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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fourth Semester B.Tech Degree (S, FE) Examination May 2023 (2015 Scheme)

Course Code: CS206

Course Name: OBJECT ORIENTED DESIGN AND PROGRAMMING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1 Draw the use case diagram of a super market prize scheme. Here each customer who comes to the super market registers her name with the sales clerk. The sales clerk has the additional duty of billing the items the customer has purchased. Finally the manager of the super market selects the winners. (3)

2 Explain Java Virtual Machine. (3)

3 Illustrate method overloading in Java. (3)

4 What is the use of *this* keyword in Java? Explain with an example. (3)

PART B

Answer any two full questions, each carries 9 marks.

5 a) Explain Object Oriented System Development Life Cycle. (4)

b) Distinguish between structural and behavioural UML diagrams with examples. (5)

6 a) Define a class *ComplexNumber* with two numeric member variables *real* and *imaginary* to represent a complex number. Add a parameterized constructor to initialize these variables. Add a member method *findMagnitude* which returns the magnitude of the complex number using the formula $\sqrt{real^2+imaginary^2}$. (5)

b) Explain variable length arguments with an example. (4)

7 a) Write a Java program to read an integer as a command line argument. Print the factorial of the number. (6)

b) Why is the *main* function *static* in Java? (3)

PART C

Answer all questions, each carries 3 marks.

8 What is a file? How are files represented in Java? (3)

9 Explain the difference between the keywords *final* and *finally*. (3)

10 Draw the life cycle of a thread. (3)

11 What are checked exceptions? Explain with an example. (3)

PART D

Answer any two full questions, each carries 9 marks.

12 a) Discuss about any two stream classes in Java. (3)

b) Write a Java program to read a text file which contains a single word. Check whether the word is a palindrome or not. The file name should be read through the keyboard. Use proper exception handling. (6)

13 a) What is multithreading? (2)

b) Write a Java program to read a number *n* from the keyboard. Create two threads, the first one prints all the prime numbers up to *n* and the second one prints all the Fibonacci numbers up to *n*. The main thread should wait till the child threads exit. (7)

14 a) What are packages in Java? What are their uses? How can they be created and imported in Java programs? (6)

b) What are abstract classes? How are they different from interfaces? (3)

PART E

Answer any four full questions, each carries 10 marks.

15 a) Why are strings immutable in Java? (2)

b) Explain any *four* string functions in Java with usage and examples. (8)

16 a) Define an applet. Draw the life cycle of an applet. (5)

b) Write an applet based Java program to display a label *"welcome to Object Oriented Programming"*. (5)

17 a) Explain about delegation event model in Java. (5)

b) List any *five* event sources and their corresponding event listeners. (5)

18 a) What is a frame? (2)

b) Write an AWT frame based Java application to create a simple calculator with buttons for addition, subtraction, multiplication and division. There should be three text fields, two for operands and the third for showing the result. On clicking any of the buttons, the appropriate result should be displayed in the result text box. (8)

19 a) Give the differences between AWT and Swing. (5)

b) What is use of *paint()* method? Explain with an example. (5)

20 a) With a diagram, explain the architecture of Java Database Connectivity (JDBC) (5)

b) With a suitable example, explain dynamic query in JDBC. (5)

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