

2024

COMPUTER SCIENCE — HONOURS

Paper : CC-12

(Object Oriented Programming)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer **question no. 1** and **any four** questions from the rest.

1. Answer **any five** questions: 2×5
 - (a) Mention the main purpose of the JVM (Java Virtual Machine).
 - (b) What is static method in Java?
 - (c) Explain the utility of wrapper class in Java.
 - (d) Differentiate between checked and unchecked exceptions. Provide examples.
 - (e) Differentiate between method overloading and method overriding.
 - (f) State the purpose of the 'synchronized' keyword in Java.
 - (g) Briefly explain the use of finally() method in Java.
 - (h) Explain the difference between the *StringBuilder* and *StringBuffer* classes.
2. (a) What is exception handling in Java?
(b) Discuss the key components of exception handling (try, catch, finally, throw and throws) with a detailed example demonstrating their usage. 2+8
3. Explain the difference between Abstract Classes and Interfaces in Java. Under what circumstances should each be used? Provide examples with code to illustrate your points. 3+3+4
4. (a) Differentiate between private and public access specifier with the help of an example.
(b) What is a package? Explain the different access control packages in Java.
(c) What is the difference between primitive data types and reference data types in Java? Provide examples for each. 3+4+3
5. (a) What are inner classes in Java? Briefly explain anonymous inner classes with a suitable example.
(b) What are implicit and explicit casting in Java? Explain with the help of examples.
(c) Explain Dynamic Method Dispatch with suitable examples. (2+2)+3+3

Please Turn Over

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6. (a) What is the difference between 'error' and 'exception'?
- (b) Illustrate the 'ArrayIndexOutOfBoundsException' exception with an example.
- (c) Define an exception called 'NotEqualException' that is thrown when a float value is not equals to 3.14. Write a program that uses user defined exception. 3+2+(2+3)
7. (a) State the differences between the string and stringbuffer classes in Java.
- (b) What is vector?
- (c) How is an array declared and instantiated in Java?
- (d) Write a code snippet to find out the minimum element from an array without sorting it. 3+2+2+3
8. (a) What is multithreading?
- (b) What is thread synchronization? How is it achieved in Java?
- (c) Explain the difference between creation of user thread by extending thread class and implementing runnable interface with suitable example. 2+(2+2)+4
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