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**Third Semester MCA Degree Examination, Dec.2016/Jan.2017**  
**Programming Using JAVA**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1 a. Discuss the various primitive data types used in JAVA. Give suitable example. (08 Marks)
- b. Explain implicit and explicit type conversion. Give suitable example. (06 Marks)
- c. Evaluate the following expression where a = 5, b = 10 and c = 6
  - i)  $a + b - c * b / a - c + a - b$
  - ii)  $((a - b) * c) > (c - a * b) \mid \mid (b + c * a) < (b / a + c)$
  - iii)  $(a - b) * c + c * b - a + 15 * (4 - c) / 3$  (06 Marks)
- 2 a. Write a JAVA program to evaluate the following  $1^2/3! + 2^3/4! + 3^4/5! + \dots + n^{n+1}/(n+2)!$  (10 Marks)
- b. What is a class? Give the general form of a class. (05 Marks)
- c. Explain the following with suitable example (05 Marks)
  - i) new operator
  - ii) this keyword.
- 3 a. Write a JAVA program to find the sum and average of even numbers in a given matrix. Print the result with the suitable heading along with the given matrix in the matrix form. (08 Marks)
- b. Write a JAVA program to find the sum and average of the element i.e {8, 6, 4, 2, 1, 3, 17, 18, 15} using enhanced for loop. (06 Marks)
- c. Explain any three functions that operate on string. (06 Marks)
- 4 a. Explain method overloading and method overriding. Give suitable example. (08 Marks)
- b. Explain the following : i) super ii) final (06 Marks)
- c. What is abstract class? Illustrate with a programming example. (06 Marks)
- 5 a. What are interfaces? What are their benefits? Explain how it is implemented in JAVA with a suitable example. (10 Marks)
- b. Explain different access specifiers used in JAVA. Give suitable example. (10 Marks)
- 6 a. What is multithreading? Write a JAVA program to create multiple threads in JAVA by implementing runnable interface. (08 Marks)
- b. With a suitable programming example explain inter-thread communication. (06 Marks)
- c. What is an exception? How exceptions can be handled in JAVA? (06 Marks)
- 7 a. What is autoboxing? Illustrate with a programming example. (06 Marks)
- b. What is meant by generic class? Illustrate with a programming example. (06 Marks)
- c. What is an applet? With the help of a skeleton, explain the life cycle of an applet. (08 Marks)
- 8 a. Write a JAVA swing program to create a frame which contains 2 buttons named "Alpha" and "Beta". When either of button is pressed, it should display "Alpha is pressed" and "Beta is pressed". (10 Marks)
- b. Write a JAVA program which demonstrates utilities of linked list class. (10 Marks)