B1.3-R4: PROGRAMMIMG AND PROBLEM SOLVING THROUGH 'C' LANGUAGE

NOTE:

IMPORTANT INSTRUCTIONS:

1. Question Paper in English and Hindi and Candidate can choose any one language.

2. **In case of discrepancies in language, English version will be treated as final.**

3. There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions.

4. **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book.

5. Maximum time allotted for **PART ONE** is **ONE HOUR**. Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates, who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE**.

TOTAL TIME: 3 HOURS   **TOTAL MARKS: 100**
                                             (PART ONE – 40; PART TWO – 60)

PART ONE
(Answer all the questions)

1. **Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

1.1   The two type of file structures existing in VSAM file are
A)   Key sequenced structures, entry sequenced structures
B)   Key sequenced structure, exit sequenced structures
C)   Entry sequenced structures, exit sequenced structures
D)   None of the above

1.2   In a multilist organisation
A)   records that have an equivalent value for a given secondary index item are linked together to form a list
B)   records are loaded in ordered sequence defined by collating sequence by content of key
C)   records are directly accessed by records key field
D)   none of the above

1.3   *ptr ++ is equivalent to
A)   ptr++
B)   *ptr
C)   ++ptr
D)   ++*ptr

1.4   Declaration int *(*p) int(*a) is
A)   A pointer to function that accept an integer argument and return an integer
B)   A pointer to a, which returns an integer
C)   A pointer to subroutine which returns an integer
D)   None of the above

1.5   The output of following program would be
```
main()
{ printf("d%d%d%" sizeof(3.14f), sizeof(3.14l);}
```
is
A)   4,8,10
B)   8,4,10
C)   18,8,4
D)   None of the above

1.6   An example of hierarchical data structure is
A)   array
B)   link list
C)   tree
D)   all of the above

1.7   The do..while looping statement
A)   is executed only once if the conditions is true
B)   is also known as entry-controlled loop
C)   is executed at least once if the conditions is false
D)   the unconditional loop

1.8   Which of the following is not a proper storage class in 'C'?
A)   auto
B)   dec
C)   static
D)   extern

1.9   The average number of comparison is sequential search is
A)   n**2
B)   n(n-1)/2
C)   n(n+1)/2
D)   (n+1)/2

1.10   Tell whether the following tree is:
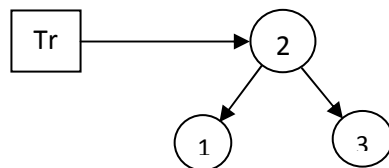
A)   Heap
B)   Full and Complete
C)   Heap Complete
D)   None of the above

2. **Each statement below is either TRUE or FALSE. Choose the most appropriate one and ENTER in the "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

2.1   A command that lets you change one or more fields in a record is look up.

2.2   In relational schema each tuple is divided into fields called relations.

2.3   The best average SORTING behavior is shown by merge sort.

2.4   The data structure that is needed to convert infix notation to prefix notation is graph.

2.5   The best case and worst case time for searching an element using linear search is 1, n.

2.6   Forest is a set of N>=0 disjoint trees, which are obtained when root is removed.

2.7   PERT graph is a graph used to perform PERT calculation.

2.8   Priority queue is a queue that is used to store priority data.

2.9   A symmetric diagraph is a directed graph such that for every edge VW there is reverse edge WV.

2.10   Maximum degree in any vector in a graph with n vertices is n-1.

3. **Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein.** **(1x10)**

X		Y	
3.1	Null pointer is	**A.**	Files that are stored on a direct access medium
3.2	Number of operators required in ?: operators	**B.**	2 bytes
3.3	Null macros is	**C.**	manipulator
3.4	A direct access file is	**D.**	Number of tracks and number of sectors per track
3.5	Seek time is	**E.**	The region over which the variable declaration has effect
3.6	A function that change state object is called	**F.**	A pointer which does not point anywhere
3.7	FORMAT command in DOS is used to establish	**G.**	Three
3.8	Scope of a variable is	**H.**	Contains pointer to itself
3.9	A self referential structure is	**I.**	Files that are stored on a random access medium
3.10	Size of a pointer in small memory model is	**J.**	A macro that represent null pointer
		K.	Depends upon context
		L.	Time taken by read write head mechanism to position itself over appropriate cylinder
		M.	Two

4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. **(1x10)**

A.	OR	**B.**	0 (Logn)	**C.**	32 KB
D.	open source software	**E.**	RAM	**F.**	And
G.	stdio.h	**H.**	single	**I.**	insertions sort
J.	0 (nlogn)	**K.**	64 KB	**L.**	Dijkstra's algorithm
M.	goto				

4.1   An example of volatile memory is _____.

4.2   The _____ operator is true only when both the operands are true.

4.3   LINUX is an example of _____.

4.4   By default a real number is treated as _____.

4.5   Header file in which NULL macro is defined is _____.

4.6   Memory that can be allocated in a single call to macro is _____.

4.7   Total number of comparison in bubble sort is _____.

4.8   Arranging pack of cards by picking one by one is an example of _____.

4.9   All pair shortest path problem can be solved by _____.

4.10   Avoid the use of _____ statement in the program.

5.

a) A lucas sequence is given below:
1, 3, 4, 7, 11, 18, 29
The third number is sum of previous two numbers. Write a program to print first 10 numbers of lucas sequence.

b) Write a program to print the value of numbers in words when number entered is in the range of 0 to 999.

c) With the help of suitable example, explain the functioning of switch statement.

(5+5+5)

6.

a) Explain the function performed by following library function of 'C':
i)   getch
ii)   getche
iii)   getchar
iv)   putchar
v)   putch

b) Describe output of following program:

```
#include<stdio.h>
main()
{ auto int i=10;
{ auto int i=5;
printf("%d", i);
}
printf("%d", i+s);
printf("%d"i);
```

c) Explain the following:
i)   static variable
ii)   auto variable
iii)   register variable

(5+5+5)

7.

a) Explain the difference between logical and bitwise operator.
b) Write a program using pointer to find greatest number in an array.
c) Assuming ip is a pointer; explain the function of following statements:
i)   ip = ip + 5;
ii)   ip = ip – 10;
iii)   ip –
iv)   *ip++
v)   *ip –

(5+5+5)

8.

a) Assume following code:
```
int dat = 100;
int  *var
var = &dat;
```

Here dat is an integer variable and var is a pointer. Answer the output of the following statements, in this regards and explain your answer.
i)   printf("%d", * var);
ii)   printf("%d", (* var)++);
iii)   printf("%d", var);
iv)   printf("%d", -var);

b) Write a program to find greatest number in an array.

(10+5)

9.

a) Enumerate the difference between:
i)   structures and union
ii)   union and enum

b) Explain the difference between text mode and binary mode files.
c) Write a program to copy a file into another file.

(5+5+5)