Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – April/May – 2017**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **16MA1005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **APPLIED MATHEMATICS – MATRICES AND CALCULUS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Find the Eigen values and Eigen vectors of | CO1 | 15 |
| b. | Find the nature of the quadratic form  with out reduction of canconical form (Using Determinants Method) | CO1 | 5 |
| (OR) | | | | |
| 2. |  | Reduce the quadratic form  to a Canonical form and also find its rank, index , signature and nature. | CO1 | 20 |
| 3. | a. | Transform the euqation x4 – 8x3 – x2 +68x + 60 = 0 into one does not contain the term x3 . Hence solve the equation. | CO2 | 10 |
|  | b. | Solve | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Solve x4 – 10x3 + 26x2 -10x + 1 = 0 given that 2 + is a root of the equation. | CO2 | 10 |
|  | b. | Solve  given that it has a double root | CO2 | 10 |
| 5. |  | Find the equation of the circle of curvature at (c, c) on xy = c2. | CO3 | 20 |
| (OR) | | | | |
| 6. | a. | Show that the evolute of the ellipse is . | CO3 | 15 |
| b. | Find the envelope of family of straight line , where  being the parameter. | CO3 | 5 |
| 7. | a. | Change the order of the integration and hence evaluate | CO4 | 15 |
|  | b. | Evlauate | CO4 | 5 |
| (OR) | | | | |
| 8. | a. | Evaluate, where V is the volume of tetrahedron bounded by the lines  and | CO4 | 10 |
|  | b. | Evaluate | CO4 | 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **Compulsory:** |  |  |
| 9. | a. | A person has two daughters A and B aged 13 and 16 years. He has Rs.40,000 with him now but wants that both of them should get the equal amount when they are 20 years old. How he should divide the money if it were to be deposited in a bank giving 9% compound interest per annum? | CO5 | 10 |
|  | b. | Find the sum all numbers divisible by 9 between 200 and 500. | CO6 | 10 |

ALL THE BEST