

Patuakhali Science and Technology University (PSTU)

Department of Computer Science and Information Technology(CIT)

MId Term Examination (LAB), July-December - 2018

Program: B. Sc. Engg. In CSE

Session: 2017-18

Course Code : CCE 221

Course Title : Object Oriented Programming Language Sessional

Full Time: 2.00 hours

Answer the marked questions

Full Marks: 15

1.

Write a Java program to add two binary numbers.

Input Data:

Input first binary number: 10

Input second binary number: 11

Expected Output

Sum of two binary numbers: 101

2.

Write a Java program to compute the distance between two points on the surface of earth. Distance between the two points [(x₁,y₁) & (x₂,y₂)]

$$d = \text{radius} * \arccos(\sin(x_1) * \sin(x_2) + \cos(x_1) * \cos(x_2) * \cos(y_1 - y_2))$$

Radius of the earth r = 6371.01 Kilometers

Input Data:

Input the latitude of coordinate 1: 25

Input the longitude of coordinate 1: 35

Input the latitude of coordinate 2: 35.5

Input the longitude of coordinate 2: 25.5

Expected Output

The distance between those points is: 1480.0848451069087 km

3.

Write a Java program that takes the user to provide a single character from the alphabet. Print Vowel or Consonant, depending on the user input. If the user input is not a letter (between a and z or A and Z), or is a string of length > 1, print an error message. *Test Data*

Input an alphabet: p

Expected Output :

Input letter is :Consonant

4.

Write a Java program to calculate the average value of array elements.

5. Write a Java method to display the first 50 pentagonal numbers

Note: A pentagonal number is a figurate number that extends the concept of triangular and square numbers to the pentagon, but, unlike the first two, the patterns involved in the construction of pentagonal numbers are not rotationally symmetrical.

Expected Output:

1	5	12	22	35	51	70	92	117	145
176	210	247	287	330	376	425	477	532	590
651	715	782	852	925	1001	1080	1162	1247	1335
1426	1520	1617	1717	1820	1926	2035	2147	2262	2380
2501	2625	2752	2882	3015	3151	3290	3432	3577	3725

6. Write a Java method to check whether a string is a valid password.

Password rules:

A password must have at least ten characters.

A password consists of only letters and digits.

A password must contain at least two digits.

Expected Output:

1. A password must have at least eight characters.
2. A password consists of only letters and digits.
3. A password must contain at least two digits

Input a password (You are agreeing to the above Terms and Conditions.):

abcd1234

Password is valid: abcd1234

- 7.

4.35,4.36,4.37(a, b, c, d), 5.12,5.13,5.14,5.15(a, b, c, d),5.20,5.24,
6.23,6.24,6.25,6.26,6.27,7.29, 7.14,7.17

```
int n, i,
```

```
Scanner input = new Scanner(system
s.out.println (" Enter the nth term
n = input.nextInt();
```

```
s.out.println ("Required series of Int
team or "));
```

```
for (i=0; i<n; i++)
    s.out.print (fib (i)) + "
```

```
static int fibo (int val)
```

```
{ if (val == 0)
```

```
    return 0;
```

```
else if (val == 1)
    return 1;
```

```
else
    return (fibo(val-1) +
            val-2);
```

Patuakhali Science and Technology University (PSTU)
Department of Computer Science and Information Technology (CSIT)
Department of Computer and Communication Engineering (CCE)

Midterm Examination: July-December-2019

Program: B. Sc. Engg.(CSE)

Session: 2018-19

Course Code : CCE-122

Full Time: 1 Hour 30 Minutes

Course Title : Object Oriented Programming Sessional

Full Marks: 15

Part A

1. (*Employee Class*) Create a class called Employee that includes three instance variables—a first name (type String), a last name (type String) and a monthly salary (double). Provide a constructor that initializes the three instance variables. Provide a *set* and a *get* method for each instance variable. If the monthly salary is not positive, do not set its value. Write a test app named EmployeeTest that demonstrates class Employee's capabilities. Create two Employee objects and display each object's *yearly* salary. Then give each Employee a 10% raise and display each Employee's yearly salary again. 7.5
2. (*Computer-Assisted Instruction*) The use of computers in education is referred to as *computer-assisted instruction (CAI)*. Write a program that will help an elementary school student learn multiplication. Use a SecureRandom object to produce two positive one-digit integers. The program should then prompt the user with a question, such as How much is 6 times 7? The student then inputs the answer. Next, the program checks the student's answer. If it's correct, display the message "Very good!" and ask another multiplication question. If the answer is wrong, display the message "No. Please try again." and let the student try the same question repeatedly until the student finally gets it right. A separate method should be used to generate each new question. This method should be called once when the application begins execution and each time the user answers the question correctly. 7.5
3. (*Date Class*) Create class Date with the following capabilities: 7.5
 - a) Output the date in multiple formats, such as
MM/DD/YYYY
June 14, 1992
DDD YYYY
 - b) Use overloaded constructors to create Date objects initialized with dates of the formats in part (a). In the first case the constructor should receive three integer values. In the second case it should receive a String and two integer values. In the third case it should receive two integer values, the first of which represents the day number in the year.
[Hint: To convert the String representation of the month to a numeric value, compare Strings using the equals method. For example, if s1 and s2 are Strings, the method call s1.equals(s2) returns true if the Strings are identical and otherwise returns false.]
4. (*Rectangle Class*) Create a class Rectangle with attributes length and width, each of which defaults to 1. Provide methods that calculate the rectangle's perimeter and area. It has *set* and *get* methods for both length and width. The *set* methods should verify that length and width are each floating-point numbers larger than 0.0 and less than 20.0. Write a program to test class Rectangle. 7.5



Patuakhali Science and Technology University (PSTU)
Department of Computer Science and Information Technology(CSE)

Mid-Term Examination, July-December -2018-19

Program: B. Sc. in CSE

Session : 2017-18

Course Title : Object Oriented Programming Language

Full Marks: 15

Course Code : CSE-121

Full Time: 1 hour

Answer the questions

1. Why java is called machine independent language? 01
2. Develop a Java application that determines whether any of several department-store customers has exceeded the credit limit on a charge account. For each customer, the following facts are available:
 - a) account number
 - b) balance at the beginning of the month
 - c) total of all items charged by the customer this month
 - d) total of all credits applied to the customer's account this month
 - e) allowed credit limit.

The program should input all these facts as integers, calculate the new balance (= beginning balance + charges - credits), display the new balance and determine whether the new balance exceeds the customer's credit limit. For those customers whose credit limit is exceeded, the program should display the message "Credit limit exceeded".

3. What is the difference between a local variable and an instance variable? 01
4. Where does array stored in memory? 01
5. What is ArrayIndexOutOfBoundsException? 01
6. Factorials are used frequently in probability problems. The factorial of a positive integer n (written $n!$ and pronounced " n factorial") is equal to the product of the positive integers from 1 to n . Write an application that calculates the factorials of 1 through 20. Use type long. Display the results in tabular format. What difficulty might prevent you from calculating the factorial of 100? 02
7. Explain the purpose of a method parameter. What is the difference between a parameter and an argument? 01

8. (**Temperature Conversions**) Implement the following integer methods: 03

a) Method **celsius** returns the Celsius equivalent of a Fahrenheit temperature, using the calculation
 $celsius = 5.0 / 9.0 * (fahrenheit - 32);$

b) Method **fahrenheit** returns the Fahrenheit equivalent of a Celsius temperature, using the calculation
 $fahrenheit = 9.0 / 5.0 * celsius + 32;$

Use the methods from parts (a) and (b) to write an application that enables the user either to enter a Fahrenheit temperature and display the Celsius equivalent or to enter a Celsius temperature and display the Fahrenheit equivalent.

9. What does the following program segment do? 01

```
- for (i = 1; i <= 5; i++)
{
    for (j = 1; j <= 3; j++)
    {
        for (k = 1; k <= 4; k++)
            System.out.print('*');
        System.out.println();
    } // end inner for
    System.out.println();
} // end outer for
```

10. Identify and correct the errors in each of the following sets of code: 01

a) while (c <= 5)

```
{
    product *= c;
    +c;
```

b) if (gender == 1)

```
    System.out.println("Woman");
else;
    System.out.println("Man");
```

[Figures in the right margin indicate full marks. Split answering of any question is not recommended. Write the full question number e.g. 4(B) before the answer paragraph]

Answer any 5 of the following questions

- A** What are the principles of Object Oriented Programming (OOP)? Discuss with example. 3
- B** Write a full java program that will read a person's weight (kg) and height (meter) and will calculate the Body Mass Index (BMI).
 $BMI = \frac{\text{weight}}{\text{height}^2}$
 If BMI is < 18, display "You are underweight", if BMI>25 display "You are overweight" else show "Good. You are fit". 5
- C** Write an application that calculates the product of the odd integers from 1 to 15. 6

2 A class recursion

```

    {
        int func(int n)
        {
            int result;
            result = func(n-1);
            return result;
        }
    }

    Class Output
    {
        public static void main(String args[])
        {
            recursion obj = new recursion();
            system.out.print (obj.func(12));
        }
    }
  
```

Write the output of the above code with explanation.

- 2 B** class Teacher {
 String designation = " Teacher" ;
 String collegeName= " PSTU" ;
 void does(){
 System.out.println(" Teaching");
 }
}

public class PhysicsTeacher extends Teacher{
 String mainSubject = "Physics";
 public static void main(String args[]){
 PhysicsTeacher obj = new PhysicsTeacher();
 System.out.println(obj.collegeName);
 System.out.println(obj.designation);
 System.out.println(obj.mainSubject);
 }

97 (1.1.2) = 0

Teach

Teacher

PSTU

Phys Teach

```
    obj.does();
}
}
```

Write the output of the above code with explanation.

2 C Write the difference between method overloading and method overriding with example. 6

3 A Describe the meaning of polymorphism in java with example. Differentiate between compile time polymorphism and run time polymorphism in java. 4

3 B Compare and contrast abstract classes and interfaces. Why would you use an abstract class? Why would you use an interface? 5

3 C How multithreading help to increase parallelism in java? Explain with an example. 5

4 A Explain the purpose of a method parameter. What is the difference between a parameter and an argument? 3

B One of the world's most common objects is a wrist watch. Discuss how each of the following terms and concepts applies to the notion of a watch: object, attributes, behaviors, class, inheritance (consider, for example, an alarm clock), modeling, messages, encapsulation, interface and information hiding. 4

C Write method distance to calculate the distance between two points (x_1, y_1) and (x_2, y_2) . All numbers and return values should be of type double. Incorporate this method into an application that enables the user to enter the coordinates of the points. 3

D An integer number is said to be a perfect number if its factors, including 1 (but not the number itself), sum to the number. For example, 6 is a perfect number, because $6 = 1 + 2 + 3$. Write a method isPerfect that determines whether parameter number is a perfect number. Use this method in an application that displays all the perfect numbers between 1 and 1000. Display the factors of each perfect number to confirm that the number is indeed perfect. Challenge the computing power of your computer by testing numbers much larger than 1000. 4

5 A Define Constructor. What happens when a return type, even void, is specified for a constructor? How garbage collector works in JAVA?

B What are overloaded constructors? Describe with an example.

C Create class SavingsAccount. Use a static variable annualInterestRate to store the annual interest rate for all account holders. Each object of the class contains a private instance variable savingsBalance indicating the amount the saver currently has on deposit. Provide method calculateMonthlyInterest to calculate the monthly interest by multiplying the savingsBalance by annualInterestRate divided by 12—this interest should be added to savingsBalance. Provide a static method modifyInterestRate that sets the annualInterestRate to a new value. Write a program to test class SavingsAccount. Instantiate two savingsAccount objects, saver1 and saver2, with balances of \$2000.00 and \$3000.00, respectively. Set annualInterestRate to 4%, then calculate the monthly interest for each of 12 months and print the new balances for both savers. Next, set the annualInterestRate to 5%, calculate the next month's interest and print the new balances for both savers.

6 A Why are exceptions particularly appropriate for dealing with errors produced by methods of classes in the Java API? If no exceptions are thrown in a try block, where does control proceed to when the try block completes execution? 3

B What is the key reason for using finally blocks? Write java code to create a java file and perform read-write to that file? 4

C Write short note about a) Iterator b) autoboxing c) ArrayList d) auto-unboxing e) set f) collection. 3

D Define a data-manipulation application for the books database. The user should be able to edit existing data and add new data to the database (obeying referential and entity integrity constraints). Allow the user to edit the database in the following ways:

a) Add a new author.

b) Edit the existing information for an author.

c) Add a new title for an author. (Remember that the book must have an entry in the AuthorISBN table.).

d) Add a new entry in the AuthorISBN table to link authors with titles.

Credit hour: 3.00

Course Title: Object Oriented Programming

Full marks: 70

Duration: 3 hours

[Figures in the right margin indicate full marks.]

Answer any 4 from questions 1 to 5. Answering question no. 6 is must. Split answering is not recommended.

1. **(a)** Define procedural programming language. What are the benefits of Object Oriented Programming? 4
(b) When do we use private, protected and public keywords? Discuss in short with example. 4
c. Define: *constructor, encapsulation, inheritance and polymorphism.* 6
2. a. Declare a class named Student with 3 private member variables for name, ID and marks obtained. The ~~class~~ class should have a default constructor which sets name to empty string, id to 0(zero) and marks obtained to 0.0. The class should also contain a 3 parameter constructor to set the member variables. 5
 b. Write 3 get methods for the class Student you have just written in question 2.a. 4
 c. Write another class Grade which has a member variable for grade and an object of Student class. Write the default constructor which sets grade to "F" and creates the student object with Student's default constructor. Finally write a member function to calculate the grade using PSTU grading rule. 5
3. **(a)** What is method overloading? How can the constructor be overloaded? Explain with example. 6
b. What is an *interface*? How does polymorphism work in interfaces? 5
(c) What are *this* and *super* keywords? Give examples. 3
4. **(a)** Write a program in Java which should take an integer number (*n*) as input first. Then the program should ask to input *n* integer numbers. Then your program will ask for another number (*x*). Now your program should be able to find *x* from those *n* numbers and count how many times *x* was present in the array. The array of integers should be dynamically bound. The program should be in object-oriented way and the functions should be small in size. 14
5. **(a)** Write a class named Employee with 3 member variables for first name, last name and basic salary. These variables should be accessible by its subclasses. Now, write a 3 parameter constructor for the class which initialises the names and the basic salary. 5
 b. Write a class named Teacher which should inherit the Employee class of question 3.a. The Teacher class should have 3 private member variables for his number of increment, amount of each increment and salary. This class should have a 5 parameter constructor which calls the constructor of the super class using *super* keyword. Write a method to calculate the salary which is the sum of basic salary and the increment multiplied by the number of increments. 5
 c. Write another class named TestDriver which should have only the main function. In the main function, instantiate an object of the Teacher class of question 3.b. which should be initialized with 5 parameters. (You may choose any name, basic salary and increment for this). Call the method to calculate the salary of the Teacher object. 4

6. Find and point out the errors in the following program. 14

```

Public class ErrorChecker {
    private Int x;
    private String str;
    ErrorCheck()
    {
        x = 0;
        str = "";
    }
    public ErrorChecker(int X, Str)
    {
        x = X;
        str = Str;
    }
}

system.out.println("This is a print statement");
System.Out.print("x = "+x + " Str = " + Str);
}

public static void main(String[] args) {
    ErrorChecker myClass = new ErrorChecker();
    myClass.x = 50;
    myClass.str = "Hello!!";
    ErrorChecker myAnotherClass = new ErrorChecker(5,"HelloWorld!!");
    myClass.print();
    myAnotherClass pritn(x,str);
}

```

Patuakhali Science and Technology University

Final Examination of B.Sc. Engineering in CSE Level: 1 Semester: II Session: 2016-17

Course Code

CCE | 21

Course Title

July-December
2017

Credit: 03

Time: 03 Hr

Marks: 70

Marks: 70
Answer any 05 out of 06 Questions (Split answers are highly discouraged and write the full question number e.g. 1(a) before the answer paragraph)

- 1 (a) What is Java Virtual Machine and how it is considered in the context of Java's platform-independent feature? 2

(b) Classify and explain Java programming error with example. 3

(c) What are the naming conventions for class names, method names, constants, and variables? Which of the following items can be a constant, a method, a variable, or a class according to the Java naming conventions? 4
MAX_VALUE, Test, read, readDouble

(d) Write a program that prompts the user to enter the minutes (e.g., 1 billion), and displays the number of years and days for the minutes. For simplicity, assume a year has 365 days. Here is a sample run: 3
Enter the number of minutes: 1000000000
1000000000 minutes is approximately 1902 years and 214 days

(e) Suppose $x = 2$ and $y = 3$. Show the output, if any, of the following code. What is the output if $x = 3$ and $y = 2$? What is the output if $x = 3$ and $y = 3$? 2

```
if(x > 2)
if(y > 2){
int z = x + y;
System.out.println("z is " + z);    }
else
System.out.println("x is " + x);
```

2 (a) Suppose you want to develop a program for a first-grader to practice subtraction. The program randomly generates two single-digit integers, number1 and number2, with $number1 \geq number2$, and it displays to the student a question such as "What is $9 - 2$?" After the student enters the answer, the program displays a message indicating whether it is correct. Here is a sample run: 4
What is $6 - 6$? 0 Enter
You are correct! 5
What is $9 - 2$? 5
Your answer is wrong
 $9 - 2$ is 7

(b) What is y after the following switch statement is executed? Rewrite the code using an If-else statement. 3

```
x = 3; y = 3;
switch (x + 3) {
case 6: y = 1;
default: y += 1;
}
```

(c) Write a program that prompts the user to enter a three-digit integer and determines whether it is a palindrome number. A number is a palindrome if it reads the same from right to left and from left to right. Here is a sample run of this program: 3
Enter a three-digit integer: 121
121 is a palindrome
Enter a three-digit integer: 123
123 is not a palindrome

(d) What are the three parts of a for loop control? Convert the following for loop statement to a while loop and to a do-while loop: 4

```
long sum = 0;
for (int i = 0; i <= 1000; i++)
sum += sum + i;
```

- / 3 (a) Design a client-server program for primality testing using connection-oriented programming language.
- (b) What are the disadvantages of connectionless service? Briefly, describe the server creation steps using stream socket.
- (c) Write the differences between constructor and method.
- 4 (a) What do you mean by synchronization? Suppose you want to read final marks of 50 students stored in an array called "studentResultArray" using five threads. Now design the program using Java programming language and in that case, you must ensure synchronization among threads such that each thread performs the same amount of task without overlapping.
- (b) Why are two different methods used to create a thread in Java? Create and test a thread named "DownloadSong" which inherit properties from "PlaySong" class.
- (c) "Composition is has-a relationship"-Justify this statement with example.
- 5 (a) Differentiate between checked and unchecked exception. Write sample code to create and test a user-defined checked exception called "NameNotFoundException" which return the message "Name not found in database".
- (b) Design a class "Account" containing the public method "GetAccountInfo" and another class "Test" which will use the "GetAccountInfo" method. You must ensure that your "GetAccountInfo" method will force the developer to handle "FileNotFoundException" in "Test" class.
- (c) What is the difference between termination and resumption model of exception handling? Explain stack unwinding with sample code.
- 6 (a) Differentiate among class, interface, and abstract class with example. Why do you think the abstract class is important for software design? Explain with sample code.
- (b) Create a class "Shape" which will be inherited by class "Circle" and "Rectangle". Design another class "ShapeUtility" consists of method "PrintShapeInfo" with an argument of "Shape" object. This method will print information according to object type, for example, in case of "Circle" type object; the method will print "Shape is Circle" and so on. Write sample code using the concept of object upcasting and downcasting in Java.
- (c) Why subclass constructor call superclass constructor explicitly or implicitly?

```
public class A extends B {
    public A() {
        String Name = null;
        super(" name is null");
    }
}
```

Dog d = new Dog()
d = (Animal)

Patuakhali Science and Technology University
 B.Sc. Engg. (CSE) Level-1, Semester-2 Final Examination-2015 (July-December)
 Course Code: CCF 421 Course Title: Object Oriented Programming
 Session: 2014-2015 Credit Hour: 3.0 Full Marks: 70 Duration: 3 Hours

[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]
Answer any 5 of the following questions.

✓ 1) Shortly explain the following terms (using 1-3 sentences and/or a formula and/or an example). A

- i) OOP
- ii) Java threads
- iii) Member
- iv) Relationship between a class and an object

✓ 2) a) Why is Java called platform independent?
 b) Describe the try-throw-catch mechanism.
 c) What is the differences between abstract class and interface? Why would you use an abstract class? (3)

✓ 2) a) Define the following terms (using 1-3 sentences and/or a formula and/or an example). (6)

- i) Constructor
- ii) Access modifiers
- iii) Encapsulation
- iv) Class library

b) Consider the following piece of code:
`Employee E1 = new Employee("PSTU, CSE", "Md. Mamun", 8000);
 Employee E2 = new Employee(E1);`

c) What are the values of the expressions `E1.equals(E2)` and `E1 == E2`? Why?

d) State the different way to override a method. Why return type of the method is not consider in method overloading?
 Explain with java code. (1)

e) Write a program in Java that simply print the following output on the screen: (2)

```

    0 0 0 1 1
    1 1 1 2 2
    2 2 2 3 3
    3 3 3 4 4
  
```

✓ 3) a) Write the output of the following programs. (3)

i) `public class A1 {
 public static void show() {
 System.out.println("Static method
 }
 public static void main(String[] args) {
 A obj=null;
 obj.show();
 }
}`

ii) `public class ArrayDemo {
 public static void main(String[] args) {
 int a[]={1,2,3,4,5,6,0};
 for (int i=0; i<a.length; i++) {
 System.out.println(a[i]);
 }
 }
}`

iii) `public class A {
 static int n=5;
 static
 {
 a=(a-1)/a;
 }
 System.out.println(a);
}
System.out.println(a);
a=a+1;
}

public static void main(String[] args) {
 System.out.println(a);
}`

✓ 4) Why main method is public and static? (2)

c) Given classes A, B, and C, where B extends A, and C extends B, and where all classes implement the instance method `void doIt()`. How can the `doIt()` method in A be called from an instance method in C? Why? (2)

d) Why socket programming is needed? Sketch the basic client server communication model. Write the java code to create client and server. (3)

e) Write a java program to reverse a given String without using String API. (4)

- 4 ✓ Write a while, a do-while and a for loop that will count backwards from 20 to 10.
- ✓ Shortly explain different types of inheritance.
- ✓ Differentiate between method overriding and method overloading?
- d) Describe two ways of creating thread with code in java. Why java support two different ways of thread creation.
- e) Write a class named *TestClass* and add a String data field called *data1*. The data field should be private to the class. Now, add a constructor that accepts a starting value for *data1* as its single parameter, and public methods for setting and retrieving the value of *data1*. Call these methods *setData()* and *getData()*.

5 (a) Differentiate among instance variable, class variable and local variable. (5)

(b) What is the difference between a class and a structure?

(c) i) Is it possible for a class to inherit the constructor of its base class?
ii) Can you inherit private members of a class? → public, Private

(d) What is exception in java? Distinguish between checked exception and unchecked exception.

(e) Write a java program to calculate sum of following series. Where the value of n is given by user.

$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \dots + \frac{1}{n}$$

6 (a) A complete Java program may use the same name for several different methods or variables. Java has a number of features that allow the user to prevent such re-use of names from causing chaos. Describe these under the headings:

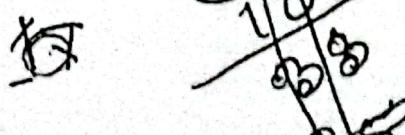
(a) Scope rules within individual functions.

(b) Visibility of method names within classes, and the effects of inheritance.

b) Explain how to set up a 2-dimensional array in Java.

c) What are collections and generics in java?

d) Write a Java program that will write a list of double numbers into a file. Your program will then read the content of the file and find the summation of the numbers.

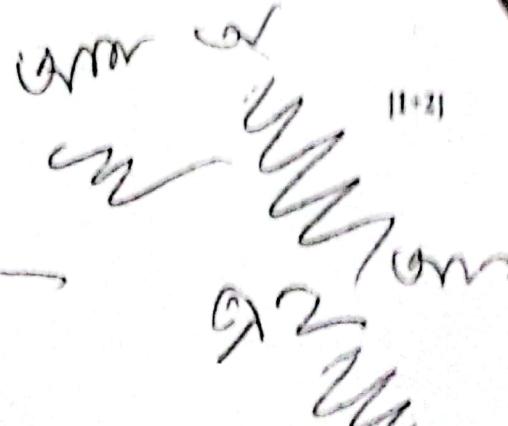


[Figure in the right margin indicates full marks. Split answering of any question is not recommended.]
Answer any 5 of the following questions.

1. (a) What are the differences between process and thread? Depicts the life cycle of a thread. [2+2]
- (b) Write down the sample code of thread creation using Java in two different ways. [5]
- (c) What is deadlock? Explain deadlock situation using synchronized method and synchronized object. [1+4]
2. (a) What is the difference between class and interface? You know that all classes in java are inherited from java.lang.Object class. Are interfaces also inherited from Object class? [2+1]
- b) Can a class extend more than one classes or does java support multiple inheritances? If not, why? How do you implement multiple inheritances in java? Answer with java sample code. [3+4]
- (c) How do you restrict a member of a class from inheriting to its sub classes? Are constructors and initializers also inherited to sub classes? What happens if both, super class and sub class, have a field with the same name? Overriding, Java inheritance confusion [2+1+1]
3. (a) What is an exception? Draw the exception hierarchy. Differentiate between checked and unchecked exception with an example. [1+1+2]
- b) Write down five keywords using in java exception handling with their purpose. How to create custom Exception with Java? [3+3]
- (c) "All catch blocks must be ordered from superclass exception to subclass exception"-Justify this statement with Java code. [4]
4. (a) Create an overload and override version of a method named DISPLAY and overload method must be defined by changing the number of method parameters. Method overloading is not possible by changing the return type of method. Why? [2.5+2.5]
- b) What is the abstract method? Write a practical scenario where the abstract method can help to design the software. [1+4]
- (a) Briefly describe object upcasting and downcasting. Sample code is appreciated. [4]
5. (a) Create a java class using following attribute (instance variable should be public and method should be private.)
Class name: Account
Instance Variable: account_holder_name, amount
Method: WithdrawMoney, Deposit [3]
- (b) What are the differences between method and constructor? [2]

Q) What is UML? Draw the UML of following java class [1+2]

```
class Human
{
    String s1, s2, name;
    public Human()
    {
        s1 = "Super class";
        s2 = "Parent class";
    }
    public Human(String str)
    {
        s1 = str;
        s2 = str;
    }
    private void SetName(String str)
    {
        name = str;
    }
    private String GetName()
    {
        return name;
    }
}
```



a) Write the output of following programs [3]

```
try
{
    int x = 0;
    int y = 5 / x;
}
catch (Exception e)
{
    System.out.println("Exception");
}
catch (ArithmaticException ae)
{
    System.out.println("Arithmatic
Exception");
}
System.out.println("finished");
```

```
public class Foo
{
    public static void main(String[] args)
    {
        try
        {
            return;
        }
        finally
        {
            System.out.println("Finally");
        }
    }
}
```

Ans: Finally

Q) Briefly describe access modifiers of Java? How do you achieve encapsulation property of object oriented programming in your code? [3+1]

b) Why do you need synchronization in multithreaded program? How do you achieve synchronization in your multithreaded program? Explain with code. [2+3]

g) Consider following condition write a sample java code of inheritance [5]

- Super class : Animal
- Super class contain parameterized constructor
- Sub class: Mammal
- Sub class contain default constructor

~~500~~
~~250~~
~~250~~
~~250~~
~~250~~

1. a) Is Empty java file name a valid source file name?
public static void main (String [] args) ---- explain this statement.
- b) What is the output of the following Java program?
- ```
11. class Test
12. {
13. public static void main (String args[])
14. {
15. System.out.println(500 * 25 + "Javatpoint");
16. }
17. }
```
- c) Write a program in Java to print such pattern like right angle triangle with number increased by 1. The pattern like:
- 1  
2 3  
4 5 6  
7 8 9 10
2. a) Why multiple inheritance is not supported in java through class?  
How is Inheritance achieved in Java?  
Will the following code be successfully compiled? If yes, what is the output?
- ```
17. public class A {
18.     int x = 20;
19. }
20. public class B extends A {
21.     int x = 30;
22. }
23. public class test {
24.     public static void main (String [] args) {
25.         B b = new B();
26.         System.out.println(b.x);
27.         A a = new A();
28.         System.out.println(a.x);
29.         A a2 = new B();
30.         System.out.println(a2.x);
31.     }
32. }
```