

(Please write your Exam Roll No.)

Exam Roll No .....

**Bharati Vidyapeeth's**  
**Institute of Computer Applications and Management**  
**A-4, Paschim Vihar, New Delhi-63**  
**THIRD SEMESTER [MCA] Internal Examination, October-2017**

<b>Paper Code: MCA -205</b>	<b>Subject: Java Programming</b>
<b>Time: 2 Hours</b>	<b>Maximum Marks: 45</b>
<b>Note: Attempt THREE questions in all. Question No. 1 is compulsory and attempt one question from each unit.</b>	

1. Answer all the following questions briefly:- 1.5 x 10 = 15
- (a) Discuss the requirements for a class to fulfill in order to be processed using the enhanced for loop of java (for each)? 1.5
  - (b) Suggest an approach that may be used in order to avoid code replication in multiple constructors of a class. 1.5
  - (c) Differentiate between up-casting and down-casting and their restrictions? 1.5
  - (d) An overriding function is not allowed to have lower accessibility level as compared to the corresponding overridden function. Why? 1.5
  - (e) Give two examples where Java API uses interfaces to implement callbacks. 1.5
  - (f) Explain try-with-resources? What is the restriction on the "resources"? 1.5
  - (g) State the significance of three top level classes in exception class hierarchy of Java. 1.5
  - (h) Interpret situations when you would prefer using HashSet over TreeSet and vice versa. 1.5
  - (i) State two situations where serialization may be used to access objects across JVMs? 1.5
  - (j) Justify how can a specific functionality be imposed on multiple classes not related through inheritance relationship? Give a suitable example. 1.5

**UNIT I**

2. Give short answers for the following 5x2=10
- (a) Elaborate the significance of the statement that swing components are thread unsafe? How is this problem overcome?
  - (b) State three good programming practices while writing exception handlers. Explain with help of an example, the difference between functions getKeyCode and getKeyPress?
3. Construct code snippets for the following: 5x2=10
- (a) Create a code snippet that may be added to a class course to make its objects sort able on basis of course name (not its natural sorting order). Disallow pressing of non-numeric key in a text field.
  - (b) Given a class ProductExpiredException to be raised while selling an expired product, write a code snippet to raise the same on attempting to sell an expired product. Ensure that the information of expired product is bundled in the exception object. Prepare and send a datagram packet for replying to the sender

## UNIT II

4. Design implementation model for the following: 5x2=10
- (a) A database associates projects undertaken with the client for which the project is being developed. Write a function to search and return a hash map of Project and Client classes.
  - (b) Construct functions to open and save text files in a simple text editor. Assuming the UI is already created. Draw the GUI you are working on.
5. Analyze the Case Study mentioned below and attempt the questions: [5x2=10]
- On Time Co. Ltd. is in the business of selling analog and digital watches. Some of the analog watches are mechanical vintage watches. In battery operated watches the cells are installed only at the time of selling the watch, whereas mechanical watches are always kept in operational mode. However time shown by each watch is verified and set before selling. Recently the company also diversified into selling fitness bands most of which also have an inbuilt feature of showing time in digital mode. You are required to design an object oriented system for representing the above situation. The desirable features are listed below (part 1 is compulsory, attempt any two from the rest):
- (a) Draw a class diagram for the above mentioned situation. Design a GUI for adding a product to the inventory (no code required). Assuming that the entity classes as per the diagram suggested by you are already given to you, write the event handler for adding a product to the DB. No DB handling code is required here; use the code written in entity classes. Assuming that addition of a duplicate product raises a user defined exception write the custom exception class and a code snippet to show an error message to the end user when addition of a duplicate product is attempted.
  - (b) You are given a UI that uses drop down lists to choose the product name and corresponding model number. Write the code to populate the list for model number from database, when selection in list for product name changes. (State the structures of DB tables used). Create the sell functions of all the products. In case the product is capable of telling time, the functionality to check/set time must be invoked before updating the inventory. You may assume function(s) to adjust inventory level exist(s) in appropriate class / classes. State your assumption clearly.

\*\*\*\*\* **Wish you Luck!** \*\*\*\*\*