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Time: 3 hours Max. Marks: 60															
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а	Find the Eigen values of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$.													2M	
b			,												2M
C						-									2M
a	Test fo	or conv	ergeno	ce the	series	$\sum \frac{n^n}{3^m}$.									2M
e	Find F	ourier	consta	nt a_0	for f	(x) =	1-x	² in [-	-1,1].						2M
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				(Ans	swer a	ll Five	Parameter Santa	possesses	0 = 5	0 Mar	ks)				
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a	Eind th	السمساء	C 41			4 2	2 3	3							5M
	rina u	ie rank	t of the	matri	X A=	8 4	7	13	ŀ	/					
h										_17					CD 4
U	Determine the Eigen values of A^{-1} where $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$.														5M
D.	11	0 1			2										
						!y" +	2z2 -	2xy	+2xz	-2y	z into	the car	onical	form	10M
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9	Calcul	ata tha				C	THE REAL PROPERTY.	-	4	1 .					53.4
a			appro	oximai	e van	ie oi	V10 (correc	t to 4	decin	nal pla	aces us	ing Ta	ylor's	5M
b			x in r	ower	of (x	-1)	and h	ence (evalua	te log	110	orrect t	o 4 de	cimal	5M
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a	Prove	that \int_0^1	$\frac{x}{\sqrt{1-x^5}}$	dx =	$\frac{1}{5}B$	$\left(\frac{2}{5},\frac{1}{2}\right)$.									5M
b	Prove t	that \int_{0}^{1}	$\frac{x}{\sqrt{1-x^2}}$	= dx =	$=\frac{1}{2}\beta$	$(1,\frac{1}{2})$).								5M
		U	VI N					-111							
	a b c d e a b	eg. No: SIDDH B.Tec ne: 3 hours a Find th b Prove c Define d Test for e Find F a Find th b Determ Reduce the by Orthogo a Calculatheorer b Expand places a Prove to	B.Tech I Yours B.Tech I Yours a Find the Eight b Prove that I of Define Total d Test for convice Find Fourier a Find the rank b Determine the Reduce the Quad by Orthogonal tra a Calculate the of theorem. b Expand loge places using a Prove that \int_0^1	B. Tech I Year I S B. Tec	B.Tech Year Semestate: 3 hours a Find the Eigen values of the Prove that I'(1) = 1. c Define Total differential of the Find Fourier constant a_0 . (Ans. a) Find the rank of the matrix b Determine the Eigen value Reduce the Quadratic form $2x$ by Orthogonal transformation. a Calculate the approximate theorem. b Expand $\log_e x$ in power places using Taylor's theorem. a Prove that $\int_0^1 \frac{x}{\sqrt{1-x^5}} dx = \frac{x}{\sqrt{1-x^5}} dx = \frac{x}{\sqrt{1-x^5}}$	B.Tech I Year I Semester S a Find the Eigen values of the matrix A= b Prove that I'(1) = 1. c Define Total differential coeffid Test for convergence the series e Find Fourier constant a_0 for f (Answer a Find the rank of the matrix A= b Determine the Eigen values of Reduce the Quadratic form $2x^2 + 2$ by Orthogonal transformation. a Calculate the approximate value theorem. b Expand $\log_e x$ in power of (x) places using Taylor's theorem. a Prove that $\int_0^1 \frac{x}{\sqrt{1-x^5}} dx = \frac{1}{5}B$	Eg. No: SIDDHARTH INSTITUTE OF EN (AU B.Tech I Year I Semester Supplements of the Matrix A (Context) (Answer all the Context) (Answer all Five that I'(1) = 1. (Answer all Five that Find Fourier constant a_0 for $f(x) = 0$ (Answer all Five that Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 &$	SIDDHARTH INSTITUTE OF ENGINE (AUTONO B.Tech I Year I Semester Supplement MATHEM (Common details) a Find the Eigen values of the matrix $A = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$ b Prove that $I'(1) = 1$. c Define Total differential coefficient. d Test for convergence the series $\sum_{\frac{n^2}{3^n}}^{\frac{n^2}{n^2}}$. e Find Fourier constant a_0 for $f(x) = 1 - x$. (Answer all Five Units Units a Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 3 \\ 4 & 2 & 1 \\ 8 & 4 & 7 \\ 8 & 4 & -3 \end{bmatrix}$ b Determine the Eigen values of A^{-1} where solve of the orem. Reduce the Quadratic form $2x^2 + 2y^2 + 2z^2 - 2z^2$ by Orthogonal transformation. UNIT a Calculate the approximate value of $\sqrt{10}$ of theorem. b Expand $\log_e x$ in power of $(x - 1)$ and he places using Taylor's theorem. a Prove that $\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$. b Prove that $\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \frac{1}{2} \beta(1, \frac{1}{2})$.	SIDDHARTH INSTITUTE OF ENGINEERIN (AUTONOMOU B.Tech I Year I Semester Supplementary MATHEMATIC (Common to AI (Com	Eg. No: SIDDHARTH INSTITUTE OF ENGINEERING & AUTONOMOUS) B.Tech I Year I Semester Supplementary Exammath MATHEMATICS-I (Common to ALL) a Find the Eigen values of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ b Prove that $I'(1) = 1$. c Define Total differential coefficient. d Test for convergence the series $\sum_{3}^{n^{2}}$. e Find Fourier constant a_{0} for $f(x) = 1 - x^{2}$ in [-1,1]. PART-B (Answer all Five Units 5 x 10 = 50 \text{UNIT-I} a Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$ b Determine the Eigen values of A^{-1} where $A = \begin{bmatrix} 1 & 0 \\ 1 & 2 \\ 2 & 2 \end{bmatrix}$ OR Reduce the Quadratic form $2x^{2} + 2y^{2} + 2z^{2} - 2xy + 2xz$ by Orthogonal transformation. UNIT-II a Calculate the approximate value of $\sqrt{10}$ correct to 4 theorem. b Expand $\log_{e} x$ in power of $(x - 1)$ and hence evaluar places using Taylor's theorem. OR a Prove that $\int_{0}^{1} \frac{x}{\sqrt{1-x^{2}}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$. b Prove that $\int_{0}^{1} \frac{x}{\sqrt{1-x^{2}}} dx = \frac{1}{2} \beta(1, \frac{1}{2})$.	Eg. No: SIDDHARTH INSTITUTE OF ENGINEERING & TECH (AUTONOMOUS) B.Tech I Year I Semester Supplementary Examination MATHEMATICS-I (Common to ALL) The sign of the Eigen values of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ The prove that I'(1) = 1. The period of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ The prove that I'(1) = 1. The period of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ The prove that I'(1) = 1. The period of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ The prove that I'(1) = 1. The period of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ The period of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ The period of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & 3 & 5 \\ 3 & 4 & 7 & 13 \\ 3 & 4 & -3 & -1 \end{bmatrix}$ The period of the matrix $A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 & 5 \\ 3 & 4 & 7 & 13 & 3 \\ 3 & 4 & 7 & 13 & 3 \\ 3 & 4 & 7 & 13 & 3 & 3 \\ 3 & 4 & 7 & 13 & 3 & 3 & 3 \\ 3 & 4 & 7 & 13 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & 3 & $	Eg. No: SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOL (AUTONOMOUS) B.Tech I Year I Semester Supplementary Examinations I MATHEMATICS-1 (Common to ALL) ie: 3 hours $ \begin{array}{cccccccccccccccccccccccccccccccccc$	Eg. No: SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: (AUTONOMOUS) B.Tech I Year I Semester Supplementary Examinations December 3 hours PART-A (Common to ALL) Max PART-A (Answer all the Questions $5 \times 2 = 10 \text{ Marks}$) Find the Eigen values of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ Prove that I (1) = 1. Define Total differential coefficient. Test for convergence the series $\sum_{n=1}^{\infty} \frac{n}{3n}$. Find Fourier constant a_0 for $f(x) = 1 - x^2$ in [-1,1]. PART-B (Answer all Five Units $5 \times 10 = 50 \text{ Marks}$) UNIT-I Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$ Determine the Eigen values of A^{-1} where $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$ OR Reduce the Quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy + 2xz - 2yz$ into the car by Orthogonal transformation. UNIT-II Calculate the approximate value of $\sqrt{10}$ correct to 4 decimal places using theorem. Expand $\log_e x$ in power of $(x - 1)$ and hence evaluate $\log 1.1$ correct to places using Taylor's theorem. OR Prove that $\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$. Prove that $\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$.	SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTT (AUTONOMOUS) B. Tech I Year I Semester Supplementary Examinations December-20 MATHEMATICS-1 (Common to ALL) The substitute of the Matrix A in the Part of the Matrix A in the Eigen values of the matrix $A = \begin{bmatrix} -2 & 2 & -3 \\ 2 & 1 & -6 \\ -1 & -2 & 0 \end{bmatrix}$ B. Prove that I'(1) = 1. C. Define Total differential coefficient. Test for convergence the series $\sum \frac{n^2}{3^n}$. Find Fourier constant a_0 for $f(x) = 1 - x^2$ in [-1,1]. PART-B (Answer all Five Units 5 x 10 = 50 Marks) UNIT-II A Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & 7 & 13 \end{bmatrix}$. Determine the Eigen values of A^{-1} where $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$. OR Reduce the Quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy + 2xz - 2yz$ into the canonical by Orthogonal transformation. UNIT-II a Calculate the approximate value of $\sqrt{10}$ correct to 4 decimal places using Ta theorem. b Expand $\log_e x$ in power of $(x - 1)$ and hence evaluate $\log_e 1$.1 correct to 4 deplaces using Taylor's theorem. OR a Prove that $\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$. b Prove that $\int_0^1 \frac{x}{\sqrt{1-x^2}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$.	Eg. No: SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS) B. Tech I Year I Semester Supplementary Examinations December-2021 MATHEMATICS-I (Common to ALL) Max. Marks: 60 PART-A (Answer all the Questions $5 \times 2 = 10$ Marks) a Find the Eigen values of the matrix $A = \begin{bmatrix} 2 & 2 & -3 \\ -1 & -2 & 0 \end{bmatrix}$ b Prove that $I'(1) = 1$. c Define Total differential coefficient. d Test for convergence the series $\sum_{3}^{n} \frac{\pi^{3}}{3^{n}}$. e Find Fourier constant a_{0} for $f(x) = 1 - x^{2}$ in $[-1,1]$. PART-B (Answer all Five Units $5 \times 10 = 50$ Marks) UNIT-I a Find the rank of the matrix $A = \begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$ b Determine the Eigen values of A^{-1} where $A = \begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$ OR Reduce the Quadratic form $2x^{2} + 2y^{2} + 2z^{2} - 2xy + 2xz - 2yz$ into the canonical form by Orthogonal transformation. UNIT-II a Calculate the approximate value of $\sqrt{10}$ correct to 4 decimal places using Taylor's theorem. b Expand $\log_{e} x$ in power of $(x - 1)$ and hence evaluate $\log_{e} 1.1$ correct to 4 decimal places using Taylor's theorem. OR Prove that $\int_{0}^{1} \frac{x}{\sqrt{1-x^{2}}} dx = \frac{1}{5} B\left(\frac{2}{5}, \frac{1}{2}\right)$. b Prove that $\int_{0}^{1} \frac{x}{\sqrt{1-x^{2}}} dx = \frac{1}{2} \beta(1, \frac{1}{2})$.

6 a If
$$u = \sin^{-1}(x - y)$$
, where $x = 3t$, $y = 4t^3$, then show that $\frac{du}{dt} = \frac{3}{\sqrt{1 - t^2}}$.

b If
$$u = x^2 + y^2 + z^2$$
 and $x = e^{2t}$, $y = e^{2t}\cos 3t$, $z = e^{2t}\sin 3t$, find $\frac{du}{dc} = ?$ 5M

OR

- Find a point on the plane 3x + 2y + z 12 = 0, which is nearest to the origin. 7
 - and longest shortest distance the b 4M point(3,1,-1) to the sphere $x^2+y^2+z^2=4$.

8 Examine the following sequences for convergence:

10M

6M

i)
$$a_n = \frac{n^2 - 2n}{3n^2 + n}$$
 ii) $a_n = 3 + (-1)^n$.

OR

State the value of x, for which the following series converge: 9

10M

i)
$$x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \frac{x^5}{5} - - - - - - \infty$$
,

ii) $\frac{1}{1-x} + \frac{1}{2(1-x)^2} + \frac{1}{3(1-x)^3} + \dots - \infty$.

UNIT-V

- Find the Fourier series to represent the function $f(x) = x^2$ for $-\pi < x < \pi$ and 10M 10 hence show that
 - $(i)\frac{1}{1^2} \frac{1}{2^2} + \frac{1}{2^2} \frac{1}{4^2} \dots \frac{\pi^2}{12}. \qquad (ii)\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{2^2} + \frac{1}{4^2} \dots \frac{\pi^2}{6}.$ (iii) $\frac{1}{1^2} + \frac{1}{3^2} + \frac{1}{5^2} + \frac{1}{7^2} - - - = \frac{\pi^2}{8}$

Find the half range sine series expansion of $f(x) = x^2$ when 0 < x < 4. 11

5M

Find the half range cosine series expansion of f(x) = x(2-x) in $0 \le x \le 2$. **5M**

END