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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **16MA2005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BUSINESS MATHEMATICS** | **Max. Marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | If A = {1,5}, B = {6,7,8,9} and C = {6,7,10} then prove that  and | CO1 | 10 |
| b. | If A = {1, 2, 4, 6, 8}, B = {2, 3, 4, 5, 6}, C = {3, 6, 9, 12, 15}, find  , , , , and. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | The sum of 3 numbers in geometric progression is 35 and their product is 1000. Find the numbers. | CO1 | 10 |
| b. | Find the sum of series 40+36+32+………+0. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Find the effective rate of interest equivalent to a nominal rate of 14% p.a., compounded monthly. Also find the effective rate when interest is compounded continuously. | CO1 | 10 |
|  | b. | A sum of money amounted to Rs. 2,071 in 6 months and Rs. 2,106 in 15 months. Calculate the rate of simple interest. | CO1 | 10 |
| **(OR)** | | | | |
| 4. | a. | A certain sum amounts to Rs. 10,000 at the end of 6 yeas at 15% p.a. interest. Find the total amount. | CO1 | 10 |
|  | b. | A person is entitled to receive an annual payment which for each year is less by one tenth of what it was for the year before. If the first payment is Rs.500, show that he can not receive more than Rs.5000 however long he may live. | CO1 | 10 |
|  |  |  |  |  |
| 5. | a. | A steel plant produces ‘x’ tonnes of steel per week at total Cost of Rs.(+5+99+35). Find the output level at which the marginal cost attains its minimum. | CO2 | 20 |
| **(OR)** | | | | |
| 6. | a. | Solve by the method of integration by parts. | CO2 | 10 |
|  | b. | Evaluate. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | Two shops A and B have in stock the following types of radios.  Single band Two band Three band  Shop A 23 20 15  Shop B 40 10 8  Shop A places order for 40 single band, 40 two band and 20 three band radios whereas shop B orders 26, 30, 20 numbers of the three varieties. Due to the factors they received only half of the order as supplied by the manufacturer. The cost of three types of radios are Rs.100, Rs.220, Rs.300 respectively.  Represent the following as matrices.   1. Initial stock 2. The order 3. The supply 4. Final stock 5. Cost of individual items   Total cost of stock in the shops. | CO3 | 20 |
| **(OR)** | | | | |
| 8. | a. | If A = and B = find the matrix X such that 2A+4B+X = 0 and prove that A + B = B + A. | CO3 | 10 |
|  | b. | If,  Prove that and | CO3 | 10 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Solve by graphical method.  Max  subject to | CO3 | 20 |