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



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

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| **Code :** | **16CS2002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **FUNDAMENTALS OF JAVA PROGRAMMING** | **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. | Create a Java application to perform the following operation.   1. Get the ‘N’ value from the user. 2. Use the recursion function to complete the sum of “N” numbers. | CO2 | 10 |
|  | b | Develop a Java program to print inverted half pyramid using numbers.  1 2 3 4 5  1 2 3 4  1 2 3  1 2  1 | CO2 | 10 |
| **(OR)** | | | | |
| 2. | a. | Explain the two types of constructors in class design with suitable sample code snippets. | CO1 | 10 |
| b. | Differentiate between call by value and call by reference with user defined function in Java. | CO1 | 10 |
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| 3. | a. | Write a Java program to perform matrix multiplication using arrays. | CO2 | 10 |
| b. | Differentiate between method overloading and method overriding with example(s). | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Discuss the working and meaning of the various access modifiers with suitable examples. | CO1 | 10 |
| b. | Write a program in Java to illustrate the implementation of multiple inheritance through interfaces. | CO1 | 10 |
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| 5. | a. | Analyze the following in detail with example program:  i) ArithmeticException  ii) ArrayIndexOutofBoundsException | CO3 | 10 |
| b. | Write a Java program that implements a multi-threaded application that has three threads. First thread generates a random integer every 1 second and if the value is even, second thread computes the square of the number and prints. If the value is odd, the third thread will print the value of cube of the number. | CO2 | 10 |
| **(OR)** | | | | |
| 6. | a. | Develop a Java program to implement user defined exception handling. | CO3 | 10 |
| b. | Describe the lifecycle and states of thread with an example. | CO2 | 10 |
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| 7. | a. | Develop a program to demonstrate the file handling operations as per the following.   * Write your personal details in a file “newfile.txt”. * Read and display the personal details from that file in a console. | CO3 | 10 |
| b. | Develop a program to store the given ‘M’ number of integers in an array variable and find the sum of those numbers and display the same. | CO2 | 10 |
| **(OR)** | | | | |
| 8. | a. | Demonstrate the usage of ArrayList with sample program. | CO1 | 10 |
| b. | Illustrate method overloading and method overriding with sample code. | CO3 | 10 |
|  | | **Compulsory:** |  |  |
| 9. |  | Design a Java swing GUI application for the Login functionality as per the sample design given below. Show a message box “Login Successful” if username and password is “pass\*code”, otherwise show a message box “Login Failed”. | CO1 | 20 |