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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 :

10×3=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.