PG/IIIS/MCA/301/24

MCA 3rd Semester Examination, 2024

MCA

(*Advanced Java*)

PAPER — MCA-301

Full Marks : 100

Time : 3 hours

Answer **all** questions

The figures in the right hand margin indicate marks

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

GROUP — A

Answer any **five** questions :   2 × 5

1. Define encapsulation and provide an example.

2. What are the different types of access specifiers in Java ?

(2)

3. What is the purpose of the "final" keyword in java ?

4. Explain the concept of immutable strings in Java with an example.

5. What is the role of the finalize() method in Java ?

6. How do you mean by an event in AWT ?

7. What is abstract class ?

8. What is byte code ?

GROUP – B

Answer any **four** questions : 15×4

9. What do you mean by a constructor ? What are the types of constructors ? Explain constructor overloading with suitable example. $4 + 4 + 7$

10. How does method overriding differ from overloading ? Explain with suitable examples. Explain the role of the "this" and "super" keywords in method calls with proper examples.   7 + 8

11. What are exceptions and why is exception handling important ? Explain the usage of try-catch blocks with an example. How can you ensure resource cleanup when exceptions occur ? Differentiate between throw and throws.   3 + 6 + 3 + 3

12. What do you mean by inter-thread communication ? How is it implemented in Java ? How do you achieve thread synchronization and why is it necessary ? Write a multithreaded program to explain deadlock.   3 + 2 + 2 + 8

13. Explain thread life cycle with suitable diagram. What do you mean by multithreading ? Explain synchronized() method with suitable example.   7 + 3 + 5

14. Can an interface extends another interface ?
If yes, demonstrate with an example. In which
scenarios will you use an interface instead
of an abstract class ? How does Java support
multiple inheritance using interfaces ? What
is a marker interface ? Give one example.

5 + 4 + 3 + 3

15. How do you handle keyboard input using
Buffered Reader ? Discuss with an example.
Explain the use of the Scanner class for reading
different types of input with a suitable example.
Briefly explain how command line arguments
are handled by Java using an example.

4 + 4 + 7

16. What are Java frameworks, and why are they
important ? Briefly describe the different
scripting elements of JSP. How does a servlet
work in a web-based application ?   4 + 8 + 3

[Internal Assessment — 30 Marks]