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

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**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **14MA3003/17MA3003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FOUNDATIONS OF MATHEMATICS AND STATISTICS** | **Max. marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Find the coefficient oin the expansion ofin ascending power of x and state the condition under which this series is valid. | CO1 | 10 |
| b. | Sum the series to infinity | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Prove that | CO1 | 10 |
| b. | Find the coefficient oin the expansion of | CO1 | 10 |
| 3. | a. | Find the maxima and minima values of | CO2 | 10 |
| b. | Find the value of i. ii. . | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | Derive the quotient rule of differentiation. Also find the value of . | CO2 | 10 |
| b. | Find the maxima and minima values of | CO2 | 10 |
| 5. | a. | Evaluate | CO3 | 15 |
| b. | Evaluate | CO3 | 5 |
| (OR) | | | | |
| 6. | a. | Derive the integration by parts formula. Using the integration by parts, evaluate | CO3 | 10 |
| b. | Evaluate using Bernoulli’s formula | CO3 | 10 |
| 7. | a. | A and B alternatively roll a pair of dice, A wins if he throws six before B throws 7 and B wins if he throws 7 before A throws six. If A begins the game what is the chance of his winning? | CO4 | 10 |
| b. | Fit a Binomial curve to the following distribution:   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | x | 2 | 4 | 6 | 8 | 10 | | f | 1 | 4 | 6 | 4 | 1 | | CO5 | 10 |
| (OR) | | | | |
| 8. | a. | In a test on 2000 electric bulbs, it was found that the life of a particular make was normally distributed with an average life of 2040 hours and S.D of 60 hours. Estimate the number of bulbs likely to burn for i. more than 2150 hours ii. less than 1950 hours iii. more than 1920 hours but less than 2160 hours. | CO5 | 10 |
| b. | Fit a Poisson distribution to the set of observations :   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | x | 0 | 1 | 2 | 3 | 4 | | f | 122 | 60 | 15 | 2 | 1 | | CO5 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | In a sample of 1000 people in Karnataka 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat eaters are equally popular in this state at 1% level of significance? | CO6 | 10 |
| b. | A group of 10 rats fed on diet A and another group of 8 rats fed on a different diet B, recorded diet B, recorded the following increase in weight   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | DietA (gms) | 5 | 6 | 8 | 1 | 12 | 4 | 3 | 9 | 6 | 10 | | Diet B (gms) | 2 | 3 | 6 | 8 | 1 | 10 | 2 | 8 |  |  |   Find if the variance are significantly different. | CO6 | 10 |

ALL THE BEST