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3 (Sem - 1/CBCS) CSC HC 1

2022

**COMPUTER SCIENCE**

(Honours)

Paper : CSC-HC-1016

**(Programming Fundamentals using C/C++)**

Full Marks : 60

Time : Three hours

***The figures in the margin indicate  
full marks for the questions.***

1. Answer ***any seven*** of the following questions  
as directed :  $1 \times 7 = 7$

(a) C is an object oriented programming  
language. *(State true or false)*

(b) \_\_\_\_\_ is an octal constant whose decimal  
value is 20. *(Fill in the blank)*

Contd.

(c) Which of the following is a valid identifier ?

- (i) static
- (ii) for
- (iii) integer
- (iv) void

*(Choose the correct option)*

(d) cin is a library function.

*(State true or false)*

(e) In C++, once a reference is created, it cannot be later made to refer another object.

*(State true or false)*

(f) Which of the following operators cannot be overloaded ?

- (i) Size of operator
- (ii) Conditional operator
- (iii) Subscripting operator [ ]
- (iv) Both (i) and (ii)

*(Choose the correct option)*

(g) Using \_\_\_\_, it is possible to create generic functions and classes.

*(Fill in the blank)*

(h) We can extend semantic of operator using operator overloaded function.

*(State true or false)*

(i) \_\_\_\_\_ preprocessor directive is used to report a warning message and continue preprocessing.

*(Fill in the blank)*

(j) The \_\_\_\_ is used in multiple inheritances to prevent ambiguity between multiple instances.

*(Fill in the blank)*

(k) \_\_\_\_\_ abnormal conditions that a program encounters during its execution.

*(Fill in the blank)*

(l) Initial default value of a static variable is \_\_\_\_\_.

*(Fill in the blank)*

2. Write output of **any four** of the following code segments :

$2 \times 4 = 8$

(a) 

```
int a,b;
a = 1,2,3;
b = (1,2,3);
printf("%d %d",a,b);
```



(b) `for(char x=65;x<='Z';x++)  
printf("%c",x);`

(c) `int arr[ ]={1,3,5,7,9};  
cout<<*(arr+3);`

(d) `int a;  
a<<5  
cout<<a;`

(e) `unsigned char c;  
for(c=200;c<c+1;c++);  
cout<<c;`

(f) `#define MULTIPLY(x,y) x*y  
int main() {  
printf("%d",MULTIPLY(2+3,4+5));}`

(g) `int a[ ]={1,2,3,4,5};  
cout<<3[a];`

(h) `int a;  
a=15>7 && (6&9);  
cout<<a;`

3 Answer **any three** of the following questions :

5×3=15

(a) Explain different primitive data types available in C/C++.

(b) What is meant by type conversion ? Why is it necessary ?

(c) Differentiate between —

(i) pointer and reference variable;

(ii) class and object.

(d) What is storage class ? List the features of different storage classes.

(e) What is friend function ? What are the properties of friend function ?

(f) What is constructor ? What are the characteristics of constructor ?

(g) Differentiate between static and dynamic memory allocation. Describe new and free operators.



(h) Give a brief description of *any five* preprocessor directives.

4. Answer **any three** of the following questions :

$$10 \times 3 = 30$$

(a) Write a function that checks whether a given string is palindrome or not. Use this function to find whether the string entered by user is palindrome or not.

(b) What is variadic function ? Describe with an example.

(c) Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.

(d) Write a program to calculate GCD of *two* numbers (i) with recursion, and (ii) without recursion.

(e) What does inheritance mean in C++ ? What are different forms of inheritance ? Explain.

(f) Explain exception handling mechanism used in C++ with a suitable example.

(g) Write a program to copy the contents of one text file to another file, after removing all white spaces.

(h) Create Matrix class using templates. Define member functions for multiplying matrices.