

# **INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous)

Dundigal, Hyderabad -500 043

## **FRESHMAN ENGINEERING**

## ASSIGNMENT

Course Name	:	MATHEMATICS-II
Course Code	:	A30006
Class	:	II B. Tech I Semester
Branch	:	CIVIL
Year	:	2016 - 2017
<b>Course Coordinator</b>	:	Ms .K. Rama Jyothi, Assistant Professor, Freshman Department
Course Faculty	:	Ms. K. Rama Jyothi, Assistant Professor, Freshman Department

#### **OBJECTIVES:**

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

## ASSIGNMENT – I & II

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome		
	ASSIGNMENT-I (SHORT ANSWER TYPE QUESTIONS) UNIT – I				
1	Define divergence?	Remember	1		
2	Define curl?	Remember	1		
3	Evaluate the angle between the normal to the surface $xy=z^2$ at the points (4,1,2) and (3,3,-3)?	Understand	1		
4	Find a unit normal vector to the given surface $x^2y+2xz=4$ at the point (2,-2,3)?	Apply	1		
5	If $\bar{a}$ is a vector then prove that grad $(\bar{a}, \bar{r}) = \bar{a}$ ?	Understand	1		
6	Prove that F=yzi+zxj+xyk is irrotational?	Analyze	1		
7	Show that $(x+3y)i+(y-2z)j+(x-2z)k$ is solenoidal?	Understand	1		
8	Define line integral?	Remember	2		
9	Define volume integral?	Remember	2		
10	State Gauss divergence theorem?	Understand	3		
	(LONG ANSWER QUESTIONS) UNIT-I				
1	Prove that $\nabla f(\mathbf{r}) = \frac{\overline{\mathbf{r}}}{\mathbf{r}} \cdot \mathbf{f}^{1}(\mathbf{r})$	Analyze	1		
2	Prove that $\operatorname{div}(r^n, \overline{r}) = (n+3)r^n$ . Hence Show that $\frac{\overline{r}}{r^3}$ is solenoidal Vector	Analyze	1		
3	If $\overline{F} = (5xy - 6x^2)\overline{i} + (2y - 4x)\overline{j}$ evaluate $\int_{C} \overline{F} \cdot d\overline{r}$ along the curve C in xy plane $y = x^3$	Understand	2		

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
	from (1,1) to (2,8).		
4	Evaluate $\iint_{S} \overline{A}.\overline{n}ds$ where $\overline{A} = Z\overline{i} + x\overline{j} - 3y^2z\overline{k}$ and S is the surface of the cylinder $x^2+y^2=16$ included in the first octant between Z=0 and Z=5	Understand	2
5	Evaluate $\iint_{S} \overline{F}.d\overline{s}$ if $f = yzi + 2y^2 j + xz^2 k$ and S is the Surface of the Cylinder $x^2+y^2=9$ contained in the first Octant between the planes z=0 and z=2.	Understand	2
6	Verify gauss divergence theorem for the vector point function $F=(x^3-yz)i-2yxj+2zk$ over the cube bounded by $x=y=z=0$ and $x=y=z=a$	Apply	3
7	Verify divergence theorem for $2x^2yi - y^2j + 4xz^2k$ taken over the region of first octant of the cylinder $y^2 + z^2 = 9$ and $x = 2$	Apply	3
8	Applying Green's theorem evaluate $\int (y - \sin x)dx + \cos x  dy$ where C is the plane $\Delta^{le}$ enclosed by $y = 0$ , $y = \frac{2x}{\pi}$ , and $x = \frac{\pi}{2}$ Verify Green's Theorem in the plane for $\int (x^2 - xy^3)dx + (y^2 - 2xy)dy$ where C is a	Apply	3
9	Verify Green's Theorem in the plane for $\int_{c} (x^2 - xy^3) dx + (y^2 - 2xy) dy$ where C is a square with vertices (0,0),(2,0),)(2,2),(0,2)	Apply	3
10	Verify Stokes theorem for $f = (x^2 - y^2)i + 2xyj$ over the box bounded by the planes x=0,x=a,y=0,y=b,z=c	Apply	3
	(SHORT ANSWER TYPE QUESTIONS) UNIT-II		
1	Define Euler's formulae	Remember	5
2	Write Dirichlet's conditions	Understand	4
3	If $f(x) = x^2 - 2$ in (-2,2) then find $b_2$	Apply	5
4	If $f(x) = x^2$ in (-2,2) then $a_0$	Apply	5
5	If $f(x) = \sin^3 x$ in $(-\pi, \pi)$ then find $a_n$	Apply	5
6	If $f(x) = x^4$ in (-1,1) then find $b_n$	Apply	5
7	Write about Fourier sine and cosine integral	Understand	6
8	Find the finite Fourier cosine transform of $f(x)=1$ in $0 < x < \pi$	Apply	6
9	Find the inverse finite sine transform $f(x)$ if $F_s(n) = \frac{1 - cosn\pi}{n^2 \pi^2}$	Apply	6
10	Write the properties of Fourier transform (LONG ANSWER QUESTIONS)	Understand	6
1	UNIT-II Obtain the Fourier series expansion of f(x) given that $f(x) = (\pi - x)^2$ in $0 < x < 2\pi$ and deduce the value of $\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \dots = \frac{\pi^2}{6}$ .	Understand	5
2	Find the Fourier Series to represent the function $f(x) =  \sin x $ in $-\pi < x < \pi$ .	Apply	5
3	Find the Fourier series to represent $f(x) = x^2$ in $(0, 2\pi)$ .	Apply	5
4	Expand the function $f(x) = x^2$ as a Fourier series in $(-\pi, \pi)$ .	Understand	5

S. No	QUESTION	Blooms Taxonomy Level	Course Outcome
	$f(x) = \begin{cases} 0 \text{ for } -\pi \le x \le 0\\ x^2 \text{ for } 0 \le x < \pi \end{cases}$		
6	Expand f(x)=cosx for $0 < x < \pi$ in half range sine series	Understand	5
7	Using Fourier integral show that $e^{-x}cosx = \frac{2}{\pi}\int_0^\infty \frac{\lambda^2 + 2}{\lambda^4 + 4}cos\lambda x dx$	Understand	6
8	Find the Fourier transform of $f(x) = \begin{cases} a^2 - x^2 & \text{if }  x  < a \\ 0 & \text{if }  x  > a \end{cases}$ Hence show that $\int_{a}^{\infty} \frac{\sin x - \cos x}{x^3} dx = \frac{\pi}{4}$	Apply	6
9	Find the Fourier sine transform for the function f(x) given by $f(x) = \begin{cases} \sin x, & 0 < x < a \\ 0 & x \ge a \end{cases}$	Apply	6
10	Find the inverse Fourier transform $f(x)$ of $F(p) = e^{- p y}$	Apply	6
	(SHORT ANSWER TYPE QUESTIONS)		
1	UNIT-III Define Interpolation and extrapolation	Remember	7
2	Explain forward difference interpolation	Understand	7
3	Construct a forward difference table for $f(x)=x^3+5x-7$ if	Analyze	9
4	x=-1,0,1,2,3,4,5 Evaluate $\Delta \log f(x)$	Understand	9
5	Find the missing term in the following table $X$ 01234Y13981	Apply	8
	(LONG ANSWER QUESTIONS)		
1	UNIT-III         x       20       25       30       35       40       45         y       354       332       291       260       231       204       Find f(22), from the following data using Newton's Backward formula.	Apply	8
2	Given sin 45=0.7071,sin 50=0.7660,sin 55=0.8192 and sin 60=0.8660 find sin 52 using newton's formula	Apply	8
3	The population of a town in the decimal census was given below. Estimate the population for the year 1895Year (x)18911901191119211931Population (y)46668193101	Understand	8
4	Find by Gauss's backward interpolating formula the value of y at $x = 1936$ using the following tableX190119111921193119411951Y121520273952	Apply	8
5	Find f (1.6) using Lagrange's formula from the following table.x1.22.02.53.0	Apply	8
	f(x) 1.36 0.58 0.34 0.20		

UNIT-IIIUNIT-III1What is the principle of method of least squareUnderstand92Define curve fittingRemember83Derive the normal equations for second degree parabolaUnderstand85Write the normal equations for second degree parabolaUnderstand87Charles the normal equations to fit the curve $y = acb^{X_X}$ Understand8UNIT-III1A curve passes through the points (0, 18),(1, 10), (3, -18) and (6, 90). Find the slopeApply72 $\overline{x}$ $1$ $2$ $3$ $4$ $5$ 8y14 $27$ $40$ $55$ $68$ 3 $\overline{Fit}$ a curve $y=a+bx+cx^2$ from the following dataUnderstand73 $\overline{\frac{X}{Y}}$ $1$ $2$ $3$ $4$ 4 $\overline{\frac{X}{Y}}$ $0$ $0.5$ $1$ $1.5$ $2$ 2.5 $\overline{\frac{X}{Y}}$ $0$ $0.5$ $1$ $1.5$ $2$ $2.5$ $\overline{\frac{X}{Y}}$ $0$ $0$ $0.5$ $1$ $1.5$ $2$ $2.5$ $\overline{\frac{X}{Y}}$ $0$ $0.5$ $1$ $1.5$ $2$ $2.5$ $\overline{\frac{X}{Y}}$ $0$ $0.5$ $1$ $1.5$ $2$ $2.5$ </th <th></th> <th>ASSIGNMENT – II (SHORT ANSWER TYPE QUESTIONS)</th> <th></th> <th></th>		ASSIGNMENT – II (SHORT ANSWER TYPE QUESTIONS)		
2       Define curve fitting       Remember       8         3       Derive the normal equations for straight line       Understand       8         4       Derive the normal equations for second degree parabola       Understand       8         5       Write the normal equations for second degree parabola       Understand       8         7       Understand       8       1       Understand       8         7       Image: Constant of the curve of the points (0, 18), (1, 10), (3, -18) and (6, 90). Find the slope of the curve at x = 2.       A curve passes through the points (0, 18), (1, 10), (3, -18) and (6, 90). Find the slope of the curve at x = 2.       7       Image: Constant of the curve at x = 2.       7         2       Image: Constant of the curve at x = 2.       Telestant of the straight line that best fits the following data:       Apply       7         2       Image: Constant of the curve straight line that best fits the following data       Understand       7         3       Image: Constant of the form straight line that best fits the following data:       Understand       7         4       Image: Constant of the form y=ab* for the following data by the method of least squares find the constants a and b such that y=ae the fits the following data:       7         5       Image: Constant of the form y=ab* for the following data by the method of least squares.       Image: Constrand the point of the form				
3       Derive the normal equations for straight line       Understand       8         4       Derive the normal equations for second degree parabola       Understand       8         5       Write the normal equations to fit the curve $y = a^{bx}$ Understand       8         (LONG ANSWER QUESTIONS) UNTT-III         A curve passes through the points (0, 18),(1,10), (3, -18) and (6,90). Find the slope of the curve at $x = 2$ .       A       5         8       by the method of least square, find the straight line that best fits the following data:       Apply       7         2 $\frac{x}{1}$ $\frac{2}{2}$ $\frac{3}{4}$ $\frac{4}{5}$ $\frac{5}{68}$ 3       Fit a curve $y=a+b+tex^2$ from the following data       7 $\frac{x}{1}$ $\frac{2}{2}$ $\frac{3}{4}$ $\frac{5}{2}$ $\frac{2}{2.5}$ Understand       7 $\frac{x}{0}$ $0.5$ $1$ $1.5$ $2$ $2.5$ $\frac{1}{y}$ $0.0.5$ $1$ $1.5$ $2$ $2.5$ $\frac{x}{0}$ $0.5$ $1$ $1.5$ $2$ $2.5$ $2.5$ $2.5$ $2.5$ $2.5$ $2.5$ $2.5$ $2.5$				
4       Derive the normal equations for second degree parabola       Understand       8         5       Write the normal equations to fit the curve $y - ac^{bX}$ Understand       8         (LONG ANSWER QUESTIONS) UNIT-III         1       A curve passes through the points (0, 18),(1,10), (3, -18) and (6,90). Find the slope of the curve at $x = 2$ .       A pply       7         2 $\overline{X}$ $1$ $2$ $3$ $4$ $5$ 3 $\overline{Y}$ $1$ $2$ $3$ $4$ $5$ 4 $\overline{Y}$ $6$ $11$ $18$ $27$ $2.5$ $\overline{Y}$ $6$ $11$ $18$ $27$ $2.5$ $7$ $7$ $0$ $0.5$ $1$ $1.5$ $2$ $2.5$ $\overline{Y}$ $0.10$ $0.45$ $2.15$ $9.15$ $40.35$ $180.75$ $7$ $\overline{Y}$ $6$ $11$ $15$ $2$ $2.5$ $7$ $7$ $\overline{Y}$ $6$ $11$ $15$ $2.15$ $9.15$ $40.35$ $180.75$ $7$ $\overline{Y}$ $6$ $11.5$ $2.15$		Ŭ		
5       Write the normal equations to fit the curve $y = ae^{bx}$ Understand       8         ICONG ANSWER QUESTIONS) UNIT-III         1       A curve passes through the points (0, 18),(1,10), (3,-18) and (6,90). Find the slope of the curve at $x = 2$ .       Apply       7         2 $\overline{x}$ 1       2       3       4       5 $\overline{y}$ 14       2       3       4       5 $\overline{y}$ 14       2       3       4       7         2 $\overline{x}$ 1       2       3       4       7         3 $\overline{Tx}$ 1       2       3       4       7         4 $\overline{Tx}$ 1       1       18       27       7         4 $\overline{Tx}$ 0       0.5       1       1.5       2       2.5 $\overline{y}$ 0.10       0.5       1       1.5       2.5       1.60.75       7         5 $\overline{x}$ 2       3       4       5       6       7       9         60/bining data:       0       0.5       1.5       1.52       1.52       1.5       1.5       1.5       1.5       1.5       1.5				
(LONG ANSWER QUESTIONS) UNIT-III           1         A curve passes through the points (0, 18),(1.10), (3, -18) and (6,90). Find the slope of the curve at x = 2.         Apply         7           B y the method of least square, find the straight line that best fits the following data:         Apply         7           2 $\frac{x}{y}$ $1$ $2$ $3$ $4$ $5$ 3 $\frac{X}{X}$ $1$ $2$ $3$ $4$ $5$ 3 $\frac{X}{X}$ $1$ $2$ $3$ $4$ $7$ 4 $\frac{X}{Y}$ $6$ $11$ $18$ $27$ $2.5$ $\frac{Y}{10}$ $0.5$ $1$ $1.5$ $2$ $2.5$ $7$ $\frac{Y}{100}$ $0.5$ $1$ $1.5$ $2$ $2.5$ $7$ $\frac{Y}{100}$ $0.45$ $2.15$ $9.15$ $40.35$ $180.75$ $7$ $\frac{Y}{9}$ $8.3$ $15.4$ $33.1$ $65.2$ $127.4$ $100$ <b>Write about bisection method</b> Understand $10$ $100$ <				
A curve passes through the points (0, 18),(1,10), (3,-18) and (6,90). Find the slope of the curve at x = 2.       Apply       7         By the method of least square, find the straight line that best fits the following data:       Apply       7         2 $\overline{x}$ $\overline{1}$ $\overline{2}$ $\overline{3}$ $\overline{4}$ $\overline{5}$ 68       7         3 $\overline{X}$ $\overline{1}$ $\overline{2}$ $\overline{3}$ $\overline{4}$ $\overline{4}$ 7       7         4 $\overline{Y}$ $\overline{6}$ $\overline{6}$ $\overline{11}$ $\overline{18}$ $\overline{27}$ Understand       7         5 $\overline{Y}$ $\overline{6}$ $\overline{6}$ $\overline{11}$ $\overline{18}$ $\overline{27}$ 2.5 $\overline{Y}$ $\overline{9}$ $\overline{10}$ $\overline{9}$ $\overline{15}$ $\overline{10}$ $\overline{15}$ $\overline{2}$ $\overline{2.5}$ $\overline{100}$ $\overline{10}$ $\overline{15}$ $\overline{2.15}$ $\overline{9.15}$ $\overline{40.35}$ $\overline{180.75}$ $\overline{100}$ $\overline{10}$ $\overline$			Understand	0
1       of the curve at x = 2.       By the method of least square, find the straight line that best fits the following data:       Apply       7         2 $\overline{x}$ 1       2       3       4       5         3 $\overline{Y}$ 14       27       40       55       68         3 $\overline{Y}$ 6       11       18       27       18       7         4 $\overline{Y}$ 6       11       18       27       180.75       7       7         4 $\overline{X}$ 0       0.5       1       1.5       2.5       2.5       7       7         4 $\overline{X}$ 0       0.5       1       1.5       2.5       180.75       7       7         5 $\overline{X}$ 2       3       4       5       6       7       9       0.10       0.45       2.15       9.15       40.35       180.75       7          0.10       0.45       2.15       9.15       40.35       180.75       7       9       9       9       9       10       10       10       10       10       10       10       10       10       10       10       10				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1		Apply	1
y       14       27       40       55       68         3       Fit a curve y=a+bx+cx <sup>2</sup> from the following data Y       6       11       18       27         4       Y       6       11       18       27         4       X       0       0.5       1       1.5       2       2.5         y       0.10       0.45       2.15       9.15       40.35       180.75       No       No         5       X       2       3       4       5       6       9       9       0.10       0.45       2.15       9.15       40.35       180.75       No       No       7         6       y       0.10       0.45       2.15       9.15       40.35       180.75       No       No       7         5       X       2       3       4       5       6       9       9       8.3       15.4       33.1       65.2       127.4       No       No       10         1       Define algebraic and transcendental equation and give example       Remember       10       10       10       10       10       10       10       10       10       10       10       10 <t< td=""><td></td><td>By the method of least square, find the straight line that best fits the following data:</td><td>Apply</td><td>7</td></t<>		By the method of least square, find the straight line that best fits the following data:	Apply	7
Image: 1 model in the square of the square square of the square of the square of the square square of the square of the square of the square square of the square square of the square of the square square of the square square of the square of the square square of the square square of the square of the square square square square square	2	x 1 2 3 4 5		
3 $\overline{X}$ 1       2       3       4         Y       6       11       18       27         using the method of least squares find the constants a and b such that y=ae <sup>bx</sup> fits the following data:       Apply       7         4 $\overline{X}$ 0       0.5       1       1.5       2       2.5         y       0.10       0.45       2.15       9.15       40.35       180.75       7         Obtain a relation of the form y=ab <sup>3</sup> for the following data by the method of least squares.       Understand       7         5 $\overline{X}$ 2       3       4       5       6         y       8.3       15.4       33.1       65.2       127.4         UNIT-IV         UNIT-IV         UNIT-IV         UNIT-IV         UNIT-IV         UNIT-IV         UNIT-IV         UNIT-IV         UNIT-IV         Understand       10         3       Write about false position method       Understand       10         Getine algebraic and transcendental equation and give example       Remember </td <td></td> <td>y 14 27 40 55 68</td> <td></td> <td></td>		y 14 27 40 55 68		
Y6111827Using the method of least squares find the constants a and b such that $y=ae^{bx}$ fits the following data:Apply74 $\overline{x}$ 00.511.522.5y0.100.452.159.1540.35180.75NoObtain a relation of the form $y=ab^{x}$ for the following data by the method of least squares.Understand75 $\overline{x}$ 23456y8.315.433.165.2127.4NoNoCHORT ANSWER TYPE QUESTIONS) UNT-IVUnderstandTo befine algebraic and transcendental equation and give exampleRemember102Write about bisection methodUnderstand103Write about false position methodUnderstand104State the condition for convergence of the root by iterative methodUnderstand105Find the square root of a number 16 by using Newton's RaphsonApply117Define Crout's and Doolittle's methodRemember118If $A=LU$ and $A = \begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ then find LApply119Explain the procedure to find the inverse of the matrix by using LU decomposition UNIT-IVUnderstand11(LONG ANSWER QUESTIONS) UNIT-IVUNDERstand109Explain the difference between Jacobi's and Gauss Sciel iterative methodUnderstand1110Write		Fit a curve $y=a+bx+cx^2$ from the following data	Understand	7
Image: Constraint of the constants and b such that $y=ae^{bx}$ fits the following data:Apply74 $\overline{x}$ 00.511.522.5 $\overline{y}$ 0.100.452.159.1540.35180.75180.755 $\overline{x}$ 23456 $\overline{y}$ 8.315.433.165.2127.416000000000000000000000000000000000000	3			
4       following data:       interfactor in the inverse of the matrix by using LU decomposition method       1         4       interfactor in the inverse of the matrix by using LU decomposition method       1         5       interfactor in the inverse of the matrix by using LU decomposition method       1         6       interfactor in the inverse of the matrix by using LU decomposition method       1         1       Define algebraic and transcendental equation and give example       Remember       10         2       Write about bisection method       Understand       10         3       Write about bisection method       Understand       10         4       int a square root of a number 16 by using Newton's Raphson       Apply       11         7       prime root of a number 16 by using Newton's Raphson       Apply       11         8       If A=LU and A = $\begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ then find L       Apply       11         9       Explain the procedure to find the inverse of the matrix by using LU decomposition       Understand       11         10       Write the difference between Jacobi's and Gauss Seidel iterative method       Understand       11         10       Explain the guare root of 25 up to 2 decimal place s by using bisection method       Apply       11         1       Find the square root of 25 up to 2 decimal place s				_
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	4		Apply	7
Obtain a relation of the form y=ab* for the following data by the method of least squares.       Understand       7         5 $\overline{x}$ $\overline{2}$ $\overline{3}$ $\overline{4}$ $\overline{5}$ $\overline{6}$ $\overline{9}$ $\overline{8.3}$ $\overline{15.4}$ $\overline{33.1}$ $\overline{65.2}$ $\overline{127.4}$ $\overline{10}$ (SHORT ANSWER TYPE QUESTIONS) UNIT-IV         1       Define algebraic and transcendental equation and give example       Remember $\overline{10}$ 2       Write about bisection method       Understand $\overline{10}$ 3       Write about false position method       Understand $\overline{10}$ 4       State the condition for convergence of the root by iterative method       Understand $\overline{10}$ 5       Find the square root of a number 16 by using Newton's Raphson       Apply $\overline{11}$ 6       Explain LU decomposition method       Remember $\overline{11}$ 7       Define Crout's and Doolittle's method       Remember $\overline{11}$ 7       Define the difference between Jacobi's and Gauss Seidel iterative method       Understand $\overline{11}$ 9       Explain the procedure to find the inverse of the matrix by using LU decomposition method       Understand $\overline{11}$ 10       Write the difference between J	4	x 0 0.5 1 1.5 2 2.5		
squares.         x       2       3       4       5       6         y       8.3       15.4       33.1       65.2       127.4         (SHORT ANSWER TYPE QUESTIONS) UNIT-IV         1       Define algebraic and transcendental equation and give example       Remember       10         2       Write about bisection method       Understand       10         3       Write about false position method       Understand       10         4       State the condition for convergence of the root by iterative method       Understand       10         5       Find the square root of a number 16 by using Newton's Raphson       Apply       11         6       Explain LU decomposition method       Remember       11         7       Define Crout's and Doolittle's method       Remember       11         8       If A=LU and $A = \begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ then find L       Apply       11         9       Explain the procedure to find the inverse of the matrix by using LU decomposition method       Understand       11         10       Write the difference between Jacobi's and Gauss Seidel iterative method       Understand       11         9       Explain the procedure to find the inverse of the matrix by using LU decomposition method       Understand       11		y 0.10 0.45 2.15 9.15 40.35 180.75		
x23430y8.315.433.165.2127.4(SHORT ANSWER TYPE QUESTIONS) UNIT-IV1Define algebraic and transcendental equation and give exampleRemember102Write about bisection methodUnderstand103Write about false position methodUnderstand104State the condition for convergence of the root by iterative methodUnderstand105Find the square root of a number 16 by using Newton's RaphsonApply116Explain LU decomposition methodRemember117Define Crout's and Doolittle's methodRemember118If A=LU and $A = \begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ then find LRemember119Explain the procedure to find the inverse of the matrix by using LU decomposition methodUnderstand1110Write the difference between Jacobi's and Gauss Seidel iterative methodUnderstand111Find the square root of 25 up to 2 decimal place s by using bisection methodApply10			Understand	7
(SHORT ANSWER TYPE QUESTIONS) UNIT-IV         1       Define algebraic and transcendental equation and give example       Remember       10         2       Write about bisection method       Understand       10         3       Write about false position method       Understand       10         4       State the condition for convergence of the root by iterative method       Understand       10         5       Find the square root of a number 16 by using Newton's Raphson       Apply       10         6       Explain LU decomposition method       Apply       11         7       Define Crout's and Doolittle's method       Remember       11         8       If A=LU and $A = \begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ then find L       Apply       11         9       Explain the procedure to find the inverse of the matrix by using LU decomposition method       11         10       Write the difference between Jacobi's and Gauss Seidel iterative method       Understand       11         10       Write the difference between Jacobi's and Gauss Seidel iterative method       Understand       11         11       Iterative method       Understand       11       11         10       Write the difference between Jacobi's and Gauss Seidel iterative method       Understand       11         11       Find	5	x 2 3 4 5 6		
UNIT-IV1Define algebraic and transcendental equation and give exampleRemember102Write about bisection methodUnderstand103Write about false position methodUnderstand104State the condition for convergence of the root by iterative methodUnderstand105Find the square root of a number 16 by using Newton's RaphsonApply106Explain LU decomposition methodApply117Define Crout's and Doolittle's methodRemember118If A=LU and $A = \begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}$ then find LApply119Explain the procedure to find the inverse of the matrix by using LU decomposition methodUnderstand1110Write the difference between Jacobi's and Gauss Seidel iterative methodUnderstand111Find the square root of 25 up to 2 decimal place s by using bisection methodApply10		y 8.3 15.4 33.1 65.2 127.4		
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1     Find the square root of 25 up to 2 decimal place s by using bisection method     Apply     10				1
2 Find a real root of the equation $e^x \sin x = 1$ , using Regulately method Apply 10	1		Apply	10
	2	Find a real root of the equation $e^x \sin x = 1$ , using Regulafalsi method	Apply	10

3	Solve 2x=cosx+3 by iterative method	Understand	10
4	Find a real root of the equation, $\log x = \cos x$ using Regulafalsi method	Apply	10
5	Find a real root of 3x-cosx-1=0 using Newton Raphson method	Apply	10
6	Evaluate x tanx+1=0 by Newton Raphson method.	Understand	10
7	Solve x+3y+8z=4, x+4y+3z=-2, x+3y+4z=1 using LU decomposition	Understand	11
8	Solve $5x-y+3z=10,3x+6y=18,x+y+5z=-10$ with initial approximations (3,0,-2) by Jacobi's iteration method	Understand	11
9	Using Jacobi's iteration method solve the system of equation 10x+4y-2z=12, x-10y- z=-10,5x+2y-10z=-3	Understand	11
10	Using Gauss-seidel iterative method solve the system of equations $5x+2y+z=12$ , $x+4y+2z=15$ , $x+2y+5z=20$	Understand	11
	(SHORT ANSWER TYPE QUESTIONS) UNIT-V		
1	Explain Trapezoidal rule	Understand	12
2	Explain Simpson's 1/3 and 3/8 rule	Understand	12
3	Estimate $\int_{0}^{\Pi/2} e^{\sin x} dx$ taking h= $\Pi/6$ correct o four decimal places	Understand	12
4	Explain two point and three point Gaussian quadrature	Understand	12
5	Compute using Gauss integral $\int \sqrt{1-x^2} dx, n = 3$	Apply	12
6	Explain Taylor's series method and limitations	Understand	13
7	Explain Picard's method of successive approximation Write the second approximation for $y^1 = x^2 + y^2$ , $y(0) = 1$	Understand	13
8	Give the difference between Euler's method and Euler's modified method	Analyze	13
9	Find y(0.1) given $y^1 = x^2 - y, y(0) = 1$ by Euler's method	Apply	13
10	Explain Runge-Kutta second and classical fourth order	Understand	13
	(LONG ANSWER QUESTIONS) UNIT-V		
1	Evaluate $\int_{0}^{\pi} \left(\frac{\sin x}{x}\right) dx$ by using i) Trapezoidal rule ii) Simpson's $\frac{1}{3}$ rule taking n=6	Understand	12
2	Using Taylor's series method, find an approximate value of y at x=0.2 for the differential equation $y'-2y = 3e^x$ for y(0)=0.	Apply	13
3	Given $y^1 = 1 + xy$ , $y(0) = 1$ compute y (0.1), y (0.2) using Picard's method	Understand	13
4	Solve by Euler's method $\frac{dy}{dx} = \frac{2y}{x}$ given y(1)=2 and find y(2).	Understand	13
5	Find y(0.1) and y(0.2) using Euler's modified formula given that $\frac{dy}{dx} = x^2 - y$ and y(0)=1	Apply	13
6	Find y(0.1) and y(0.2) using Runge Kutta fourth order formula given that $\frac{dy}{dx} = x + x^2 y \text{ and } y(0)=1.$	Apply	13

	using Runge Kutta method of order 4 find $y(0.2)$ for the equation	Apply	13
7	$\frac{dy}{dx} = \frac{y - x}{y + x}, y(0) = 1, h = 0.2$		
8	Use power method find numerically largest Eigen value $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and corresponding	Apply	14
	Eigen vector and other Eigen value		
9	Use power method find numerically largest Eigen value $\begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \end{bmatrix}$	Apply	14
	0 0 3		
		Understand	14
10	Write the largest Eigen value of the matrix $\begin{bmatrix} 1 & 3 & 0 \\ 2 & 0 & -4 \end{bmatrix}$		
10			

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