

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), November 2016

B. Tech in CSE, Semester III

Roll No.....

Principles of Programming Languages: CSE303

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark) 10

- i. Which of the following is not an escape sequence?
(A) \n (B) \r
(C) \' (D) \p
- ii. The variable that are declared outside all the functions are called _____.
(A) Local variable (B) Global variable
(C) Auto variable (D) None of the above
- iii. Consider the following statements:-
int x = 6, y=8, z, w;
y = x++;
z = ++x;
The value of x,y,z by calculating the above expressions are:-
(A) y=8, z=8, x=6 (B) y=6, x=8, z=8
(C) y=9, z=7, x=8 (D) y=7, x=8, z=7
- iv. The function that allocates requested size of bytes and returns a pointer to the first byte of the allocated space is -
(A) realloc (B) malloc
(C) calloc (D) none of the above
- v. The postfix form of the following infix notation is : $(A + B) * (C * D - E) * F$
(A) $AB + CD * E - * F *$ (B) $AB + CDE + - * F *$
(C) $AB + CD - EF + - **$ (D) $ABCDEF * - + * +$
- vi. Continue Statement
(a) Without Executing remaining statements takes control back to starting loop
(b) Take control outside the loop
(c) Continues to program end
(d) None
- vii. _____ consists of set of instruction
(d) Scanner
(a) Software (b) Hardware (c) Program (d) None of this
- viii. Which is used to check the error in the block?
a) try
b) throw

	c) catch d) none of the mentioned	
ix.	The process of building new classes from existing one is called _____. a) Polymorphism b) Structure c) Inheritance d) Cascading	
x.	Full form of LISP is as follows:- (d)Scanner (a)List Processing (b) List identification Series Processing (c) Language identification Series Processing (d) None of this	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
a	Consider the following macro definition #define root (a, b) sqrt((a) * (a) + (b) * (b)) What will be the result of the following macro call statement root(a++, b++) if a = 3 and b = 4	
b	Differentiate abstraction and encapsulation.	
c	Differentiate between Java and C++.	
d	Differentiate between compilation error and execution error.	
Q.3A	Explain about various programming domains. What are the factors that influence the basic design of programming languages?	05
Q.3B	Give BNF versions of an expression grammar. Explain about attribute grammars in detail.	05
Q.4A	Distinguish between static scoping and dynamic scoping with an example. What are the primary design issues particular to pointers?	05
Q.4B	What are the design issues of multiple selection constructs? Explain about different semantics models of parameter passing and implementation models of parameter passing.	05
Q.5A	Explain in detail about semaphores. Discuss about exception handling with try-block-catch construct.	05
Q.5B	Explain about LISP. Discuss about basic elements of LISP and Prolog.	05
Q.6A	Describe Object Oriented Programming features along with examples.	05
Q.6B	What are the features that are provided to make a program modular? For all Y, If Y is a person and employer then X is officer. Explain -> person(Ram) -> employer(Ram) and -> ?- officer(Ram)	05
OR		
Q.6B	Given are two one dimensional arrays A and B which are stored in ascending order. Write a program to merge them into a single sorted array C that contains every element of A and B in ascending order.	05
Q.7A	Name any four procedural programming language? Discuss Von Neuman	05

	architecture in detail.	
Q.7B	Discuss case study of Python on account of Binding Scope, Values and Types.	05
	OR	
Q.7B	What will be syntax and semantic for the following expression ? Expression : $a * b \setminus 2 + C / d - e * \text{fun}(y)$ Disucss about side effects problem for the above expression.	05
Q.8A	Explain significance of parse tree. Draw parse tree for $(a+b-c*d+e/f-g)$	10
Q.9A	Give the outputs of the following code segments, if any and justify your answers. (i) <pre>#define CUBE(x) (x * x * x) main() { printf("%d", CUBE(4+5)); }</pre> (ii) <pre>int j = 5; printf("%d", j = j == 6); printf("%d", j = ++j == 6);</pre> (iii) <pre>for (j = 0; j = 3; j++) printf("%d", j);</pre> (iv) <pre>main() { static char a[] = "Test String"; static char *b = "Test String"; printf("%d %d", sizeof(a), sizeof(b)); }</pre> (v) <pre>main() { enum test {RED, BLUE, GREEN}; enum test t = BLUE; printf("%d", t); }</pre>	10
Q.9B	Describe the following concepts. a) Functional programming languages b) Semaphores c) Guarded commands. d) Monitors	10
	OR	
Q.9B	Compute the weakest precondition for each of the following assignment statements and post conditions: a) $a = 2 * (b - 1) - 1 \{a > 0\}$ b) $b = (c \setminus 10) / 3 \{b > 6\}$ c) $a = a * 2 * b - 1 \{a > 1\}$ d) $x = 2 * y \setminus x - 1 \{x > 11\}$.	10