

Dec.-22-0276

CS-601 (Advance Java)

B.Tech. 6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question from each section A, B, C and D. Question no. 9 is compulsory.

SECTION - A

- (a) Is Java pure object oriented language? Support your answer. Explain the advantage and disadvantages of Java. (5)
- (b) Write a brief note on OOP principles. (5)
- (a) Explain the concept of JDK, JRE and JVM. (5)
- (b) Make a comparative study between Java, C and C++. (5)

SECTION - B

- (a) Why does JComponent have add() and remove() methods but Component does not? Give suitable example (5)
- (b) How are the elements of a border layout organized? (5)
- (a) What advantage do Java layout managers provide over traditional windowing system? (5)
- (b) How are the elements of a Border Layout organized?(5)

SECTION - C

- (a) How does the performance of JSP pages compare with that of servlets? How does it compare with perl scripts? (6)

2

CS-601

- (b) How do you call one servlet from another servlet? (4)
- 6. (a) How do you upload a file to servlet or JSP? (5)
- (b) How does servlet communicate with a JSP page? (5)

SECTION - D

- 7. (a) Define JDBC drivers. Mention all the four types of JDBC drivers and contrast them with their advantages and disadvantages. (6)
- (b) Write a detailed note on different types of design patterns in JDBC. (4)
- 8. (a) How to create a database connection with ODBC? Explain in detail (5)
- (b) How to pass parameters to a statement? Explain with example (5)

SECTION - E

- 9. (a) How many types of JDK are there? (5)
- (b) How to terminate the JVM instance from the running application? (5)
- (c) Why AWT is heavyweight? (5)
- (d) Which swing methods are thread-safe? (5)
- (e) Which are three types of Look & Feel available in swing? (5)
- (f) Why there are no constructors in servlets? (5)
- (g) How do you deal with multi-valued parameters in a servlet? (5)
- (h) List out some advantages of using JSP. (5)
- (i) What is the purpose of ODBC? (5)
- (j) Which type of JDBC driver is the fastest one and why? (10×2=20)

- (b) Discuss about SDD with suitable example and differentiate between S-attribute and L-attribute. (5)

SECTION - D

7. (a) Construct the DAG for the following basic block

$$d = b * c$$

$$e = a + b$$

$$b = b * c$$

$$a = e - d$$

and simplify the above three address code of assuming:

- (i) Only **a** is live on the exit from the block.
 (ii) **a**, **b**, and **c** are live on exit from the block. (5)

- (b) Discuss the partitioning of three-address instructions into basic blocks and representation by flow graph using suitable example. (5)

8. (a) Translate the following three-address statements into machine-code instructions and show the register and address descriptors before and after the translation of each three-address instruction.

$$t = a - b$$

$$u = a - c$$

$$v = t + u$$

$$a = d$$

$$d = u + v \quad (5)$$

- (b) Construct the DAG following expressions.

$$((x + y) - ((x + y) * (x - y))) + ((x + y) * (x - y)) \quad (5)$$

SECTION - E

9. (a) Discuss in brief about any compiler writing tool.
 (b) Compare DFA and NFA with suitable example.
 (c) What do you mean by bootstrapping? Discuss with example.
 (d) Explain backtracking with suitable example.
 (e) Describe the context free grammar and parse tree.
 (f) Construct the syntax tree for the expression:
 $a + a * (b - c)$.
 (g) Compare the quadruples and triples representation of three-address code.
 (h) Translate the arithmetic expression $a = b * -c + b * -c$ into three-address code where $-c$ is a unary operator.
 (i) What are the primary tasks of code generator in compiler design?
 (j) What is the Peephole Optimization? (10×2=20)

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]

Dec-24-0463 (CBCS)

CS-601 (Advance Java)

B.Tech-6th (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all, select one question from each section A, B, C, D. Section E (Question-9) is compulsory.

SECTION A

1. a) Explain the control structures used in Java. (5)
b) Write a program to demonstrate uses of implementing interfaces. (5)
2. Define a package. Illustrate creating and accessing user-defined packages in java with an example. (10)

SECTION B

3. Write note on:
(i) JDBC API (5)
(ii) JDBC driver (5)
4. Write a Java program to find the sum of first 100 prime numbers. (10)

SECTION C

5. a) What is multithreading? Write a program to print the sum of given 30 numbers. The program should start three threads where each thread will find the sum of 10 numbers. The main thread should print the final sum. (5)

2

CS-601

- b) Write a program to demonstrate the following: (5)
 - i. To convert lower case string to upper case.
 - ii. To compare two strings.
6. a) Consider a class distance which stores a distance value using kilometer and meter. Overload the +operator to add two distance objects. (5)
b) The Fibonacci sequence is defined by the following rule: The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a Java program that uses both recursive and non-recursive functions to print the nth value in the Fibonacci sequence. (5)

SECTION D

7. a) What is constructor? How to declare it? Write a program to show how can constructor be overloaded. (5)
b) Write a program that reads from the console two integer numbers (int) and prints how many numbers between them exist, such that **the remainder of their division by 5 is 0**. Example: in the range (14, 25) there are 3 such numbers: 15, 20 and 25. (5)
8. Explain following:
 - a) What are the different component classes of Swing? (5)
 - b) Explain the life cycle of servlet. (5)

[P.T.O.]