

INDIAN SCHOOL MUSCAT
THIRD PRELIMINARY EXAMINATION 2017-2018

COMPUTER SCIENCE
(MARKING SCHEME)

CLASS XII

(a) Answer: 2

Ordinary function : These are function define anywhere in the program and called directly using function name.

Example

```
void cube (int x)
{ cout << x * x * x; }
```

```
void main()
```

```
{ int a; cin>>a; cube (a); //Function call.
}
```

Member function : These are function define inside the class and called using object.

```
class A
```

```
{ int x;
```

```
public:
```

```
void cube ()
```

```
{ cout << x * x * x; }
```

```
----- };
```

```
void main ( )
```

```
{ A A1;
```

```
=
```

```
A1.cube(); //Function call }
```

(½ Mark for each correct explanation and ½ Mark for each correct example of ordinary and member function

(b) Answer: 1

i) setw() - iomanip.h ii) isalnum() – ctype.h

(½ Mark each for the correct answer)

(c) Answer: 2

```
void main()
```

```
{ cout<<"Enter an Alphabet:";
```

```
char CH;                                      // Error 1
```

```
cin>>CH;
```

```
switch(CH)
```

```
{                                              // Error 2(i)
```

```
case 'A' :                                    // Error 3(i)
```

```
cout<<"Ant"; break; // Error 4(i)
```

```
case 'B' :                                    // Error 3(ii)
```

```
cout<<"Bear"; break; // Error 4(ii)
```

- `}_` // Error 2(ii) }
 (4 errors ½ Mark each for each correction)
- (d) Answer: 3
 Output:
 111:60
 112:70
 113:85
 (1 Mark for each correct line of output)
- (e) Answer: 2
 Text = tMKCM@IMJGCR
 New Text = CM@IMJGCR
 last Text = IMJGCR
 [(1 Mark for first line ½ Mark for second line ½ Mark for third line)]
- (f) Answer: 2
 (iii) O – R – A – G –
 Minimum L value – 5
 Maximum L value – 8
 (1 Mark for correct option ½ Mark for each min and max value of L)
- (a) Answer: 2
 Data hiding can be defined as the mechanism of hiding the data of a class from the outside world. This is done to protect the data from any accidental or intentional access.. Data hiding is achieved by making the members of the class private.
 Data abstraction refers to, providing only essential information to the outside world and hiding their background details. Members defined with a public label are accessible to all parts of the program. The data abstraction view of a type is defined by its public members.
 (1/2 mark each for definition of Data Hiding and Data Abstraction)
 (1/2 mark each for the difference in their implementation)
 Or (2 marks for explanation through an example.)
- (b) Answer: 2
 (i) Constructor It will be executed at the time of object creation.
 (ii) planet p(“Pluto”,”7.5 Billion Km”);
 (1 Mark each for the correct answer)
- (c) Answer: 4

```

class Candidate
{ int Rno;
  char Cname[20];
  float Agg_marks;
char Grade;
void setGrade()
{ if (Agg_marks>= 80)
Grade = 'A';
else if(Agg_marks<80 && Agg_marks>=65)
Grade = 'B';
else if (Agg_marks<65 && Agg_marks>=50)
Grade = 'C';
else Grade='D';
}
public: Candidate()

```

```

{   Rno=0;
    Strcpy(Cname,"N.A.");
    Agg_marks=0.0;
}
void Getdata ()
{   cout<<"Registration No";
    cin>>Rno;
    cout<<"Name";
    cin>>Cname;
    cout<<"Aggregate Marks";
    cin>>Agg_marks;
    setGrade();
}
void dispResult()
{   cout<<"Registration No"<<Rno;
    cout<<"Name"<<Cname;
    cout<<"Aggregate Marks"<<Agg_marks;
    cout<<"Grade"<<Grade;
}

```

(½ mark for correct syntax for class header)

(½ mark for correct declaration of data members)

(½ mark for correct definition of the constructor Candidate())

(1 mark for correct definition of setGrade())

(1 mark for correct definition of Getdata() with proper invocation of setGrade())

(½ mark for correct definition of dispResult())

(d) Answer:

4

(i) None of data members are accessible from objects belonging to class AUTHOR. (1 Mark for correct answer)

(ii) Enter(),Show() (1 Mark for correct answer)

(iii) Datamembers: Voucher_No,Sales_Date,Salary (½ Mark for correct answer)

Memberfunction: Sales_Entry(),Sales_Detail(),Enter(),Show(),Register, Status() (½ Mark for correct answer)

(iv)66 (1 Mark for correct answer)

Note: Marks should not

be given if less variable names or more variable names or function names are mentioned in the answer for question (ii) and (iii)

(a) Answer:

2

```

void Alter (int A[ ], int N)

```

```

{
for (int i=0;i<N;i++)
if (A[i] %5==0)
A[i]=5;
else
A[i]=0;
}

```

(½ Mark for proper function header)

(1 ½ Mark for correct logic)

(b) Answer:

3

```

void SWAPCOL(int A[][100], int M, int N)
{
int Temp, I;
for(I=0; I<M; I++)
{
Temp = A [I][0] ;
A[I][0] = A[I][N-1];
A[I][N-1] = Temp;
}}

```

(1 Mark for correct function header)

(1 Mark for correct loop)

(1 Mark for swapping the first column with last column correctly)

(c) Answer: Col-major Formula:- $S[I][J] = B + W * [(I - Lr) + (J - Lc) * M]$ 3

$W = \text{size of each location in bytes} = 4$ $Lr = \text{Lower Bound of rows} = 0$
 $Lc = \text{Lower Bound of columns} = 0$ $M = \text{Number of rows per column} = 40$
Address of $S[I][J] = \text{BaseAddress} + W * [(I - Lr) + (J - Lc) * M]$
Address of $S[15][10] = \text{BaseAddress} + 4 * [(15 - 0) + (10 - 0) * 40]$
 $7200 = \text{Base Address} + 4 * 415$
Base Address = $7200 - 4 * 415$
= $7200 - 1660$
= 5540
Address of $S[20][15] = 5540 + 4 * [(20 - 0) + (15 - 0) * 40]$
= $5540 + 4 * 620$
= $5540 + 2480$
= 8020

(1 Mark for Column major formula)

(1 Mark for substituting correct values in the formula for base address calculation and address calculation of $S[15][10]$.

(1 mark for finding the correct base address and address of $S[15][10]$.

(d) Answer: 4

```

void QUEUE::DELETE()
{PRODUCT *P;
if( F==NULL)
{
cout<<"Queue Empty"; }
else
if(F==R)
{P=F;
cout<<"\n The deleted element is";
cout<<P->PID<<P->PNAME;
F=NULL;
R=NULL;
delete P;
}
else
{
P= F;
cout<<"\n The deleted element is";
cout<<P->PID<<P->PNAME;
F=F->Next;
}
}

```

delete P;

} }

(½ Mark for checking empty queue)

(½ Mark for assigning front to temporary pointer)

(1 Mark for reassigning front)

(1 Mark for deleting previous front using temporary pointer)

(1 Mark for deletion logic if front and rear node is same)

(e) Answer: (4, 10, 5, +, *, 15, 3, /, -)

2

Steps	Element Scanned	Action	Stack Status	Result
1	((
2	4	Push 4	(4	
3	10	Push 10	(4 10	
4	5	Push 5	(4 10 5	
5	+	Pop 5 & 10 Push 15	(4 15	10 + 5 = 15
6	*	Pop 15 & 4 Push 60	(60	4 * 15
7	15	Push 15	(60 15	
8	3	Push 3	(60 15 3	
9	/	Pop 15 & 3 Push 5	(60 5	15/3 = 5
10	-	Pop 50 & 5 Push 55	(55	60 - 5
11)	Stack empty		55

Result = 55

(1 ½ Marks for correct steps showing stack status)

(½ Mark for correct output)

(a) Answer:

1

```
File.seekg(0,ios::end); //Statement 1
```

```
File.tellg(); //Statement 2
```

(½ Mark for each correct Statement)

(b) Write a function in C++ to read the content of a text file "PLACES.TXT" and display all those lines on screen, which are either starting with 'P' or starting with 'S'. 2

Answer:

```
void DispPorS ( )
```

```
{  
ifstream File ("PLACES.TXT");
```

```
char STR[80];
```

```
while(File.getline(STR,80))
```

```
{  
if(STR[0]=='P' || STR[0]=='S')
```

```
cout<<STR<<endl;
```

```
}
```

```
File.close(); }
```

(½ Mark for opening PLACES. TXT correctly)

(½ Mark for reading each Line (Whichever method adopted) from the file)

(½ Mark for checking lines starting with 'P' or 'S')

(½ Mark for displaying the lines)

(c) Answer:

3

```
void BUMPER()
{
    GIFTS G;
    ifstream fin;
    fin.open("GIFTS.DAT", ios::binary);
    while(fin.read((char*)&G, sizeof(G)))
    { if(strcmp(G.GetRemarks(),"ON DISCOUNT")= =0)
      G.Seen(); }
    fin.close();
}
```

(1Mark for opening GIFTS .DAT correctly)

(½ Mark for reading records from GIFTS.DAT)

(½ Mark for comparing Remarks with ON DISCOUNT (ignore case sensitive checking))

(1 Mark for displaying record)

(a) Answer:

2

DDL stands for Data Definition language and comprises of commands which will change the structure of database object.

DML stands for Data Manipulation Language and comprises of commands which are used to insert, edit, view & delete the data stored in a database object.

DDL Commands: ALTER, DROP

DML Commands: UPDATE, INSERT

(1 Mark for correct difference)

(1 Mark for correct identification)

(b) Answer:

6

(i) SELECT * FROM MEMBER ORDER BY ISSUEDATE DESC;

(ii) SELECT CODE,BNAME FROM BOOK WHERE TYPE='Fiction';

(iii)SELECT COUNT(*),TYPE FROM BOOK GROUP BY TYPE;

(iv)SELECT MNAME, ISSUEDATE FROM MEMBER WHERE ISSUEDATE>='2017-01-01'
AND ISSUEDATE<='2017-12-31';

(OR) SELECT MNAME, ISSUEDATE FROM MEMBER WHERE ISSUEDATE
BETWEEN '2017-01-01' AND '2017-12-31';

(OR) SELECT MNAME, ISSUEDATE FROM MEMBER WHERE ISSUEDATE
LIKE '2017%';

(1 Mark for each correct answer for question (i) to (iv))

(v) MAX(ISSUEDATE)

2017-02-23

(vi)DISTINCT TYPE

Fiction

Literature

Comic

(vii) CODE	BNAME	MNO	MNAME
L102	German Easy	M101	RAGHAV SINHA
F102	Untold Story	M103	SARTHAK JOHN
C101	Tarzan in the lost world	M102	ANISHA KHAN

(viii) BNAME

German Easy

(½Mark for each correct answer for question (v) to (viii))

(a) Answer:

(i) $(A.B)' = A' + B'$

(ii) $(A+B)' = A'.B'$

Truth Table Verification: (i)

A	B	A.B	$(A.B)'$	A'	B'	$A'+B'$
0	0	0	1	1	1	1
0	1	0	1	1	0	1
1	0	0	1	0	1	1
1	1	1	0	0	0	0

(ii)

A	B	A+B	$(A+B)'$	A'	B'	$A'.B'$
0	0	0	1	1	1	1
0	1	1	0	1	0	0
1	0	1	0	0	1	0
1	1	1	0	0	0	0

(1 Mark for stating any one De Morgan's Theorems correctly)

(1 Mark for correctly verifying any one De Morgan's Theorems using Truth Table)

(b) Answer:

$F(A,B) = A'.B + A.B'$ (2 Marks for correct expression)

(c) Answer:

$F(A,B,C) = A'B'C' + A'BC + AB'C' + ABC$

OR

$F(A,B,C) = \sum (0,3,4,7)$

(1 Mark for the correct SOP form)

(d) Answer:

	Z'W'	Z'W	ZW	ZW'
U'V'			1	1
U'V	0	1	3	2
UV				1 6
UV'	1 12	1 13		
	1 8	1 9	1	1

		11	10
--	--	----	----

$$\text{Quad} = m_8 + m_9 + m_{12} + m_{13} = UZ'$$

$$\text{Quad} = m_2 + m_3 + m_{10} + m_{11} = V'Z$$

$$\text{Pair} = m_2 + m_6 = U'ZW'$$

$$E(U, V, Z, W) = UZ' + V'Z + U'ZW'$$

(½ Mark for drawing K-Map with correct variable names)

(½ Mark for correctly plotting 1s in the given cells)

(½ Mark each for 3 groupings)

(½ Mark for writing final expression in reduced/minimal form)

- (a) Answer: 1
- Makes web more interactive through online social media
 - Supports easy online information exchange
 - Interoperability on the internet
 - Video sharing possible in the websites
- OR Any two of the above or any other two correct characteristics of Web 2.0
(½ Mark each for any two correct characteristics)
- (b) Answer: 1
- (i) VOIP – Voice Over Internet Protocol
 - (ii) CDMA – CODE DIVISION MULTIPLE ACCESS
- (½ Mark each for the correct expansion)
- (c) Answer: 1
- Client side scripts: Java script / VB script / Perl Tcl/Tk / REXX.
Server side scripts: JSP / ASP / PHP / CGI / Perl
(½ Mark for writing one correct Client side scripting language name)
(½ Mark for writing one correct Server side scripting language name)
- (d) Answer: 1
- Cookies is small text file that web servers send to a web browser so that the web server can keep track of the user's activity on a particular website.
(1 Mark each for the correct explanation)
- (e) Answer: 1
- Option No.5
(1 mark for correct answer)
- (f) Answer: 1
- Trojan Horse It is a "Malware" computer program presented as useful or harmless in order to induce the user to install and run them.
Computer worm -It is a self-replicating computer program. It uses a network to send copies of itself to other nodes (computers on the network) and it may do so without any user intervention.
(½ Mark each for the correct explanation)
- (g) Answer: 1
- The most suitable place to house the server is the Z building. In the Z building we have the maximum number of computers installed(150 nos), so as per the 80 - 20 network design rule the server should be placed in that building where the network traffic is maximum localized which reduces the cabling cost and increases the efficiency.
(1 Mark for the correct explanation)

Answer:

- a) Repeater is not needed in this layout because according to this layout no nearby buildings are more than 100m apart. 1
- b) Switch is to be installed in each building as it gives connectivity to all computers in the network with dedicated band width. 1
(½ Mark each for correct explanation)

(i) Answer:

The most economic way to connect it with reasonable high speed would be radio wave transmission, as they are easy to install, can travel long distances and penetrate buildings easily. 1

(1 Mark for correct explanation)