

Ref. No.: EX/IT/T/111/2018(s)

BACHELOR OF INFORMATION TECHNOLOGY
SUPPLEMENTARY EXAMINATION, 2018
1st YEAR 1st SEMESTER
Introduction to Programming

Time: 3 Hours

Full Marks: 100

NOTE:

- Please make your answer script clean.
- Write all parts of a question in a single place.
- Give the corresponding output of your program whether mentioned or not, when you are asked to write a program.

1. Check whether the following code snippet will execute successfully. If not, then why? If yes, then what will be the output? Answer without explanation for both yes and no will be considered as void. **10 x 2 = 20**

a) `int x = 7;
printf("%x", x << 2);`

b) `struct x1 {float a, b;};
struct x2 {struct x1 a; int b[13];};
struct x2 x;
printf("%d \t %d \t %d",
sizeof(x), sizeof(x.a), sizeof(x.a.a));`

c) `int x = -1;
if(++x)
printf("TRUE");
else
printf("FALSE");`

d) `int i = 0;
for (i = 0; i < 3; ++i)
printf("a \n");
printf("b \n");
printf("c \n");`

e) `int c=5, b=7;
if(c)
printf("%d\n", c);
else
printf("%d\n", b);`

f) `main(){
int A, B, C;
A = 20;
B = 25;
C = 20;
if(A=0) C = B*2+10;
printf("%d", C);
}`

g) `char *p = "abcde";
while(*p++ != 'c');
printf("%s", p);`

h) `int a = 2, b = 3;
printf("%d", a+++b);`

i) `int a = 10, b = 3;
if(a=b)
printf("%d \n", a);
else
printf("%d \n", b);`

j) `int a, b, c, d, e;
b = c = 9;
d = 20; e = 19;
a = b > c ? c > d ? 12 : d > e : 13 :
14 : 15;
printf("%d \n", a);`

2. Explain why the below statements are true or false. Answer without explanation will consider as void. (ANY FIVE) 5 x 2=10
- The expression `*ptr++` and `++*ptr` are same.
 - Three declarations `char **apple`, `char *apple[]`, and `char apple[][]` are same.
 - In a call to `printf()` function the format specifier `%b` can be used to print binary equivalent of an integer.
 - We can specify a variable filed within a `scanf()` format string.
 - Preprocessor directive `#undef` can be used only on a macro that has been `#define` earlier
 - There exists a way to prevent the same file from getting `#included` twice in the same program.

3. Answer the following questions: 5 x 4 = 20
- Write a function `remove()` which deletes all occurrences of a given character from a string. The function should take two arguments: the string name and the character to be removed.
 - Define a preprocessor `swap(t,x,y)` that will swap two arguments `x` and `y` of a given type.
 - Write a recursive function to calculate the sum of digits of the `n`-digit number passed as argument.
 - Draw the equivalent flow-chart of the `do-while` and `for` loop.

4. Write a program to convert the binary equivalent of an integer number without using array. 10

5. Write a program to print the following pattern for line number 5. The line number will be the user input.

```

1      2      3      4      5      4      3      2      1
      1      2      3      4      3      2      1
          1      2      3      2      1
              1      2      1
                  1

```

10

6. Write short notes on: (ANY FIVE) 5 x 3 = 15
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|--------------------------------|-------------------------------|
| a) Programming Language Levels | d) Source File to Object File |
| b) Programming Paradigms | e) File Handling |
| c) Hierarchy Chart | f) Procedural Programming |

7. Write difference between: (ANY FIVE) 5 x 3 = 15
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|----------------------------|--|
| a) structure and union | d) Call by reference and Call by value |
| b) Algorithm and Flowchart | e) Enum and Const |
| c) Break and Continue | f) Character array and String |

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