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 – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **16MA1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BASIC MATHEMATICS FOR SCIENCES** | **Max. marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | If . Prove that | CO1 | 10 |
| b. | Simplify | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Prove that | CO1 | 10 |
| b. | If  then prove that | CO1 | 10 |
| 3. | a. | If Show that | CO1 | 10 |
|  | b. | If n is a positive integer, prove that. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Find the rank of a Matrix | CO2 | 10 |
|  | b. | Verify Caley Hamiltom theorem for the matrix | CO2 | 10 |
| 5. | a. | Find the Eigen Values and Eigen vectors of the matrix | CO2 | 10 |
|  | b. | Test the Consistency of the system of linear equation x-y+2z=2; 2x+y+4z=7;  4x-y+z=4 and hence find the solution. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Define monoids with examples. | CO3 | 10 |
|  | b. | Prove that the set of even integers is an addition group. | CO3 | 10 |
| 7. | a. | Four cards are drawn at random on pack of 52 cards. Find the probability that,  (i) They are a king, a queen, a jack and an ace  (ii) Two are kings and two are queens  (iii) Two are black and two are red  (iv) There are two cards of hearts and two cards of diamonds | CO3 | 10 |
|  | b. | In a bolt factory machines A, B and C manufacturer respectively 25%, 35% and40% of the total. Of their output5, 4, and 2 percents are defective bolts. A bolt is drawn at random from the product and it is found to be defective. What are the probabilities that it was manufactured by machines A, B and C? | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Obtain the linear regression for the following data:   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | X | 65 | 66 | 67 | 67 | 68 | 69 | 70 | | 72 | | | Y | 67 | 68 | 65 | 68 | 72 | 72 | | 69 | | 71 | | | CO3 | 10 |
|  | b. | Calculate rank correlation coefficient of correlation from the following data:   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | X | 44 | 45 | 46 | 48 | 52 | 53 | 54 | 56 | 62 | 60 | | Y | 36 | 40 | 49 | 41 | 42 | 44 | 46 | 48 | 50 | 52 | | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. |  | Find the mean and standard deviation for the following data:   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Class Interval | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | | Frequency | 5 | 7 | 8 | 12 | 28 | 20 | 10 | 10 | | CO3 | 10 |

ALL THE BEST