $r = b(1-\cos\theta)$.	7	L2	CO1
	c	Show that the radius of curvature at any point of the cycloid $x = a(\theta+\sin\theta),\ y = a(1-\cos\theta)$ is $4a\cos\left(\frac{\theta}{2}\right)$.	7	L3	CO1
		OR			
Q.2	a	With usual notations prove that for the curve $r = f(\theta)$, $\frac{1}{p^2} = \frac{1}{r^2} + \frac{1}{r^4}\left(\frac{dr}{d\theta}\right)^2$.	7	L2	CO1
	b	Find the pedal equation of the curve $r^m = a^m(\cos m\theta + \sin m\theta)$.	8	L2	CO1
	c	Using modern mathematical tool write a program/code to plot the sine and cosine curve.	5	L3	CO5
		Module 2			
Q.3	a	Expand $e^{\sin x}$ by Maclaurin's series up to the term containing x^6.	6	L2	CO1
	b	If $u = f(2x-3y, 3y-4z, 4z-2x)$, show that $6\frac{\partial u}{\partial x} + 4\frac{\partial u}{\partial y} + 3\frac{\partial u}{\partial z} = 0$.	7	L2	CO1
	c	Show that the function $f(x,y) = x^3 + y^3 - 3xy + 1$ is minimum at point(1, 1).	7	L3	CO1
		OR			
Q.4	a	If $u = \tan^{-1}\left(\frac{y}{x}\right)$ then find the value of $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}$.	7	L2	CO1
	b	If $x+y+z = u, y+z = uv, z = uvw$ find $\frac{\partial(x,y,z)}{\partial(u,v,w)}$.	8	L3	CO1
	c	Using modern mathematical tool write a program/code to evaluate $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$.	5	L3	CO5
		Module – 3			

Q.5	**a**	Solve $x\dfrac{dy}{dx}+y=x^3y^6$.	**6**	**L2**	**CO2**
	b	Find the orthogonal trajectories of the family of curves $\dfrac{x^2}{a^2}+\dfrac{y^2}{b^2+\alpha}=1$ where α is a parameter.	**7**	**L3**	**CO2**
	c	Solve $xyp^2-\left(x^2+y^2\right)p+xy=0$	**7**	**L2**	**CO2**
		OR			
Q.6	**a**	Solve $\left(x^2+y^2+x\right)dx+xydy=0$	**6**	**L2**	**CO2**
	b	Show that a differential equation for the current i in an electrical circuit containing an inductance L and resistance R in series and acted on by an electromotive force $E\sin\omega t$, satisfies the equation $\dfrac{di}{dt}+Ri=E\sin\omega t$. Find the value of the current at any time t, if initially there is no current in the circuit.	**7**	**L3**	**CO2**
	c	Find the general and singular solution of the equation $\left(px-y\right)\left(py+x\right)=a^2p$ reducing into Clairaut's form, using the substitution $X=x^2, Y=y^2$..	**7**	**L2**	**CO2**
		Module – 4			
Q.7	**a**	Evaluate $\int_{-c}^{c}\int_{-b}^{b}\int_{-a}^{a}\left(x^2+y^2+z^2\right)dxdydz$.	**6**	**L2**	**CO3**
	b	Change the order of integration and evaluate $\int_{0}^{1}\int_{\sqrt{y}}^{y}dxdy$.	**7**	**L2**	**CO3**
	c	Prove that $\int_{0}^{\frac{\pi}{2}}\sqrt{\sin\theta}\,d\theta\times\int_{0}^{\frac{\pi}{2}}\dfrac{1}{\sqrt{\sin\theta}}\,d\theta=\pi$.	**7**	**L2**	**CO3**
		OR			
Q.8	**a**	Evaluate $\int_{0}^{1}\int_{0}^{\sqrt{1-y^2}}\left(x^2+y^2\right)dxdy$ by changing to polar coordinates.	**6**	**L2**	**CO3**
	b	Derive the relation between beta and gamma function.	**7**	**L2**	**CO3**
	c	Using double integration find the area between the parabolas $y^2=4ax,\quad x^2=4ay$.	**7**	**L3**	**CO3**
		Module – 5			
Q.9	**a**	Find the rank of the matrix $\begin{bmatrix}2 & 1 & -1 & 3\\ 1 & 2 & 4 & 3\\ 3 & 6 & 12 & 9\\ 3 & 3 & 3 & 6\end{bmatrix}$.	**6**	**L2**	**CO4**

	b	Solve the system of equations by Jordan method. $x+y+z=10,\ 2x-y+3z=19,\ x+2y+3z=22$.	7	L3	CO4
	c	Using Rayleigh's power method find the dominant eigenvalue and the corresponding eigenvector of $\begin{bmatrix} 4 & 1 & -1 \\ 2 & 3 & -1 \\ -2 & 1 & 5 \end{bmatrix}$ by taking $[1\ \ 0\ \ 0]^T$ as the initial eigenvector [carry out 6 iterations].	7	L3	CO4
OR					
Q.10	a	Find the rank of the matrix $\begin{bmatrix} 11 & 12 & 13 & 14 \\ 12 & 13 & 14 & 15 \\ 13 & 14 & 15 & 16 \\ 14 & 15 & 16 & 17 \end{bmatrix}$.	7	L2	CO4
	b	Solve the system of equations using Gauss-Seidel method by taking (0, 0, 0) as an initial approximate root $2x-3y+20z=25,\ 20x+y-2z=17,\ 3x+20y-z=-18$	8	L3	CO4
	c	Using modern mathematical tool write a program/code to test the consistency of the equations, x+2y-z=1, 2x+y+4z=2, 3x+3y+4z=1.	5	L3	CO5

Model Question Paper-II with effect from 2022 (CBCS Scheme)

USN

First Semester B.E Degree Examination

Mathematics-I for Electrical Engineering Stream (BMATE101)

TIME: 03 Hours **Max. Marks: 100**

Note:

1. Answer any **FIVE** full questions, choosing atleast **ONE** question from each **MODULE**
2. VTU Formula Hand Book is Permitted
3. M: Marks, L: RBT levels, C: Course outcomes.

		Module - 1	M	L	C
Q.1	a	Derive the radius of curvature in Cartesian form.	6	L2	CO1
	b	Find the angle between the curves $r = a\log\theta,\ r = \dfrac{\theta}{\log\theta}$.	7	L2	CO1
	c	Find the radius of curvature for the cardioids $r = a(1+\cos\theta)$.	7	L3	CO1
		OR			
Q.2	a	Show that the curves $r^n = a^n \cos n\theta \ and \ r^n = b^n \sin n\theta$ cut each other orthogonally.	7	L2	CO1
	b	Find the pedal equation of the curve $r^n = a^n \cos n\theta$.	8	L2	CO1
	c	Using modern mathematical tool write a program/code to plot the curve $r = 2\lvert cos2\theta\rvert$.	5	L3	CO5
		Module – 2			
Q.3	a	Expand $\sqrt{1+\sin 2x}$ by Maclaurin's series up to the term containing x^5.	6	L2	CO1
	b	If $u = \tan^{-1}\left(\dfrac{y}{x}\right)$, where $x = e^t - e^{-t},\ y = e^t + e^{-t}$ find the total derivative $\dfrac{du}{dt}$ using partial differentiation.	7	L2	CO1
	c	If $u = \dfrac{yz}{x},\ v = \dfrac{xz}{y},\ w = \dfrac{yx}{z}$, Show that $\dfrac{\partial(u,v,w)}{\partial(x,y,z)} = 4$	7	L3	CO1
		OR			
Q.4	a	Evaluate (i) $\lim_{x\to 0}(a^x + x)^{\frac{1}{x}}$ (ii) $\lim_{x\to\frac{\pi}{2}}(tanx)^{tan2x}$.	7	L2	CO1

	b	If $u = f\left(\frac{y-x}{xy}, \frac{z-x}{xz}\right)$ then find the value of $x^2\frac{\partial u}{\partial x}+y^2\frac{\partial u}{\partial y}+z^2\frac{\partial u}{\partial z}=0$.	8	L2	CO1
	c	Using modern mathematical tool write a program/code to show that $u_{xx}+u_{yy}=0 \ \ given\, u=e^x(x\, cosy - y\, siny)$.	5	L2	CO5
		Module – 3			
Q.5	a	Solve $\frac{dy}{dx}+y\tan x = y^3\sec x$.	6	L2	CO2
	b	When a resistance R Ohms connected in series with an inductance Henries with an emf of E volts, the current *i* amperes at time *t* is given by $L\frac{di}{dt}+Ri=E$. If $E = 100\ sint$ volts and $i = 0$ when $t = 0$, find *i* as a function of *t*.	7	L3	CO2
	c	Solve $p^3+2xp^2-y^2p^2-2xy^2p=0$.	7	L2	CO2
		OR			
Q.6	a	Solve $\left(x^2+y^3+6x\right)dx+xy^2dy=0$.	6	L2	CO2
	b	Prove that the system of parabolas $y^2=4a\left(x+a\right)$ is self-orthogonal.	7	L3	CO2
	c	Find the general and singular solution of $xp^2+xp-yp+1-y=0$.	7	L2	CO2
		Module – 4			
Q.7	a	Evaluate $\int_0^1\int_0^{\sqrt{1-x^2}}\int_0^{\sqrt{1-x^2-y^2}} xyz\, dxdydz$.	6	L2	CO3
	b	Evaluate $\int_{-2}^{2}\int_0^{\sqrt{4-x^2}}\left(2-x\right)dydx$.	7	L2	CO3
	c	Define beta and gamma functions and show that $\Gamma\left(\frac{1}{2}\right)=\sqrt{\pi}$.	7	L2	CO3
		OR			
Q.8	a	Evaluate by changing the order of integration $\int_0^a\int_0^{2\sqrt{ax}} x^2dydx,\ a>0$	6	L2	CO3

	b	Evaluate $\int_0^1 x^{\frac{3}{2}}(1-x)^{\frac{1}{2}}dx$ by expressing in terms of beta and gamma functions.	7	L2	CO3
	c	Find the volume bounded by the cylinder $x^2+y^2=4$ and the planes y + z = 4 and z = 0.	7	L3	CO3
		Module – 5			
Q.9	a	Find the rank of the matrix $\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$.	6	L2	CO4
	b	Solve the system of equations by Gauss elimination method $3x+y+2z=3,\ 2x-3y-z=-3,\ x+2y+z=4$.	7	L3	CO4
	c	Using the Gauss-Seidel iteration method, solve the equations $83x+11y-4z=9,\ 3x+8y+29z=71,$ $7x+52y+13z=104$ Carry out four iterations, starting with the initial approximations (0, 0, 0).	7	L3	CO4
		OR			
Q.10	a	Test for consistency and solve $5x+3y+7z=4,\ 3x+26y+2z=9,\ 7x+2y+10z=5$.	7	L2	CO4
	b	Using Gauss Jordan method, solve $x+y+z=11,\ 3x-y+2z=12,\ 2x+y-z=3$.	8	L3	CO4
	c	Using modern mathematical tool write a program/code to find the largest eigen value of $A=\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$ by power method.	5	L3	CO5

Model Question Paper-I with effect from 2022 (CBCS Scheme)

USN | | | | | | | | | | |

First Semester B.E Degree Examination

Mathematics-I for Electrical and Electronics Engineering Stream (22MATE11)

TIME: 03 Hours **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE.**

		Module -1	**Marks**
Q.01	a	With usual notations prove that $\tan\varphi = r\frac{d\theta}{dr}$	**06**
	b	Find the angle between the curves $r = a(1+\cos\theta)$ *and* $r = b(1-\cos\theta)$	**07**
	c	Show that the radius of curvature at any point of the cycloid $x = a(\theta + \sin\theta),\ y = a(1-\cos\theta)$ *is* $4a\cos\left(\frac{\theta}{2}\right)$	**07**
		OR	
Q.02	a	If p be the perpendicular from the pole on the tangent, then show that $\frac{1}{p^2} = \frac{1}{r^2} + \frac{1}{r^4}\left(\frac{dr}{d\theta}\right)^2$	**06**
	b	Find the pedal equation of the curve $r^m = a^m(\cos m\theta + \sin m\theta)$	**07**
	c	Find the radius of curvature of the curve $x^3 + y^3 = 3xy$ at $\left(\frac{3}{2},\frac{3}{2}\right)$	**07**
		Module-2	
Q. 03	a	Expand e^{sinx} by Maclaurin's series up to the term containing x^4	**06**
	b	If $u = f(2x-3y, 3y-4z, 4z-2x)$, show that $6u_x + 4u_y + 3u_z = 0$	**07**
	c	Show that the function $f(x,y) = x^3 + y^3 - 3xy + 1$ is minimum at the point (1, 1)	**07**
		OR	
Q.04	a	Evaluate (i) $\lim\limits_{x\to 0}\left(\frac{tanx}{x}\right)^{\frac{1}{x^2}}$ (ii) $\lim\limits_{x\to 0}(\cos x)^{\frac{1}{x^2}}$	**06**
	b	If $u = tan^{-1}\left({}^{y}/{}_{x}\right)$ then find the value of $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}$	**07**
	c	If $x + y + z = u,\ y + z = uv\ and\ z = uvw,\ find\ \frac{\partial(x,y,z)}{\partial(u,v,w)}$	**07**
		Module-3	
Q. 05	a	Solve $x\frac{dy}{dx} + y = x^3y^6$	**06**
	b	Find the orthogonal trajectories of the family of curves $\frac{x^2}{a^2} + \frac{y^2}{b^2+\alpha} = 1$, where α is a parameter	**07**
	c	Solve $xyp^2 - (x^2+y^2)p + xy = 0$	**07**
		OR	
Q. 06	a	Solve $(x^2 + y^2 + x)dx + xydy = 0$	**06**

	b	Show that a differential equation for the current i in an electrical circuit containing an inductance L and resistance R in series and acted on by an electromotive force $Esin\omega t$, satisfies the equation $\frac{di}{dt} + Ri = Esin\omega t$. Find the value of the current at any time t, if initially there is no current in the circuit.	**07**
	c	Find the general solution of the equation $(px - y)(py + x) = a^2 p$ by reducing into Clairaut's form, taking the substitution X = x^2 ,$Y = y^2$	**07**
Module-4			
Q. 07	a	Evaluate $\int_{-c}^{c}\int_{-b}^{b}\int_{-a}^{a}(x^2 + y^2 + z^2)dxdydz$	**06**
	b	Change the order of integration and evaluate $\int_0^1\int_{\sqrt{y}}^{y} dxdy$	**07**
	c	Prove that $\int_0^{\frac{\pi}{2}}\sqrt{\sin\theta}\, d\theta \times \int_0^{\frac{\pi}{2}}\frac{d\theta}{\sqrt{sin\theta}} = \pi$	**07**
OR			
Q. 08	a	Evaluate $\int_0^1\int_0^{\sqrt{1-y^2}}(x^2 + y^2)dxdy$ by changing to polar coordinates.	**06**
	b	Derive the relation between beta and gamma function	**07**
	c	Using double integration find the area between the parabolas $y^2 = 4ax$ and $x^2 = 4ay$	**07**
Module-5			
Q. 09	a	Find the rank of the matrix $\begin{bmatrix} 2 & 1 & -1 & 3 \\ 1 & 2 & 4 & 3 \\ 3 & 6 & 12 & 9 \\ 3 & 3 & 3 & 6 \end{bmatrix}$	**06**
	b	Solve the system of equations by Jordan method $x + y + z = 10$ $2x - y + 3z = 19$ $x + 2y + 3z = 22$	**07**
	c	Using Rayleigh's power method find the dominant eigenvalue and the corresponding eigenvector of $\begin{bmatrix} 4 & 1 & -1 \\ 2 & 3 & -1 \\ -2 & 1 & 5 \end{bmatrix}$ by taking $[1 \quad 0 \quad 0]^T$ as initial eigenvector [carry out 6 iterations]	**07**
OR			
Q. 10	a	Find the rank of the matrix $\begin{bmatrix} 11 & 12 & 13 & 14 \\ 12 & 13 & 14 & 15 \\ 13 & 14 & 15 & 16 \\ 14 & 15 & 16 & 17 \end{bmatrix}$	06
	b	For what values λ and μ the system of equations $x + y + z = 6;$ $x + 2y + 3z = 10; x + 2y + \lambda z = \mu$ has (i) no solution (ii) a unique solution and (iii) infinite number of solutions	**07**

	c	Solve the system of equations $2x - 3y + 20z = 25$ $20x + y - 2z = 17$ $3x + 20y - z = -18$ Using the Gauss-Seidel method, taking (0, 0, 0) as an initial approximate. (Carry out 4 iterations).	**07**

Table showing the Bloom's Taxonomy Level, Course Outcome and Program Outcome

Question		Bloom's Taxonomy Level attached	Course Outcome	Program Outcome
Q.1	(a)	L1	CO 01	PO 01
	(b)	L2	CO 01	PO 01
	(c)	L3	CO 01	PO 02
Q.2	(a)	L1	CO 01	PO 01
	(b)	L2	CO 01	PO 01
	(c)	L3	CO 01	PO 02
Q.3	(a)	L2	CO 02	PO 01
	(b)	L2	CO 02	PO 01
	(c)	L3	CO 02	PO 03
Q.4	(a)	L2	CO 02	PO 01
	(b)	L2	CO 02	PO 01
	(c)	L3	CO 02	PO 02
Q.5	(a)	L2	CO 03	PO 02
	(b)	L3	CO 03	PO 03
	(c)	L2	CO 03	PO 01
Q.6	(a)	L2	CO 03	PO 02
	(b)	L3	CO 03	PO 03
	(c)	L2	CO 03	PO 01
Q.7	(a)	L2	CO 04	PO 01
	(b)	L2	CO 04	PO 01
	(c)	L2	CO 04	PO 01
Q.8	(a)	L2	CO 04	PO 01
	(b)	L2	CO 04	PO 01
	(c)	L2	CO 04	PO 01
Q.9	(a)	L2	CO 05	PO 01
	(b)	L3	CO 05	PO 01
	(c)	L3	CO 05	PO 01
Q.10	(a)	L2	CO 05	PO 01
	(b)	L3	CO 05	PO 01
	(c)	L3	CO 05	PO 01

Bloom's Taxonomy Levels			
	Lower order thinking skills		
	Remembering (Knowledge): L_1	Understanding (Comprehension): L_2	Applying (Application): L_3
	Higher-order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6

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First Semester B.E Degree Examination

Mathematics-I for Electrical & Electronics Engineering Stream (22MATE11)

TIME: 03 Hours **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE.**

		Module -1	**Marks**
Q.01	a	With usual notations prove that $\rho = \frac{(1+y_1^2)^{3/2}}{y_2}$	06
	b	Find the angle between the curves $r = alog\theta$ and $r = \frac{a}{log\theta}$	07
	c	Find the radius of curvature for the cardioids $r = a(1 + \cos\theta)$	07
		OR	
Q.02	a	Show that the curves $r^n = a^n \cos n\theta$ and $r^n = b^n \sin n\theta$ cut each other orthogonally.	06
	b	Find the pedal equation of the curve $r^n = a^n \cos n\theta$	07
	c	Show that the radius of curvature at $(a, 0)$ on the curve $y^2 = \frac{a^2(a-x)}{x}$ is $\frac{a}{2}$	07
		Module-2	
Q. 03	a	Expand $\sqrt{1 + sin2x}$ by Maclaurin's series upto the term containing x^5	06
	b	If $u = tan^{-1}\left(\frac{y}{x}\right)$, where $x = e^t - e^{-t}$ and $y = e^t + e^{-t}$, find the total derivative $\frac{du}{dt}$ using partial differentiation	07
	c	If $u = \frac{yz}{x}$, $v = \frac{zx}{y}$, $w = \frac{xy}{z}$, show that $\frac{\partial(u,v,w)}{\partial(x.y,z)} = 4$	07
		OR	
Q.04	a	Evaluate (i) $\lim_{x\to 0}(a^x + x)^{\frac{1}{x}}$ (ii) $\lim_{x\to\frac{\pi}{2}}(\tan x)^{\tan 2x}$	06
	b	If $u = f\left(\frac{y-x}{xy}, \frac{z-x}{xz}\right)$, show that $x^2\frac{\partial u}{\partial x} + y^2\frac{\partial u}{\partial y} + z^2\frac{\partial u}{\partial z} = 0$	07
	c	Find the maximum and minimum value of $x^3 + y^3 - 3axy$	07
		Module-3	
Q. 05	a	Solve $\frac{dy}{dx} + ytanx = y^3secx$	06
	b	When a resistance R Ohms connected in series with an inductance L henries with an emf of E volts, the current i amperes at time t is given by $L\frac{di}{dt} + Ri = E$. If $E = 100\ sint$ volts and i = 0 when t = 0, find i as a function of t.	07
	c	Solve $p^3 + 2xp^2 - y^2p^2 - 2xy^2p = 0$	07
		OR	

Q. 06	a	Solve $(x^2 + y^3 + 6x)dx + y^2 x dy = 0$	06
	b	Prove that the system of parabolas $y^2 = 4a(x+a)$ is self orthogonal	07
	c	Find the general and singular solution of $$xp^2 + xp - yp + 1 - y = 0$$	07
Module-4			
Q. 07	a	Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} xyz\,dz\,dy\,dx$	06
	b	Evaluate $\int_{-2}^{2} \int_0^{\sqrt{4-x^2}} (2-x)\,dy\,dx$	07
	c	Define beta and gamma functions and show that $\Gamma\left(\frac{1}{2}\right) = \sqrt{\pi}$	07
OR			
Q. 08	a	Evaluate by changing the order of integration $\int_0^a \int_0^{2\sqrt{ax}} x^2\,dy\,dx, a > 0$	06
	b	Evaluate $\int_0^1 x^{\frac{3}{2}}(1-x)^{\frac{1}{2}}dx,$ by expressing in terms of beta and gamma functions	07
	c	Find the volume bounded by the cylinder $x^2 + y^2 = 4$ and the planes $y + z = 4$ and $z = 0$.	07
Module-5			
Q. 09	a	Find the rank of the matrix $\begin{bmatrix} 0 & 1 & -3 & -1 \\ 1 & 0 & 1 & 1 \\ 3 & 1 & 0 & 2 \\ 1 & 1 & -2 & 0 \end{bmatrix}$	06
	b	Solve the system of equations by Gauss elimination method $$3x + y + 2z = 3,$$ $$2x - 3y - z = -3,$$ $$x + 2y + z = 4$$	07
	c	Using the Gauss-Seidel iteration method, solve the equations $$83x + 11y - 4z = 9$$ $$3x + 8y + 29z = 71$$ $$7x + 52y + 13z = 104$$ Carry out four iterations, starting with the initial approximations (0, 0, 0)	07
OR			
Q. 10	a	Test for consistency and solve $5x + 3y + 7z = 4$, $3x + 26y + 2z = 9$, $7x + 2y + 10z = 5$	06
	b	Using Gauss Jordan method, solve $$x + y + z = 11$$ $$3x - y + 2z = 12$$ $$2x + y - z = 3$$	07

	c	Find the largest eigenvalue and the corresponding eigenvector of $$\begin{bmatrix} -2 & 0 & -1 \\ 1 & -1 & 1 \\ 2 & 2 & 0 \end{bmatrix}$$ with the initial approximate eigenvector $[1 \quad 1 \quad 1]^T$	07

Table showing the Bloom's Taxonomy Level, Course Outcome and Program Outcome

Question		Bloom's Taxonomy Level attached	Course Outcome	Program Outcome
Q.1	(a)	L1	CO 01	PO 01
	(b)	L2	CO 01	PO 01
	(c)	L3	CO 01	PO 02
Q.2	(a)	L1	CO 01	PO 01
	(b)	L2	CO 01	PO 01
	(c)	L3	CO 01	PO 02
Q.3	(a)	L2	CO 02	PO 01
	(b)	L2	CO 02	PO 01
	(c)	L3	CO 02	PO 02
Q.4	(a)	L2	CO 02	PO 01
	(b)	L2	CO 02	PO 01
	(c)	L3	CO 02	PO 03
Q.5	(a)	L2	CO 03	PO 02
	(b)	L3	CO 03	PO 03
	(c)	L2	CO 03	PO 02
Q.6	(a)	L2	CO 03	PO 02
	(b)	L3	CO 03	PO 03
	(c)	L2	CO 03	PO 02
Q.7	(a)	L2	CO 04	PO 02
	(b)	L2	CO 04	PO 02
	(c)	L2	CO 04	PO 01
Q.8	(a)	L2	CO 04	PO 01
	(b)	L2	CO 04	PO 02
	(c)	L2	CO 04	PO 02
Q.9	(a)	L2	CO 05	PO 01
	(b)	L3	CO 05	PO 01
	(c)	L3	CO 05	PO 02
Q.10	(a)	L2	CO 05	PO 01
	(b)	L3	CO 05	PO 01
	(c)	L3	CO 05	PO 02

Bloom's Taxonomy Levels	**Lower order thinking skills**		
	Remembering(knowledge): L_1	Understanding Comprehension): L_2	Applying (Application): L_3
	Higher order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6