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Your Roll No. ....

230

B.Sc. (Prog.)/II

C

Paper CS-201—PROGRAMMING AND DATA STRUCTURE

(Admissions of 2005 and onwards)

Time : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt All questions.

- I. (a) In the following C++ code segments find out the errors with reasons. There may be more than one error in each segment : 3+2

```
(i) class MyClass {  
        const int v1 = 30;  
        const int v2;  
        int v3;  
        int &v4;  
public :  
        MyClass(int n)  
        {  
                v2 = n;  
                v4 = v3;  
        }  
};
```

P.T.O.

(ii) `int list[5], *p;`

`p = list;`

`p = p*2;`

`cout << *p;`

(b) Rewrite the following code by using switch statement.

The output must be same for both code segments : 5

`main( )`

`{`

`int cho;`

`clrscr( );`

`cout << "Enter choice between 1 to 5 : " ;`

`cin >> cho;`

`if ( (cho == 1) || (cho == 2) || (cho == 3) ||`

`(cho == 4) || (cho == 5) )`

`{`

`cout << "Hello\n";`

`}`

`}`

2. (a) Define a class string and overload + operator to concatenate two strings. 5
- (b) Write constructors for the class ReadData, when invoked as follows : 5
- (i) ReadData obj1("This is my new string");
- (ii) ReadData obj2(345);
3. (a) What are the different forms of inheritance ? Give an example of each. 5
- (b) What is the purpose of exception handling ? What type of exceptions can be handled by this mechanism ? 5
4. (a) Differentiate between the following : 6
- (i) 'for' loop and 'while' loop
- (ii) call by reference and call by value

(b) Write output for the following code segments :  $3 \times 3 = 9$

(i) # include <iostream.h>

# include <iomanip.h>

main()

{

cout <<setiosflags(ios :: showbase);

cout <<230<<' '<<hex<<' '<<230<<oct<<'

<<230<<endl;

}

(ii) main()

{

int a = 30, b = 40, x;

x = (a! = 10) && (b = 50);

cout << x << endl;

}

```

(iii) main( )

{

    enum code {add, delete, modify, unchanged};

    typedef enum code CODE;

    CODE c, d;

    c = add;

    d = modify;

    cout << c << ' ' << d << endl;

}

```

5. (a) Evaluate the following postfix expression : 6

6 2 3 + - 3 8 2 / + \* 2 \$ 3 +

Show the contents of the stack *opStack* and the *Symbol*, *op1*, *op2* and *value* after each successive iteration of the loop in tabular form as :

Symbol	Op1	Op2	Value	opStack
--------	-----	-----	-------	---------

- (b) Explain what is stack. State *one* application (for each) in the computer system for the following data structure :

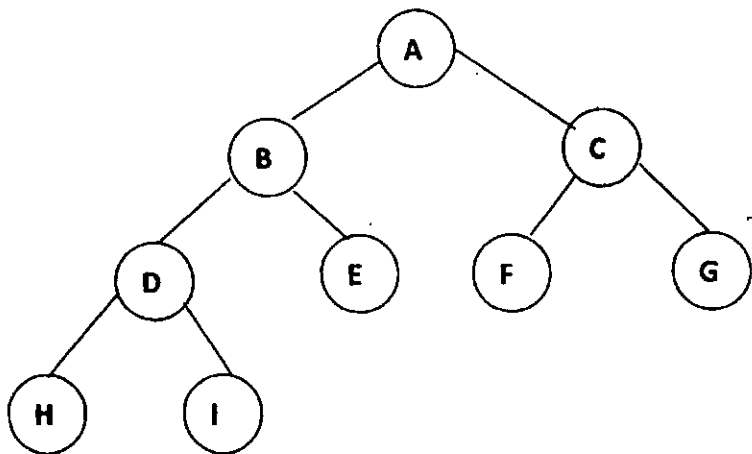
4

(i) Stack

(ii) Queue.

6. (a) Give inorder, postorder and preorder traversals of the following tree :

6



- (b) Explain link list. State *two* main drawbacks of arrays over link list.

4

7. (a) Write an algorithm to perform the following : 4
- (i) Append an element at the start of a singly link list
  - (ii) Append an element at the end of a singly link list.
- (b) Write short notes on the following : 6
- (i) Stack implemented using link list
  - (ii) Priority queue
  - (iii) Binary tree.