Seat No.: _____

Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-SEMESTER-1st/2nd • EXAMINATION - SUMMER 2016

Subject Code: 110015 Date:30/05/2016

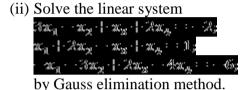
Subject Name: Vector Calculus and Linear Algebra

Time: 02:30 PM to 05:30 PM Total Marks: 70

Instructions:

- 1. Attempt any five questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1	(a)	(0) 1 1.	
	. ,	(i) Using Gauss-Jordan method find of for a: 3 1 1, if exists.	03



- (b) (i) Is the vector (1,1) is a linear combination of the vectors 03 (1,1) and (1,1) and (1,1) use (1,1) Justify.
 - (ii) Determine whether the subset $S := ((x_{il}, x_{2i}, x_{2i}) / (x_{il}) / (x_{il}) / (x_{il}) / (x_{il}) / (x_{il}) = 04$ a subspace.

- (ii) Determine whether the set of polynomial (4, x, x², 3x · 1) is linearly independent or linearly dependent.
- (b) (i) Find the angle between the two vectors were (A, A, A) and 03 (ii) Determine whether were is an inner product space under the inner 04
 - (ii) Determine whether is an inner product space under the inner product with the inner pro
- Q.3 (a) (i) Determine whether the mapping $T: \mathbb{R}^2 \to \mathbb{R}^2$, $T(x_n, y) := (c^{-x_n} c^{-y_n})$ is a 03 linear or not.
 - (ii) Determine whether the linear transformation 04 $\mathbb{R}^{2} \to \mathbb{R}^{2} \mathbb{R}^{2} \times \mathbb$
 - (b) Let $\mathbb{W}: \{(\alpha_n \mathbb{W})/(\alpha_n \mathbb{W}) \in \mathbb{R}\}$. Let $\mathbb{W}: ((\alpha_{10} \mathbb{W}_2))$ and $\mathbb{W}: ((\alpha_{10} \mathbb{W}_2))$. Define 07 $((\alpha_{10} \mathbb{W}_2)) \cdot (((\alpha_{10} \mathbb{W}_2)) \cdot ((\alpha_{11} \cdot ((\alpha_{10} \mathbb{W}_2) \cdot ((\alpha_{11} \cdot ((\alpha_{10} \times ((\alpha_{10}$
- Q.4 (a) (i) Let $\mathbb{F}: \mathbb{R}_2$ with inner product define by \mathbb{F}_2 where \mathbb{F}_2 where \mathbb{F}_3 where \mathbb{F}_4 where \mathbb{F}_4 where \mathbb{F}_4 where \mathbb{F}_4 is \mathbb{F}_4 where \mathbb{F}_4 where \mathbb{F}_4 is \mathbb{F}_4 where \mathbb{F}_4 is \mathbb{F}_4 in \mathbb{F}_4 where \mathbb{F}_4 is \mathbb{F}_4 in \mathbb{F}_4 in
 - (ii) Show that the set of polynomials S: \{\mathbb{x}^2 \cdot \dagger \mathbb{x}^2 \cdot \dagger \dagger \mathbb{x}^2 \cdot \dagger \dagger \mathbb{x}^2 \cdot \dagger \dagger
 - (b) Verify the Green's theorem for (() () where is triangle bounded by x:: () x | y:: 1 and y:: ().

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