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

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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14MA2005** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **MATHEMATICAL FOUNDATION** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | | | | **Course outcome** | **Marks** |
| **PART-A(40X1=40 MULTIPLE CHOICE QUESTIONS)** | | | | | | |
| 1. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 2. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 3. | The product of the eigen values = | | | | CO1 |  |
|  | a. | b. | c. | d. A |  | (1) |
| 4. | Unit matrix I = | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 5. | Cayley –Hamilton theorem says that “Every square matrix \_\_\_\_\_\_\_\_\_\_\_\_ its own characteristic equation”. | | | | CO1 |  |
|  | a. has | b. produces | c. satisfies | d. multiplies |  | (1) |
| 6. | The value of | | | | CO1 |  |
|  | a. 1 | b. -1 | c. i | d. -i |  | (1) |
| 7. |  | | | | CO1 |  |
|  | a. 1 | b. 0 | c. -1 | d. i |  | (1) |
| 8. |  | | | | CO1 |  |
|  | a. 1 | b. 0 | c. -1 | d. i |  | (1) |
| 9. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 10. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 11. | In Z = x + iy, imaginary part is | | | | CO1 |  |
|  | a. i | b. x | c. y | d. iy |  | (1) |
| 12. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 13. |  | | | | CO1 |  |
|  | a. -1 | b. 0 | c. 1 | d. 2 |  | (1) |
| 14. | Cos 0 = | | | | CO1 |  |
|  | a. -1 | b. 0 | c. 1 | d. 2 |  | (1) |
| 15. | Sin 0 = | | | | CO1 |  |
|  | a. 0 | b. 1 | c. -1 | d. i |  | (1) |
| 16. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 17. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 18. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 19. | If k is a constant then | | | | CO1 |  |
|  | a. k+1 | b. | c. 0 | d. 1 |  | (1) |
| 20. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 21. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 22. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 23. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 24. | The value of | | | | CO1 |  |
|  | a. 1 | b. 0 | c. -1 | d. |  | (1) |
| 25. | The value of | | | | CO1 |  |
|  | a. 1 | b. 0 | c. -1 | d. |  | (1) |
| 26. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 27. |  | | | | CO1 |  |
|  | a. x | b. | c. 1 | d. |  | (1) |
| 28. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 29. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 30. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 31. | If is the root of auxiliary equation then C F = \_\_\_\_\_\_\_\_\_\_. | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 32. | The particular integral of is \_\_\_\_\_\_\_\_\_\_ | | | | CO1 |  |
|  | a. 1 | b. | c. 0 | d. |  | (1) |
| 33. | The roots of the equation  are \_\_\_\_\_\_\_\_. | | | | CO1 |  |
|  | a. 2, 3 | b. 5, 1 | c. -2, -3 | d. -5, -1 |  | (1) |
| 34. | If then the complementary function is | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 35. | If then the complementary function is \_\_\_\_\_\_ | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 36. | The Bernoulli’s formula | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 37. | \_\_\_\_\_\_\_\_\_\_ | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |
| 38. | If f(x) is an even function then | | | | CO1 |  |
|  | a. 0 | b. | c. | d. 1 |  | (1) |
| 39. | If f(x) is an odd function then | | | | CO1 |  |
|  | a. 1 | b. 0 | c. -1 | d. 2 |  | (1) |
| 40. |  | | | | CO1 |  |
|  | a. | b. | c. | d. |  | (1) |

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| **PART B(8 X 5 = 40 MARKS) (ANSWER ANY EIGHT)** | | | |
| 41 | Prove that  . | CO2 | (5) |
| 42 | Find the real and imaginary part of . | CO2 | (5) |
| 43 | Two eigen values of the matrix are 1 and 2. Find the third eigen value and . | CO2 | (5) |
| 44 | If the characteristic equation of a matrix is  then verify Cayley-Hamilton theorem. | CO2 | (5) |
| 45 | If  then find. | CO2 | (5) |
| 46 | If  then find. | CO2 | (5) |
| 47 | Evaluate | CO2 | (5) |
| 48 | Evaluate | CO2 | (5) |
| 49 | Find the particular integral of the equation | CO2 | (5) |
| 50 | Solve. | CO2 | (5) |

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| **PART C( 2 X 10 = 20 MARKS) (ANSWER ANY TWO)** | | | |
| 51 | Find the eigen values and eigen vectors of the matrix A= | CO2 | (10) |
| 52 | Evaluate. | CO2 | (10) |
| 53 | Solve | CO2 | (10) |

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