2022

M.Sc.

2nd Semester Examination

COMPUTER SCIENCE

PAPER—COS-203

Full Marks : 50

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

COS-203 MODULE 1 (OOPS WITH JAVA)

Group - A

Answer any *two* questions. 2×2

1. What do you mean by JVM and bytecode?

2. Why static member variables and functions are used in Java?

3. Write down the usability of 'super' keyword.

4. Differentiate among final, finally and finalize.

Group – B

Answer any *two* questions. 2×4

5. What do you mean by wrapper class? Discuss about autoboxing and unboxing using a suitable example. 2+2

6. What is nested class and inner class in Java? Briefly discuss about anonymous inner class with a suitable example. 2+2

7. Why Java string is immutable? Is there any way to create mutable strings in Java? What is a jagged array? 1+1+2

8. What is a package? Briefly explain how a package is created and imported. 1+3

Group – C

Answer any *one* question. 1×8

9. Discuss about Exception class hierarchy in Java. What do you mean by checked and unchecked exception? Briefly explain about the role of try, catch, and finally in exception handling. 2+2+4

10. What do you mean by multithreading? How are threads created in Java? Briefly explain about the concept of object level and class level lock in synchronization. 2+2+4

[Internal assessment – 5]

COS–203 MODULE 2 (PROGRAMMING IN R)

Group – A

Answer any *two* questions. 2×2

1. What is the role of seq and rep functions in R?

2. What is the difference between print and cat method?

3. What are the different methods to get help from R environment?

4. What do you mean by an environment in R?

Group – B

Answer any *two* questions. 2×4

5. Explain about different types of data structures used in R.

6. Briefly discuss about different functions used for debugging in R.

7. Discuss about different methods to read data from the keyboard using suitable example.

8. What is subsetting? Discuss about the operators used for subsetting. 1+3

Group – C

Answer any *one* question. 1×8

9. What is Rmarkdown? What is KnitR? Discuss about the process of generating documents in different formats using the combination of these two. 2+2+4

10. What is vectorization in R? Why vectorized functions are written in languages like C? Briefly discuss about 'apply' family of functions used for looping in R.

[Internal assessment – 5]

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