

- (c) What do mean by marshalling and unmarshalling? What is the purpose of the RMI registry?

**3 + 5 + (2 + 2) = 12**

**Group - E**

8. (a) What are the callback annotations for message driven bean?  
 (b) What does "stateless" mean in a stateless session bean? Can stateless session beans cache any information?  
 (c) What happens when an enterprise bean throws an exception? How are exceptions propagated?

**4 + (2 + 3) + 3 = 12**

9. (a) What are enterprise bean "value objects"? How do you persist value object instances?  
 (b) How should system exceptions be handled from an enterprise bean? Can we use synchronization primitives in my enterprise beans?  
 (c) Is message driven bean a stateless bean?

**(3 + 2) + (2 + 3) + 2 = 12**

**ADVANCED JAVA  
(MCAP 3151)**

**Time Allotted : 3 hrs**

**Full Marks : 70**

***Figures out of the right margin indicate full marks.***

***Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.***

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

**Group - A  
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) Which exception is thrown by the Class.forName() method when the JDBC driver being registered is not found?  
 (a) ClassNotFoundException (b) DriverNotFoundException  
 (c) UnregisteredDriverException (d) SQLException.
- (ii) In a Java Swing application, which event is generated when a button is pressed?  
 (a) WindowEvent (b) ActionEvent  
 (c) JButtonEvent (d) KeyEvent.
- (iii) Which method is used to deactivate an active session?  
 (a) remove( ) (b) destroy( )  
 (c) delete( ) (d) invalidate( ).
- (iv) Suppose a servlet application has ONLY the following three web pages: welcome.html, welcome.htm and welcome.jsp and no welcome file list has been specified in the deployment descriptor file. When the application is run, which of the following pages gets loaded as the starting page?  
 (a) welcome.html  
 (b) welcome.htm  
 (c) welcome.jsp  
 (d) 404 (resource not found) error occurs.
- (v) Which method is used by an RMI application to access a remote object from the registry associated with a specified name?  
 (a) rebind( ) (b) bind( ) (c) lookup( ) (d) list( ).

- (vi) Which option is true about session scope?  
 (a) Objects are accessible only from the page in which they are created  
 (b) Objects are accessible only from the pages which are in same session  
 (c) Objects are accessible only from the pages which are processing the same request  
 (d) Objects are accessible only from the pages which reside in same application.
- (vii) Suppose a Java bean has the following attribute:  
 int age;  
 What is the correct prototype of its setter method?  
 (a) int setAge (int age) (b) void setAge (int age)  
 (c) int ageSetter (int age) (d) void ageSetter (int age).
- (viii) Which of the following is not an Enterprise Beans type?  
 (a) Doubleton (b) Singleton  
 (c) Stateful (d) Stateless.
- (ix) Which method in session tracking is used in a bit of information that is sent by a web server to a browser and which can later be read back from that browser?  
 (a) HttpSession (b) URL rewriting  
 (c) Cookies (d) Hidden form fields.
- (x) In MVC architecture, view corresponds to:  
 (a) Interface layer (b) Data access layer  
 (c) Domain object layer (d) Business logic layer.

**Group - B**

2. (a) Distinguish between invokeAndWait and invokeLater.  
 (b) Define the function of lightweight components used in Swing.  
 (c) What is synchronization and why is it important?  
 $3 + 3 + (3 + 3) = 12$
3. (a) Explain the use of executeQuery() and executeUpdate() method with an example.  
 (b) What is the purpose of the ResultSet class? Suppose you have a library database called LIBRARY having the fields: BOOK\_ID, BOOK\_NAME and BOOK\_PRICE (in this order) with data types integer, string and double respectively. Write JDBC code snippets showing how the ResultSet is accessed using (i) column indices (ii) column names.

- (c) What is the difference between Statement and PreparedStatement? When is it beneficial to use a PreparedStatement rather than Statement?

$$2 + (1 + 3 + 3) + (2 + 1) = 12$$

**Group - C**

4. (a) What are the differences between *n*-tier and MVC architectures?  
 (b) Explain the difference between forward() and include() methods in dispatching a request.  
 (c) What is the purpose of using cookies in a web application? Write a servlet program that creates a cookie called "department" and sets its value to "MCA". How are cookies deleted?
5. (a) Explain use of HttpSession object for session tracking.  
 (b) Suppose you are opening a single JDBC connection using init() method. Do you need to synchronize on the Connection or the Statement object?  
 (c) For initializing a servlet can we use a constructor in place of init()? Explain.

$$3 + 3 + (1 + 4 + 1) = 12$$

$$4 + 4 + 4 = 12$$

**Group - D**

6. (a) Describe the life cycle of a JSP page. What are the benefits of using JSP over Servlets?  
 (b) What are implicit objects in JSP and what benefits do they provide? How are implicit objects used to handle exceptions during the execution of a JSP web application? Explain with an example.  
 (c) Why are custom tags used in JSP applications? What is the purpose of a Tag Library Descriptor?
7. (a) Explain the differences between stub and skeleton remote objects in an RMI application.  
 (b) Explain the three layers of the RMI architecture.

$$(3 + 2) + (2 + 3) + (1 + 1) = 12$$