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C1022_CS153_CPG101 – December 2010 – QP

SECTION A

[40 Marks]

Answer ALL questions in this section.

- A1. (a) Compute the value for the following
- (i) $5 \% 2 + (12 - 5)$ [2]
- (ii) $6 + 4 / 2 * 4 / 4 + 3 * 2 / 2 - 1$ [2]
- (b) Given `int X = 3`, compute the value for
- (i) `Y = X++ - 5` [2]
- (ii) `Y = ++X - 5` [2]
- A2. Write a Java statement to accomplish each of the following.
- (a) Test if the value of the variable `count` is greater than 10. If it is, print “count is greater than 10”. [2]
- (b) Declare a method header `smallest` that takes three integers `x`, `y` and `z` and returns an integer. [2]
- (c) Decrement the variable `x` by 1 then subtract it from the variable `total`. [2]
- A3. Complete the following sentences with the appropriate answer, selected from the table below. Note that not all the words have to be used, and some may be used more than once. [10]

component	private	exception	escape sequence
integer	Label	bottom	private
public	toLowerCase()	wildcard	borderLayout
TextField	do..while	double	flowLayout

- (a) The `Integer.parseInt()` method converts a `String` object to a(n) _____.
- (b) Members of a class specified as _____ can only be accessed by members of its own class.
- (c) The default layout manager for a panel is _____.

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- (d) A(n) _____ can be created with or without initial text, an with or without a specified size.
- (e) The loop that performs its conditional check at the _____ of the loop is a do while loop.
- (f) The method _____ converts any String object to its lowercase equivalent.
- (g) A button is a window _____ which allows the user to click to trigger a specific action.
- (h) A(n) _____ always begins with a backslash.
- (i) The _____ symbol used with the import statement is the asterick.
- (j) A(n) _____ situation is an exception.

A4. Using flowchart symbol draw an Iteration construct. [4]

A5. State the four key methods found in an applet program. [4]

A6. Suppose that $a = 8$, $b = -3$ and $c = 10$, evaluate each of the following Boolean expression and state the value of X. [4]

- (a) $X = (a > b \parallel b > c)$
- (b) $X = (!(a == c) \&\& c > a)$
- (c) $X = (c < a \&\& a != b)$
- (d) $X = (b < a \parallel b == c \parallel c >= a)$

A7. (a) Name the two available types of searching methods that can be used to search an item in an array. [2]

(b) Identify the two basic steps in a recursive method. [2]

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SECTION B

[60 Marks]

Answer ANY TWO questions in this section.

B1. [30 marks]

- (a) Write a simple Java Programming using the while loop to control the sentinel loop. And use the following display screen as a guide. [10]

Enter a character : a

The character you entered is A

Enter a character : s

The character you entered is S

Enter a character : X

Exit program

Press any key to continue.....

- (b) Write a Java program using the drawString() method to display a message “Good Luck in Exam” with x and y co-ordinates at 60 and 40 respectively. You may assume that Graphics object g is to be used as the argument to the paint() method. [8]
- (c) Write Java statements to accomplish each of the following.
- (i) Declare a variable **total** to be of type double. [2]
 - (ii) Declare a method header **area** that takes two integers x and y and a double z and returns a double. [2]
 - (iii) Create a button with a label Display displayed on top of the button. [2]
 - (iv) Declare an integer array **marks** that can be used to store 3 elements. [2]
- (d) List any FOUR types of data types used in Java programming. [4]

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B2.

[30 marks]

- (a) Identify the error in each of the following program segments and explain how the error can be corrected.

(i) char alpha = 'B';
 if (alpha.equals("B"))
 System.out.println("They are the same."); [4]

(ii) number = 80;
 while (number >= 1);
 {
 System.out.println(number);
 } [4]

- (b) Explain the difference between 'length' used with an array and 'length()' used with a String object. [4]

- (c) Draw a segment of a flowchart to illustrate each of the following structures.

(i) A while loop within a selection [4]

(ii) A do while loop within a selection [4]

- (d) Write a program to draw a rectangle with x and y co-ordinates at 50 and 50 respectively, which represents the upper-left corner of the rectangle. The width and height of the rectangle should be 100 and 80 respectively and you should use the drawRect() method. [10]

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B3.

[30 marks]

- (a) (i) Explain the following method header: [3]
`public static void computeResult(double x, int y)`
- (ii) Explain the keyword static and public in method header. [4]
- (b) Rewrite the following selection structure using IF construct. [9]
`switch(fastfood)`
`{`
`case 'K' :`
`case 'k' : System.out.println("He likes KFC.");`
`break;`
`case 'M' :`
`case 'm' : System.out.println("He likes Mc Donald.");`
`break;`
`default : System.out.println("He has no preference.");`
`}`
- (c) (i) Constants are data or values stored that do not change during the execution of the program. State the keyword that is inserted before the variable name when creating a symbolic constant. [1]
- (ii) State if the example below is valid or invalid when declaring a symbolic constant and justify your reason. [2]
`static double GST = 0.07 ;`
- (d) Define a method volume that takes two arguments length, breadth and height of type double and calculate the volume(i.e. length * breadth * height). The result should be displayed within the method. [7]
- (e) Explain the difference between a local and a member variable. [4]

-END OF PAPER-