**University of Asia Pacific**

**Department of Computer Science & Engineering**

**Mid-Semester Examination Fall -2018**

**Program: B. Sc Engineering ( 2nd Year/ 1st Semester)**

Course Title: Object-Oriented Programming I: Java Course No. CSE-203 Credit: 3.00

Time: 1.00 Hours. Full Mark: 60

There are **Four** Questions. Answer any **Three**. All questions are of equal value/Figures in the right margin indicate marks.

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| 1. | A) | Write a java class **“Bug**” that has two attributes **name (String type)** and **hasWings (boolean type)**. Create a **constructor** that has 2 arguments for the 2 attributes and initializes the attributes. Write two methods **canFly**() which will return boolean and **stings**().  **canFly**() returns **true** if the bug can fly [bugs with wing can fly].  **sting()** method simply **prints** “Bug stings”. In main method, create an object of the **Bug** class where **name**=”Cockroach” and **hasWing** set to true. Now call the **sting**() method and then **canFly**() and print the output of **canFly**() call. | 12 |
|  | B) | Create two subclasses “**Cockroach**” and “**Ant**”. In **Cockroach** class, override the **sting**() method and print “Cockroach doesn’t sting”. | 8 |
| 2. | A) | Write a java public class **Box**. The class contains 3 **float** types **private** instance variables; ***length***, ***width*** and ***height***. Define **getter**, **setter** methods for all 3 variables. In the setter method, only set the attributes if the input value is between 10.0 and 30.0. | 10 |
|  | B) | Give an example code where you can stop method overriding and inheritance using final keyword? | 10 |
| 3. | A) | Assume there are 3 java classes: **SuperHero**, **SuperMan** and **SpiderMan**. **SuperMan** and **SpiderMan** are the subclasses of **SuperHero** class.  Now carefully observe the code below, line#10 & #11 shows error. This is because the argument of ***showInfo*** method is **SuperMan** but we are passing **SuperHero & Spiderman**. Rewrite the ***showInfo(SuperMan a)*** method in such a way so that the errors at line#10 & #11 go away. **Note**: You are not allowed to use method overriding. | 8 |
|  | B) | What is inheritance? What does the child class inherit from parent class? | 6 |
|  | C) | Find the output of the following code.   |  |  | | --- | --- | | **class** Singer{  String name;  **int** rank;    **public** Singer(String n, **int** r)  {  **this**.name = n;  **this**.rank = r;  }    **void** display(){  System.***out***.printn(name+":"+rank);  }    } | **public** **class** TestRef {  **public** **static** **void** main(String[] a)  {  Singer mj = **new** Singer("MJ", 10);  Singer sm = **new** Singer("SM", 8);  mj.display();  *twist*(mj, sm);  mj.display();  sm.display();  }    **public** **static** **void** twist(Singer s1, Singer s2){  s1.rank = s2.rank;  s2 = **new** Singer("SY", 7);  s1 = s2;  }  } | | 6 |
| 3. | A) | Find out if the following JAVA program has any error. **List the errors** if any. Fix the code and **rewrite** after the errors list. You cannot delete any line of code. However, you are allowed to edit or add any code as per requirement.   |  |  | | --- | --- | | **package** clashofclan.myClan;  **public** **class** Clan {  **public** **final** String name;  **int** level, noOfMembers;  **public** Clan(String n,**int** l, **int** nM)  {  **this**.name = n;  **this**.level = l;  **this**.noOfMembers = nM;  }    **public** **void** display(){  System.***out***.printf("%s:%d:%d\n", name, level, noOfMembers);  }  } | **package** clashofclan.testClan;  **public** **class** TestClan {  **public** **static** **void** main(String[] a)  {  Clan elCh;  elCh=**new** Clan("Champion", 12, 20);  elCh.level = 13;  elCh.name = "OOP Fighter";  }  } | | 10 |
|  | B) | Consider the following class containing the **main** method. Now write the **Movie** in such a way so that the following code gives the expected output as shown below.   |  |  | | --- | --- | | Code | Expected Output | | **public** **class** TestMovie {  **public** **static** **void** main(String[] args)  {  Movie movie;  movie=**new** Movie("OOP Avenger",3.5f);  System.***out***.println(movie);    movie.increaseRank(0.1f);  System.***out***.println(movie);  }  } | Movie [name=OOP Avenger, rank=3.5]  Movie [name=OOP Avenger, rank=3.6] | | 10 |