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# Sardar Patel University

## M. Sc. (Second Semester) Examination

Thursday, October 27, 2016

Course No. PS02EMTH01 : C Programming and Mathematical Algorithms-I

Time: 10.00 a.m. to 12.00 noon.

Maximum marks: 35

Note: Figures to the right indicate marks.

1. Choose appropriate answer to the question from the given options. [5]

- i) To display results in a C program \_\_\_\_\_ function is used.  
 (a) printf (b) input (c) scanf (d) read  
 ii) The effect of the statement `printf("%d + %o + %x ", 0X15, 0X15, 0X15);` is

- (a) 45 (b) 21 + 25 + 15 (c) 15 + 15 + 15 (d) 51

iii) Which of the following is an infinite loop?

- (a) `for(i=0; i>3;) printf("hello ");` (b) `for(i=0; i<3; i++);`  
 (c) `i=0; for( ; i<3; ) i++;` (d) `while(3) printf("hello ");`

iv) `exit()`; is used to \_\_\_\_\_.

- (a) terminate the program (b) input data  
 (c) skip the current pass of the loop (d) terminate a loop

v) If `int m, a; a = m/(m+1);` then the content of a is \_\_\_\_\_.

- (a) 1 (b) 0 (c) 0 or 1 (d) none of these

2. Answer any three of the following: [6]

a) Write C expressions for each of the following:

(i) $(q + \frac{e}{w})y^9$	(ii) $\frac{\cos(\beta)}{5 + \sin(\beta)}$	(iii) $\log x^2 + y^2 $	(iv) $\frac{1}{e^{(x^2+y^2)}}$
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b) State why the following are not valid identifiers:

(i) switch	(ii) "ABC"	(iii) "\n"	(iv) 9abc
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c) Write the data type of each of the following:

(i) 0XCBA	(ii) sizeof("UNIV")	(iii) '\t'	(iv) 123/13
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d) Write the values of each of the following:

(i) 27/5*5	(ii) 27/(5*5)	(iii) 27/5/5	(iv) 27*5/5
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3. a) Explain the effect of each of the following program segments: [6]

(i) <code>for(j=5; j &lt;= 5; j +=3);</code>	(iv) <code>temp = a; a = b; b = temp;</code>
(ii) <code>int i = 7, j = 2, k = 3; j = ++i + --k;</code>	(v) <code>int x, y, z; z = x - x / y * y</code>
(iii) <code>for( i=1; 0 ; i++) printf("hello\n");</code>	(vi) <code>a = x; if(a &gt;= y) a = y;</code>

b) i) Replace **while loop** by **for loop**. [2]

ii) With illustration discuss arithmetic operators in C. [2]

iii) With illustration, explain **if** statement. [2]

OR

b) i) What is the role of **break** and **continue** statements. Illustrate with examples. [2]

ii) State why the following are not correct: [2]

(1) `# define e = 2.17` (2) `0 = 5;` (3) `0891` is integer constant (4) `'\n' = t;`

iii) Explain each of the following library functions and the header file that contains the function: [2]

floor	getch	log	clrscr
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4. a) i) What will be the values of x, y and z after the execution of each of following program segments? [3]

(a) `int x = 6, y = 7, z = 1;  
x = (z++ + 5)%3 - y++;  
y = (x*x + y)*3/2;`

(b) `int x=0, y = 2,z;  
while (x<6)  
{  
x=x+3; y += x; z=x+ ++y;  
}`

ii) Define a structure *payroll* which contains following members: [3]  
employee's number; employee's name, basic salary, house rent allowance, total salary. Choose appropriate data type and members name.

b) i) Write a C program to convert kilogram to pounds. (1 KG = 2.2046 lbs.) [2]

ii) Write a C program to find n!. [2]

iii) Write a C program to solve  $x^3 - 3x - 3 = 0$  by Bisection Method. [2]

**OR**

b) i) Write a C program to find  $a^n$ . [2]

ii) Write a C program to find sum of the digits of a given number. [2]

iii) Write a program to check whether a given number is prime or not. [2]

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