|  |  |  |  |
| --- | --- | --- | --- |
| **HIGHER SECONDARY PRINCIPALS’ FORUM, GOA**  JOINT PRELIMNARY EXAMINATION January 2020  Subject : Computer Science (705)  STD: XII MARKS : 55  DATE : 11/01/2020 TIME : 2 ½ Hrs. | | | |
| *Instructions:*   1. All questions are compulsory. However there is an internal choice for question number 23, 27, 28. 2. Question number from 1 to 5 should be attempted only once. 3. Programs should be written in C++ language only. 4. State your assumptions clearly.   SECTION-A consists of 10 questions of 01 mark each.  SECTION-B consists of 11 questions of 02 marks each.  SECTION-C consists of 05 questions of 03 marks each.  SECTION-D consists of 02 questions of 04 marks each. | | | |
| **SECTION A** | | | |
| 1. | When one class inherits the properties of more than one classes, it is ----------- inheritance.   * 1. Single c. Multiple   2. Multilevel d. Hierarchical | | [1] |
| 2. | The only function of NOT gate is to ……………..   1. Stop signal 2. Invert input signal 3. Act as a universal gate 4. None of the above | | [1] |
| 3. | A set of rules that governs data communication is -----   1. Protocols c. Standards 2. RFCs d. Internet | | [1] |
| 4. | If the queue is implemented with the linked list, keeping track of a front pointer and rear pointer, which of these pointers will change during an **INSERTION (ENQUEUE**) into a **NON-EMPTY** queue?   1. Neither changes c. only front ptr 2. Only rear ptr d. both changes | | [1] |
| 5. | Which of the following is **NOT** used to seek a file pointer?   1. ios::cur c. ios::set 2. ios::beg d. ios::end | | [1] |
| 6. | What is stack overflow? | | [1] |
| 7. | Why is linked list called as Dynamic Data Structure? | | [1] |
| 8. | What is the difference between the constructor function and normal function? | | [1] |
| 9. | Following program intends to read and display a character from text file on a new line. Write suitable code for statement 1.  #include<fstream.h>  void main  {  ifstream fin(“abc.txt”);  char ch;  while(!fin.eof())  {  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ //statement 1  cout<<ch<<endl;  }  } | | [1] |
| 10. | What is the precondition to search an element in an array using binary search? | | [1] |
| **SECTION B** | | | |
| 11. | Consider the following declarations and answer the following questions :  class animal  {  int leg;  protected :  int tail;  public:  void input();  void output();  };  class wild: private animal  {  int carniv;  protected :  int teeth;  public:  void getdata();  void putdata();  };  class pet: public animal  {  int herbiv;  public :  void display();  };  void main()  {  pet P;  wild W;  }   1. Name the type of inheritance depicted in the above example? 2. How many bytes will be required by an object P of class pet? 3. Name the data member(s) that can be accessed from function display() of pet class. 4. Name the member functions which can be accessed from the object W of class wild. | [2] | |
| 12. | Convert the following in postfix expression:  A-B\* (C/D). Show the contents of the stack after each step. | [2] | |
| 13. | What is a search engine? Name any two search engines. | [2] | |
| 14. | Write a function in C++ to print all the lowercase alphabets to uppercase and uppercase alphabets to lowercase alphabets present in a text file “BOOK.txt. | [2] | |
| 15. | Draw an equivalent logic circuit for the following Boolean expression: (W+X`). (Y`+Z) | [2] | |
| 16. | What do you mean by E-Wallet? | [2] | |
| 17. | |  |  |  |  | | --- | --- | --- | --- | | A | B | C | F | | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 1 | | 0 | 1 | 0 | 1 | | 0 | 1 | 1 | 0 | | 1 | 0 | 0 | 1 | | 1 | 0 | 1 | 1 | | 1 | 1 | 0 | 0 | | 1 | 1 | 1 | 0 |   Given is the truth table of a function (A, B, C). Write the SOP and POS form (canonical) from the truth table. | [2] | |
| 18. | What will be the status of the following list after third pass of bubble sort for arranging the following elements in ascending order? 26 21 20 23 29 17. | [2] | |
| 19. | Describe various situations in which a copy constructor is invoked? | [2] | |
| 20. | State any one merit and one demerit of open source. | [2] | |
| 21. | Write statement 1 and statement 2 to execute the member function 1 and member function 2 respectively for the following code:  Class Exam  {  int code;  char Ename [20];  float marks;  public:  Exam() //Member function 1  {  code = 100; strcpy(Ename, “NoName”); marks =0; }  Exam (Exam &e) //Member function 2  {  code = e.code +1;  strcpy(Ename, e.Ename);  marks= e.marks; }  };  void main()  {  \_exam e;\_\_\_\_\_\_\_\_\_\_\_\_\_ //statement 1  \_exam e1(e);\_\_\_\_\_\_\_\_\_\_\_\_\_ //statement 2  } | [2] | |
| **SECTION C** | | | |
| 22. | Write a program to check whether a given number is strong number or not.  Note : A strong number is a number in which the sum of the factorial of the digits is equal to the number itself. Eg. 145 = 1! + 4! + 5!= 145. | [3] | |
| 23. | Write a user defined function draw() to accept a positive integer and generate the following pattern for ‘n’ lines.  \* \* \* \* \*  \*  \*  \*  \* \* \* \* \*  **OR**  0  0 1  0 1 0  0 1 0 1  0 1 0 1 0 | [3] | |
| 24. | Define a class named Tour in C++ with following description  Private members :  Tno, No\_adults, No\_children, distance of type integer  Totalfare of type float  Assignfare() function to calculate and assign the value to data member Totalfare based on the following condition :-  Fare for adult  Fare per person Distance  500 >=1500  300 <1500  For one child : fixed Fare = 50  Public members:  Constructor which initializes all data members to 0.  EnterTour() function to input the values of Tno, No\_adults, No\_children, distance and Call to function Assignfare().  Function showTour() to print all details of data members.  Write main program to create an object of the class and call the necessary functions. | [3] | |
| 25. | Given a binary file “Accounts.dat”, containing records of the following class Customer  class Customer  {  char name[30] ; // name of the customer  char Acct\_type[30]; // savings or current  long int accno; // account no  float balance; // total balance  public:  void register(); // add customers  void transfer();  };  Write a function transfer() that would transfer all the customers who are having “savings” accounts and balance more than 50000/- from file Accounts.dat to “Savings.dat”. | [3] | |
| 26. | Reduce the following Boolean expression using K-map  F(U,V,W,Z ) = (0,1,2,4,5,6,8,10) | [3] | |
| **SECTION D** | | | |
| 27. | Declare a class Student consisting of the following members:  Under private visibility label  Rollno of type integer  SName of type character size 30  Under public visibility label  Parameterized constructor to initialize Rollno and SName  Under protected visibility  Display() to display the data members  Declare a class Teacher  Under private visibility label  Tno of type integer  TName of type character size 30  Under public visibility label  Parameterized constructor to initialize data members Tno and TName.  Under protected visibility  Show() to display the data members  Derive a class Course from the above two classes in public mode. It also has private data member cName of type character size 20.  Under public visibility:  Parameterized Constructor to initialize cName and output() to display CName and data members of the other classes also.  Write main function to accept input values and display all the members of the classes.  **OR**  Declare a class Employee consisting of the following members:  Under private visibility label  empno of type integer  EName of type character size 30  Under public visibility label  Parameterized constructor to initialize Empno and EName  Under protected visibility  Display() to display the data members  Declare a class Daily\_wager  Under private visibility label  Wphour of type integer  Noworked type integer  Under public visibility label  Parameterized constructor to initialize data members  Under protected visibility  Show() to display the data members  Declare class Payment  Under private visibility  Object X of Class Employee  Object Y of class Daily\_Wager  and pdate of type character size 10.  Under public visibility:  Parameterized Constructor to initialize pdate and other members of classes  Output() to display pdate and data members of the other classes also.  Write main function to accept input values and display all the members of the classes. | [4] | |
| 28. | Consider the following class declaration  class Book  {  struct node  {  int bookid;  char bname[20];  struct node \* next;  }\*start;  public:  Book() { start= NULL; }  void create (); //creates the linked list  void deletepos(); // delete a book  };  Write function definition for the function deletepos() to delete the node at any given position in the linked list.  **OR**  Consider the following class declaration  class Cabs  {  struct node  {  int regno;  char cab\_type[20];  struct node \* next;  }\*start;  public:  Cabs()  { start= NULL; }  void insertpos(); // insert node at position  };  Write function definition for the function insertpos() to insert the node at any given position in the linked list. | [4] | |