FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY
DEPARTMENT OF INFORMATION & MEDIA TECHNOLOGY
SECOND SEMESTER EXAMINATION, 2013/2014 ACADEMIC SESSION

Course Code: *CIT323*
Credit Unit: *3*

Course Title: *C++ and Java*
Time Allowed: *2 Hours.*

Instruction: Answer only **four (4)** questions.

Question 1

```
1. public class CIT323 {

2. public CIT323(){
3. System.out.println("in default constructor");
4. }

5. public CIT323(double r){
6. System.out.println("in parameterized constructor");
7. }
8. final static double PI = 3.142;

9. private  double calculalteA(double rad){
10. double circum =  PI * rad * rad;
11. return circum;
12. }

13. protected  static double calculalteA(double rad){
13. double circum = PI * rad * rad;
14. return circum;
15. }

16. private  float calculalteCircum(double rad){
17. double circum = 2 * PI * rad;
18. return (float)circum;
19. }

20. public static void main(String[] args) {
21. CIT323 awadzi = new CIT323();
22. CIT323 camilla = new CIT323(5.5);
23. double answer =awadzi.calculalteA(7.0);
24. System.out.println("The result is "+ answer);
25. }
26. }
```

a. (i) How many methods were correctly overloaded?
   (ii) Write the method declarations or signatures for the correctly overloaded methods?
b. Why is ***static*** keyword necessary in line 8?
c. Why is ***(float)circum*** expression needed in line 18?
d. Rewrite ***line 10*** by using methods from ***java.lang.Math*** class.
e. Use Java best practice to rewrite line ***23*** without using ***awadzi*** instance to call ***calculalteA***.
f. Suppose the code compiled and executed successfully, write the possible output from the program?

uestion 2

Use the interface and classes declarations below to answer questions 2(a) to 2(c).

```
1. public interface NewInterface {
2. public void respiration();
3. public void move();
4. }
```

```
1.  public abstract class Animal {
2.  int numberOfLimb = 0;
3.  public void respiration(){
4.     System.out.println("I use lung or gill");
5.   }
6.   abstract void move();
7. }
```

```
1. public class Mammal extend Animal implement NewInterface{
2.  int numberOfLimb = 4;
3. void move() {
4.       System.out.println("I can craw, walk, run and swim")
5.  }
6. }
```

```
1.  public class Main1 {
2.  public static void main(String[] hik){
3.  Mammal murjanat = new Mammal();
4.  murjanat.move();
5.  murjanat.respiration();
6.  System.out.println("I use " + murjanat.numberOfLimb + " limbs for movement");
8.     }
9. }
```

a. Identify the errors in Class Mammal

b. Suppose the codes compiled and ran successfully, write the output from the application called Main1.

c. Write another class called Reptile to implement NewInterface with under listed properties and functions;

i. Declare a field called ***numberOfLimb*** and set its value to four.

ii. Implement the Reptile class such that respiration and move methods will display ***I use lung*** and ***I can craw*** respectively when executed.

Question 3

a. The word Runnable represents two concepts in Java Thread programming. Explain the two concepts with relevant methods or sample codes. (4 marks)

b. Describe the situations that will make a thread to transition from running state to the following states; (4 marks)

i. Dead ii. Waiting iii. Blocked iv. Sleeping

c. (i) Create a thread class called **Sict** from an interface in java.lang package. The instance from the class should display "Welcome to IMT Department" when given a chance to run. (3 marks)

(ii) Write an Java application called **SictApp** to run instance of **Sict** created in c(i). (4 marks)

Question 4

a. Discuss java.io.File class as used in file access operations. (3 marks)

b. Describe any four (4) methods of java.io.File that aid file access activities. (4 marks)

c. Write a Java application called **ImtReader** that is saddled with responsibility of reading the content of a file called **tosin.txt** line by line using a suitable low level and high level character stream readers into the application. The location of the text file is C:\Users\pc\WorkBench. **ImtReader** should display the content of the file on the console. Endeavor to include all necessary support classes in your program. (8 marks)

Question 5

Use the code below to answer question 5(a).

```
1.    File mFile = new File("");
2.    FileWriter fw = null;
3.    BufferedWriter bw = null;
4.    try {
5.    fw = new FileWriter(mFile,true);
6.    bw = new BufferedWriter (fw);
7.    bw.write("IMT Dept, FUT, Minna.");
8.    } catch (Exception ex) {
9.    }finally{
10.   try {
11.   fw.close();
12.   bw.close();
13.   mFile.close();
14.   } catch (???? ex) {
15.   }
```

a.

(i) Explain the statement in line 5. (1 mark)

(ii) What is the meaning of line 6 and why is it necessary. (2 marks)

(iii) Is line 8 correct? Support your answer with valid argument. (2 mark)

(iv) Write any valid statement to replace **????** in line 14. (1 marks)

(v) Describe the importance of the *finally block* in the code above. (1 marks)

(vi) Are the statements in lines 11, 12 and 13 correctly written and rightly placed? If no, write the correct statements and their ordering. (3 marks)

b.

i. State three advantages of Java Error or Exception handling mechanism. (3 marks)

ii. Explain java.lang.Error class. (2 marks)

Best of Luck