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|  | **Faculty of Commerce and**  **Business Administration**  **Business Information Systems (BIS)** | http://egypt.aaagb.net/global1/helwan-university-helwan_egypt.jpg |

**Course: Programming Two**

**Sheet – Spring Semester 2015/2016**

**Part 1: Choose the answer that best completes the statement or answers the question.**

1. Which of the following is NOT a key component of object oriented programming?

(a) Inheritance

(b) Encapsulation

(c) Polymorphism

(d) Parallelism

2. Which of these is TRUE of the relationship between objects and classes?

(a) A class is an instance of an object.

(b) An object is the ancestor of its subclass.

(c) An object is an instance of a class.

(d) An object is the descendant of its super class.

3. Which of the following is NOT a valid ‘type’ in Java?

(a) void

(b) int

(c) Integer

(d) static

4. What is the value of y when the code below is executed?

int x = 4;

int y = (int)Math.ceil(x % 5 + x / 5.0);

(a) 1

(b) 6

(c) 5

(d) 4

5. What is the value of ’n’ after executing the following code?

int n = 20;

switch(n)

{

case 10: n = n + 1;

case 15: n = n + 2;

case 20: n = n + 3;

case 25: n = n + 4;

case 30: n = n + 5;

}

(a) This code does not compile.

(b) 25

(c) 32

(d) 23

6. What is the value of ’n’ after executing the following code?

int n = 20;

int p = n + 5;

int q = p - 10;

int r = 2 \* (p - q);

switch(n)

{

case p: n = n + 1;

case q: n = n + 2;

case r: n = n + 3;

default: n = n + 4;

}

(a) 24

(b) This code does not compile.

(c) 20

(d) 27

7. Which of the following variables contains null?

String K;

String L = new;

String M = "";

String N = "null";

(a) K

(b) L

(c) M

(d) K or N

8. Consider the following program:

import myLibrary.\*;

public class ShowSomeClass

{

// code for the class...

}

What is the name of the java file containing this program?

A. myLibrary.java

B. ShowSomeClass.java

C. ShowSomeClass

D. ShowSomeClass.class

E. Any file name with the java suffix will do

9. Which of the following is TRUE?

A. In java, an instance field declared public generates a compilation error.

B. int is the name of a class available in the package java.lang

C. Instance variable names may only contain letters and digits.

D. A class has always a constructor (possibly automatically supplied by the java

compiler).

E. The more comments in a program, the faster the program runs.

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| 10. Which is a valid declarations of a String?  A. String s1 = null;  B. String s2 = 'null';  C. String s3 = (String) 'abc';  D. String s4 = (String) '\ufeed'; |  | |
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**Part 2: Miscellaneous questions**

1. Create a class *Rectangle* which has the integer attributes *length* and *width*. The class contains 2 methods, *rect\_area* and *rect\_perimeter* which return the area and perimeter of a rectangle respectively. Create another class *Test\_rectangle* which contains the main method. The main method should use the class *Rectangle* to find the areas and perimeters of 5 rectangles whose lengths and widths are entered by the user. The program should display the message “Invalid input” if the input length and width is not positive.

Write the program in Java and draw the class and activity diagrams.

Recall that area=length\*width and perimeter=2\* (length+width)

1. Create a class *Square* which has the integer attribute *edge*. The class contains 2 methods, *square\_area* and *square\_perimeter* which return the area and perimeter of a square respectively. Create another class *Test\_square* which contains the main method. The main method should use the class *Square* to find the areas and perimeters of all squares whose edges are from 1 to 15. The output should be displayed as a table of 3 columns whose header should look as follows:

Edge Area Perimeter

Write the program in Java and draw the UML class and activity diagrams.

Recall that area=edge\*edge

1. Create a class *Product* which has the following attributes:

*Product\_ID* : integer

*Amount* : integer

*Unit\_price* : double

*Discount* : double

*Supplier\_name* :String

The class has the following methods:

*find\_total\_price* : returns the total price (without discount)

*find\_discounted\_price* : returns the net price of all units after discount

*display\_output* : displays the values of the attributes and the amount paid.

Create another class *Test\_Product* which contains the main method. It accepts the 5 attributed described above as input from the user and should display an error message if a non-positive value is entered for the first 4 attributes. A discount is applied only if the purchased amount is greater than 1000. Use the 3 described methods.

Write the program in Java and draw the UML class and activity diagrams.

1. Find the output of the following :

(a)

int i=2

while (i<=6)

{

System.out.println(i\*2+1);

i+=1;

}

(b)

int x=3, y=1;

while (x<=9)

{

if ((x+y)%5==0)

System.out.println(“\nx = ” + x + ” y= “ + y);

x+=2;

y++;

}

(c)

for (int i=5,j=15; i<j; i++,j--)

{

if (i%2 ==0)

if (j%3==0)

System.out.println(“\nHello 1”);

else

System.out.println((“\nHello 2”);

else

System.out.println((“\nHello 3”);

}

**Part 3: Evaluate the Following Boolean Expressions (Find if it is True or False)**

**Note that you have to explain your answer – final answer is not accepted without detailed evaluation**

**In case that x = 8, y = 9, z = 20**

1. X==7 && y <30 && z>15

2.(x<10 && y >x ) || (x <z && z == 30)

3. x<10 && y >x || x <z && z == 30

4. (x<10 &&!(y >x) ) || (x <z ^ z != 30)

5. !(x>=10 && y <30)

6. !(x != 4 )|| y<z

7. !(x>10 && y <30) || (!(x != 4 )|| y<z )

8. z> 15&& y < 30 | X==7

9. z> 15|| y < 30 &&X==7

10. X==7 || y < 30 & z < 15