

- N.B. :** (1) Question no. 1 is compulsory.  
(2) Attempt any three questions out of remaining five questions.
1. (a) Write a program to calculate GCD of two numbers in java. [5]  
(b) Explain any three features of java. [5]  
(c) Draw and explain applet lifecycle. [5]  
(d) Explain wrapper class and its applications. [5]
2. (a) 1 [5]  
1 2  
1 2 3  
1 2 3 4  
Write a program in java to display the above pattern.  
(b) Explain how threads are created in java. [5]  
(c) Write a applet program to draw circle rectangle and line. [10]
3. (a) Write a proper example and explain the steps to create a package and then add a class or a interface. [10]  
(b) Write a program in java to accept the values of a, b, c and d. calculate and display  $((a*d) + (b*c) / (b*d))$ . [10]
4. (a) What is a vector? Explain any five methods of vector. [10]  
(b) Explain abstract class and abstract methods ? [10]
5. (a) Write a detailed note on the following : [10]  
(i) Try-catch (ii) Finally keyword  
(iii) Catching multiple exception (iv) Throwing exception  
(b) Write a java program to find out a number of uppercase, lowercase and blank spaces. [10]
6. Write short notes on [20]  
(a) Wrapper classes  
(b) JVM  
(c) Abstract methods and classes  
(d) Package