Department of Computer Science & Engineering
Institute of Technical Education & Research, SOA University

Mid-Semester Examination, October-2016
Introduction to Computer Programming(CSE 1001)

Semester: 1st
Full mark: 30

Branch: All
Time: 2 Hours

Subject Learning Outcome	*Taxonomy Level	Ques. No.	Marks
Attain the knowledge of problem solving using programming language like Java.	L1	1(c),5(a)	4
Design the procedural programming elements.	L3	4(a,b), 2(b,c),5(b)	10
Analyze, test and debug programs that meet the desired outcomes.	L4	1(a,b), 2(a),3(b)	8
Combine multiple programming elements.	L3	3(a,c),4(c), 5(c)	8

*Bloom's taxonomy levels: Knowledge (L1), Comprehension (L2), Application (L3), Analysis (L4), Evaluation (L5), Creation (L6)

Answer all five questions.
All questions carry equal marks. All bits of each question carry equal marks.

Q1.		10

(a)	Find the output of the given java code.
	
	``
	int x=1,y=2,z;
	z=x+y;
	System.out.println(x < y ? y : x);
	System.out.println(x < y ? x ++ : y ++);
	System.out.println(x);
	System.out.println(y);
	System.out.println(z >= y && y > x);
	``
		2

(b)	Find the output of the given java code.
	
	``
	int x=5,y,k=1;
	do{y=1;
	    do{ System.out.print(k*x+" ");
	        y++;k=k*-1;
	    }while(y<=x);
	  x--;
	  System.out.println();
	}while(x!=0);
	``
		2

(c)	For the above given java code in question number 1(b) draw the control flow diagram.	2
Q2.		

(a)	Consider the following program, which uses the Java bit-wise exclusive or operator ^:
	
	``
	int a = 10;
	int b = 11;
	a = a ^ b;
	b = b ^ a;
	a = a ^ b;
	``
	What does this program do?
	
	Truth table for Ex-OR(^)
	
	A B A^B
	0 0 0
	0 1 1
	1 0 1
	1 1 0
		2

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(b)	Write a Java program that prints the numbers from 1 to 50. But for multiples of three print *"Appy"* instead of the number and for the multiples of five print *"Fizz"*. For numbers which are multiples of both three and five print *"AppyFizz"*.	2
(c)	Write a java program that, using one loop and one if statement, prints the integers from 1000 to 2000 with five integers per line. *Hint: Use % operator.*	2
Q3.		
(a)	Given three points *(x1, y1)*, *(x2, y2)* and *(x3, y3)*, write a java program to check if all the three points fall on one straight line. *Hints: Three points are collinear, if slope of one set of points = slope of other set of points.*	2
(b)	Write the pseudo-code to compute the sum of the 1ᵗ *n* terms *(n>=1)* of the series $$s = 1 - 3 + 5 - 7 + 9 \ldots\ldots$$	2
(c)	Write the pseudo code to count all the leap years from *1200* year to *3000* year.	2
Q4.		
(a)	$n!$ means $n \times (n-1) \times \ldots \times 3 \times 2 \times 1$ For example, $10! = 10 \times 9 \times \ldots \times 3 \times 2 \times 1 = 3628800$, and the sum of the digits in the number 10! is $3 + 6 + 2 + 8 + 8 + 0 + 0 = 27$. Write the java statements to compute the sum of the digits in the number *10!*	2
(b)	Write a java program to evaluate the function *sin(x)* as defined by the infinite series expansion . $$sin(x) = x - x^3/3! + x^5/5! - x^7/7! + \ldots$$ The acceptable error for computation is 10^{-6}	2
(c)	Design an algorithm which, given some integer *n* find the largest factorial number present as a factor in *n*.	2
Q5.		
(a)	Differentiate between *break* and *continue* with proper examples.	2
(b)	Write a java program that reads in a set of n single digits and converts them into a single decimal integer. For example, the program should convert the set of 5 digits{2,7,4,9,3} to the integer 27493.	2
(c)	Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with *1* and *2*, the first *10* terms will be: 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ... By considering the terms in the Fibonacci sequence whose values do not exceed one hundred, Write the java statements to find the sum of the even-valued Fibonacci terms.	2