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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Electronics and Communication Engineering **Duration: 3 hrs.**
Course Code: 19EC5PE1OP **Max Marks: 100**
Course: Object Oriented Programing Using C++ **Date: 03.03.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.
3. **ALL CODES NEED TO BE SUPPORTED BY MEANINGFUL COMMENTS AND SAMPLE OUTPUT**

UNIT - I

1 a) Create a structure to store employee details of an organization. Write a function to store data of 100 employees using dynamic memory allocation concept. **10**

b) Realize a 4 function calculator using switch case statement. **10**

UNIT - II

2 a) Develop a class called STring with appropriate data functions for the following user program to compile: **10**

```
int main()
{
STring S1, S2("GOOD"), S3("DAY"),S4(S2);
S1.display();
S2.display();
S1.compare(S2); // To compare the strings S1 and S2 and print the result
return 0;
}
```

b) Create a class BMS_ECE to hold 'n' number of integer data items. 'n' is to be specified by the user. Set aside memory to store the data dynamically. Include functions for the following program to compile: **10**

```
int main()
{  int key;                    // item to be searched
BMS_ECE obj1,obj2(100);     // create objects of specified size
Bool res = obj1.search(key);  // To search for 'key' in obj1
return 0;
}
```

OR

3 a) Develop a class called time that has information about hours, minutes and seconds. Include appropriate functions for the following user program to **12**

compile:

```
int main()
{
time t1, t2(0), t3(0,1,22); //t1 is to be initialized to 0 hrs, 0 min, 0 secs
t1.add_time(t2); //t1 = t1+t2
t1.add_time(t2,t3); //t2 = t1+t3
t1 = t2.add_time(t3); //t1 = t1+t2
return 0;
}
```

b) Develop a class 'A' with one data member. Include appropriate function for the following line to compile: **08**

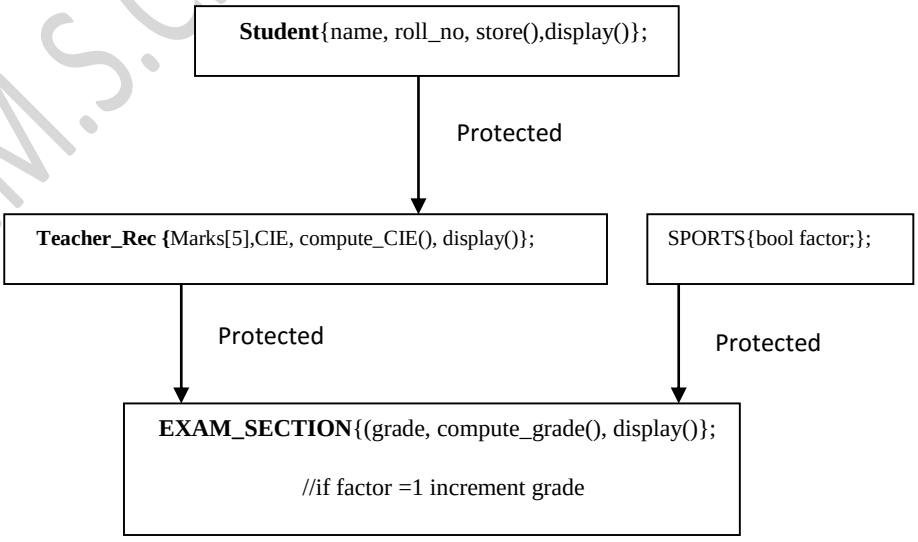
```
A obj1(10), obj2(4);  // create 2 objects of class A with data values as specified
Compare(obj1,obj2);    // compare the values of obj1 and obj2 and print the result
```

UNIT - III

4 a) Develop a class '**distance'** with integer type feet and float type inches as data members. Write appropriate member functions for the program to compile **10**

```
int main()
{ distance d1, d2(0), d3(1,8);
d2=-d1;
d3+=d1;    // add the contents of d1 with d3 and store the result in d3
d1+=2; //increment feet data by 2
}
```

b) Develop classes to realize the structure by choosing appropriate mode of access and also justify your choice of access. Class contents (data members and functions) are also included in the diagram.Analyze the problem you would encounter while realizing the above structure and suggest solutions for the same. **10**



OR

5 a) Develop a class 'Example' with one character array to hold a string of characters.. Inculde a parameterized constructor to initialize the array. Overload << and >> operator to shift the array contents (circular shift) by a specified value. Before performing the shift, validate if the required shift is feasible. For example: If the shift to be done is by 10 characters and the character array is only made of 8 characters it is not possible. **10**

Example EG1("BMS COLLEGE OF ENGG");
EG1>>2; // to perform right shift by 2 characters
EG1<<25; // to perform left shift by 25 characters

b) Create a class ClassA with one private, one protected and one public data member. Derive ClassB, ClassC and ClassD from ClassA using private, protected and public inheritance mode. Depict the implication of the inheritance mode with an example. **10**

UNIT - IV

6 a) Write an application that can be used to create account passwords. Input a password from user that contains 8 characters of which decimal point (ASCII 46), capital alphabets (ASCII 65 – 90), and repeated characters are not to be present. Use the exception handling feature to create this app. Warn the user appropriately in case of ANY wrong password entry. **10**

b) Create an application that compares two data of any given type and prints the result. Outline the usage of your app. **10**

UNIT - V

7 a) Create a file to store userID and password, both 5 characters each. Write data of 10 users onto a file 'USERDATA'. **10**

b) Write codes for the following data to be printed as per the given format. **10**

O	U	T	P	U	T		
				8	.	6	8
					+	2	1
			*	*	*	1	9
#	#	#	#	1	2		

****