

BABARIA INSTITUTE OF TECHNOLOGY
COMPUTER SCIENCE & ENGINEERING DEPARTMENT

OBJECT ORIENTED PROGRAMMING USING JAVA

SUBJECT CODE: 2150704

B.E. 5th SEMESTER

Question Bank

	BASICS OF JAVA
1	Explain the features of java.
2	List OOP characteristics and describe inheritance with examples.
3	i) JVM is platform dependent. Justify. (ii) There is no destructor in Java. Justify.
4	Compare String with StringBuffer. Also write a program to count occurrence of character in a string.
5	Explain Following: 1. Garbage Collection 2. Short Circuit Operators 3. Static block 4. this keyword 5. this() method 5. JVM and JRE
6	What is constructor? Explain constructor overloading with example.
7	It is required to compute SPI (semester performance index) of n students of your college for their registered subjects in a semester. Declare a class called student having following data members: id_no , no_of_subjects_ registered, subject_code , subject_credits, grade_obtained and spi. - Define constructor and calculate_spi methods. - Define main to instantiate an array for objects of class student to process data of n students to be given as command line argument
8	Declare a class called Coordinate to represent 3 dimensional Cartesian coordinates(x, y and z). Define following methods:

	<ul style="list-style-type: none"> - constructor - display, to print values of members - add_coordinates, to add three such coordinate objects to produce a resultant coordinate object. Generate and handle exception if x, y and z coordinates of the result are zero. - main, to show use of above methods.
	INHERITANCE
9	<p>Declare a class called employee having employee_id and employee_name as members. Extend class employee to have a subclass called Salary having designation and monthly_salary as members. Define following:</p> <ul style="list-style-type: none"> - Required constructors - A method to find and display all details of employees drawing salary more than Rs. 20000/-. - Method main for creating an array for storing these details given as command line arguments and showing usage of above methods.
10	Explain & illustrate by examples use of final, finally and method finalize.
11	What is visibility modifier? Explain all with example.
12	Explain method overriding and method overloading with the help of examples.
13	Write a program that illustrates interface inheritance. Interface A is extended by A1 and A2. Interface A12 inherits from both P1 and P2. Each interface declares one constant and one method. Class B implements A12. Instantiate B and invoke each of its methods. Each method displays one of the constants
14	How interface are useful in java? Explain with example.
15	What are final class, final function and final variable in java? Explain with example.
16	Explain this reference, key word static and garbage collection.
	PACKAGES
17	Explain package and interface with Example.
18	What is package? Explain steps to create package with example.
	EXCEPTION HANDLING

19	What is an Exception? Explain Exception handling in JAVA
20	What is Exception? Give some of Built-in exceptions in java. Also give difference between throw and throws
21	Write a method for computing xy by doing repetitive multiplication. x and y are of type integer and are to be given as command line arguments. Raise and handle exception(s) for invalid values of x and y. Also define method main. Use finally in above program and explain its usage.
22	Explain the following terms with respect to exception handling. i) try ii) catch iii) throw iv) finally
	MULTI THREADING
23	What is Multi threading ? Explain Life cycle of Thread With example.
24	Explain thread Synchronization with join() and isAlive() methods.
25	Explain: wait, sleep and synchronize.
26	<p>It is required to have total two threads, both capable of acting as a produce as well as a consumer. If first thread acts as a producer then, the second thread becomes the consumer and vice-versa. They communicate with each other through a buffer, storing one integer number. One of the threads initiates the communication by sending 1 to the other thread. The second thread, on receiving 1 sends 2 to the first thread. On receiving 2, the first thread sends three integer numbers, one by one to the second thread. The second thread consumes the numbers by displaying them. Both threads terminate after that.</p> <p>Note that both threads must be capable of initiating the communication. Write complete multi-threaded program to meet above requirements.</p>
27	Draw and explain life cycle of thread. Also list and explain various methods of thread.
28	Write an application that creates and starts three threads. Each thread is instantiated from the same class. It executes a loop with 10 iterations. Each iteration displays string "HELLO", sleeps for 300 milliseconds. The application waits for all the threads to

	complete & displays the message "Good Bye.
29	Write a program to create two threads, one thread will print odd numbers and second thread will print even numbers between 1 to 20 numbers.
30	Compare List, Set and Map interfaces. Also compare ArrayList, TreeSet and HashMap classes in java.
	JAVA I/O STREAMS
31	Explain File constructors, any two methods of class File and method seek.
32	Write a program to replace all “word1” by “word2” from a file1, and output is written to file2 file and display the no. of replacement.
33	Write a program that counts number of characters, words, and lines in a file. Use exceptions to check whether the file that is read exists or no.
34	Differentiate the following: 1. Text I/O v/s Binary I/O. 2. String class v/s StringBuffer class
35	How can we open and read a text file in java? Explain your answer with example.
	CLASS-DIAGRAM
36	Prepare a class diagram for a graphical document editor that supports grouping. Assume that a document consists of several sheets. Each sheet contains drawing objects, including text, geometrical objects and groups. A group is simply a set of drawing objects, possibly including other groups. A group must also contain at least two drawing objects. A drawing object can be a direct member of at most one group. Geometrical objects include circles, ellipses, rectangles, lines, and squares.
37	What do you mean by Aggregation? What is the difference between Aggregation and Composition? Explain use of all models.
38	Define the purpose of following terms with suitable example and UML notations with respect to class model. (i) Qualified association (ii) Association class (iii) Aggregation (iv) Multiplicity (v) Constraint (vi) Derived data (vii) Package

39	<p>Prepare a class model for the hotel management system.</p> <p>The system should supports chain of hotels. A hotel contains two categories of rooms: executive and normal, both AC and non-AC. The customers of executive rooms can avail extra facilities like games, swimming, food service in rooms, etc. The booking is possible by internet or by phone. If the booking is through phone, process is done by receptionist, and if booking is done through internet the process is carried out by customer through hotel website. Depending on the number of days customer stays, appropriate bill is generated. The bill also contains amount for transport, food and other facilities enjoyed by the customer along with necessary taxes. The manager should be able to generate reports like list of customers staying in the hotel, list of rooms empty, monthly/yearly income, etc.</p>
	USE CASE -DIAGRAM
40	<p>Consider the following system for Online Theatre Booking (for multiplex). Following are the minimum requirement of the system from the perspective of a</p> <ul style="list-style-type: none"> • User who is going to use this online system. • User should be a registered member. • User can book any number of tickets on availability. • User should be able to search for the availability of tickets on selecting particular movie. • Once user books the ticket a token number will be generated so that on providing this token he will be able to collect tickets before show from theatre premises. • User can cancel all or some seats of the ticket by providing token number before 1 Hr of scheduled time for that movie. <p>(I) Describe the system boundary for this application in a few sentences.</p> <p>(II) Identify the actors for the application and draw the use case diagram.</p>
41	<p>What is the importance of use case diagram? Explain relationships between use cases with suitable example and proper UML notations. Draw use case diagram for an</p>

	'Online railway ticket reservation system'.
	ACTIVITY DIAGRAM
42	Prepare an activity diagram for computing a restaurant bill. There should be a charge for each delivered item. The total amount should be subject to tax. There is a service charge of 18% for groups of six or more and 10% for smaller groups. Any coupons and gift certificates submitted by the customer should be subtracted.
43	Why model is required in analysis and design? What is the role of UML in preparing the model? Explain the types of model with their purpose in brief. Which of these models belong to structural group and which of them fall under behavioral group?
44	Explain the purpose of activity diagram? In which situation activity diagram is not necessary? Explain the use of followings concepts for activity diagram: synchronization bar, swimlane, and sending-receiving signals.
	STATE DIAGRAM
45	Differentiate state and event. List different types of events. Identify states and events for a Photocopier (Xerox) machine from the description given below and draw the state diagram for the same. Initially the machine is off. When the operator switches on the machine, it first warms up during which it performs some internal tests. Once the tests are over, machine is ready for making copies. When operator loads a page to be photocopied and press 'start' button, machine starts making copies according to the number of copies selected. While machine is making copies, machine may go out of paper. Once operator loads sufficient pages, it can start making copies again. During the photocopy process, if paper jam occurs in the machine, operator may need to clean the path by removing the jammed paper to make the machine ready.
46	Explain & differentiate state and event.