

MCA (Revised) / BCA (Revised)

Term-End Examination

10861

June, 2017

**MCS-024 : OBJECT ORIENTED TECHNOLOGIES AND
JAVA PROGRAMMING**

Time : 3 hours

Maximum Marks : 100

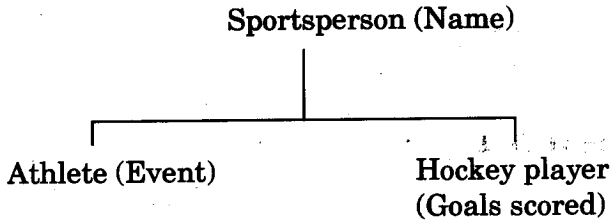
(Weightage 75%)

Note : Question no. 1 is compulsory and carries 40 marks. Attempt any three questions from the rest.

1. (a) An employee works in a particular department of an organisation. Every employee has an employee number, name and draws a particular salary. Every department has a name and a head of department. The head of department is an employee. Every year a new head of department takes over. Also, every year an employee is given an annual salary enhancement. Identify and design the classes for the above description with suitable instance variables and methods. The classes should be such that they implement information hiding. You must give logic in support of your design. Also create two objects of each class.

6

- (b) Consider the following class hierarchy :



In this hierarchy, you can assume that a sportsperson can either be an athlete or a hockey player. Every sportsperson has a unique name. An athlete is characterised by the event in which he/she participates; whereas a hockey player is characterised by the number of goals scored by him/her. Perform the following tasks using Java :

- (i) Create the class hierarchy with suitable instance variables and methods. 3
- (ii) Create a suitable constructor for each class. 3
- (iii) Create a method named `display_all_info` with suitable parameters. This method should display all the information about the object of a class. 3
- (iv) Write the main method that demonstrates polymorphism. 4



- (c) A text file stored on the disk is to be opened for reading operations. What are the different checks that should be performed on this file ? Write the portion of the code in Java to perform these checks. 4
- (d) Explain the thread model with the help of a diagram. 6
- (e) What is a layout manager ? Explain the flow layout and grid layout with the help of an example of each. 7
- (f) What is an event in the context of Java ? Explain the semantic event with the help of an example. 4
2. (a) Differentiate between the following : 12
- (i) Procedural paradigm versus Object-oriented paradigm
 - (ii) While versus For statements of Java
 - (iii) Function overloading versus Method overriding
 - (iv) Java application versus Java applet
- (b) Explain the importance/uses of the following with the help of an example each : 8
- (i) Bitwise operators
 - (ii) Operators precedence
 - (iii) Array initializer
 - (iv) Byte code

3. (a) Define the term exception in the context of Java. What are the causes of exception ? What are the actions that may need to be performed if an exception is caught ? Explain the uses of try and catch in Java with the help of an example program segment. 10
- (b) What is an Interface ? What is meant by 'implementing interfaces' ? Explain with the help of an example. 5
- (c) What are the uses of "this" keyword in Java ? Explain with the help of an example. 5
4. (a) What are the advantages of multithreading in Java ? Explain the interthread communication with the help of an example. 8
- (b) Write a program in Java that converts a string 127 into equivalent integer value and prints it. 6
- (c) What are the uses of the following in the context of I/O in Java ? 6
- (i) File class
- (ii) Buffered stream classes
5. Explain the following with the help of an example/diagram/program, if needed : 5×4=20
- (a) Creating a choice list in Java
- (b) Using checkboxes in Java
- (c) Drawing a rectangle in Java
- (d) Servlet Life Cycle
- (e) Executing SELECT statement in Java