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| Image result for adamas university logo | **ADAMAS UNIVERSITY**  **END SEMESTER EXAMINATION**  (Academic Session: 2020 – 21) | | |
| **Name of the Program:** | B.Tech. (BME/CSE/ ECE/EE/ME/CE/Biotech) | **Semester:** | I |
| **Paper Title:** | Engineering Mathematics-I | **Paper Code:** | SMA41101 |
| **Maximum Marks:** | 50 | **Time Duration:** | 3 Hrs |
| **Total No. of Questions:** | 17 | **Total No of Pages:** | 02 |
| *(Any other information for the student may be mentioned here)* | 1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer. | | |

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| **Group A**  **Answer All the Questions (5 x 1 = 5)** | | | |
| 1 | Define monotonic increasing sequence. | **R** | **CO1** |
| 2 | What is the order of homogeneity for | **U** | **CO2** |
| 3 | Find the value of . | **AP** | **CO3** |
| 4 | Define order of an ordinary differential equation. | **AP** | **CO4** |
| 5 | What is the degree of the differential equation . | **AP** | **CO4** |
| **Group B**  **Answer All the Questions (5 x 2 = 10)** | | | |
| 6 a) | Show that . | **R** | **CO1** |
| **(OR)** | | | |
| 6 b) | Show that . | **R** | **CO1** |
| 7 a) | Find whether the following limit exist or not: | **U** | **CO2** |
| **(OR)** | | | |
| 7 b) | Determine for the function | **U** | **CO2** |
| 8 a) | Define the reduction formula of | **AP** | **CO3** |
| **(OR)** | | | |
| 8 b) | Find the value of | **AP** | **CO3** |
| 9 a) | Solve | **AP** | **CO4** |
| **(OR)** | | | |
| 9 b) | Solve . | **AP** | **CO4** |
| 10 a) | Demonstrate Rolle’s theorem. | **U** | **CO2** |
| **(OR)** | | | |
| 10 b) | Find the Jacobian if . | **U** | **CO2** |
| **Group C**  **Answer All the Questions (7 x 5 = 35)** | | | |
| 11 a) | If , then show that . | **R** | **CO1** |
| **(OR)** | | | |
| 11 b) | Show that a proper vector has constant length if = 0. | **R** | **CO1** |
| 12 a) | Find the value of , if | **U** | **CO2** |
| **(OR)** | | | |
| 12 b) | Find the value of using L’Hospital rule. | **U** | **CO2** |
| 13 a) | Evaluate | **AP** | **CO3** |
| **(OR)** | | | |
| 13 b) | Evaluate | **AP** | **CO3** |
| 14 a) | Solve | **AP** | **CO4** |
| **(OR)** | | | |
| 14 b) | Solve by method of variation of parameters: . | **AP** | **CO4** |
| 15 a) | If , show that | **U** | **CO2** |
| **(OR)** | | | |
| 15 b) | Find the extreme values of . | **U** | **CO2** |
| 16 a) | Find the area of the surface generated by revolving the parabola about X-axis bounded by | **AP** | **CO3** |
| **(OR)** | | | |
| 16 b) | Find the volume generated by revolving the parabola about X-axis bounded by | **AP** | **CO3** |
| 17 a) | Solve | **AP** | **CO4** |
| **(OR)** | | | |
| 17 b) | Solve . | **AP** | **CO4** |