A3-R4: PROGRAMMING & PROBLEM SOLVING THROUGH 'C' LANGUAGE

अवधि: 03 घंटे **अधिकतम अंक: 100**

DURATION: 03 Hours **MAXIMUM MARKS: 100**

ओएमआर शीट सं.: **OMR Sheet No.:**						

रोल नं.: **Roll No.:** | | | | | | |

उत्तर-पुस्तिका सं.: **Answer Sheet No.:** | | | | | | |

परीक्षार्थी का नाम: **परीक्षार्थी के हस्ताक्षर**:

Name of Candidate: _____; Signature of candidate: _____

परीक्षार्थियों के लिए निर्देश:	**Instructions for Candidate:**
कृपया प्रश्न-पुस्तिका**,** ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यान पूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है।	Question Paper is in English language. Candidate can answer in English language only.
इस मॉड्यूल/पेपर के **दो भाग** है। **भाग एक** में चार प्रश्न और **भाग दो** में पाँच प्रश्न है।	There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions**.**
भाग एक "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 है तथा **भाग दो**, "व्यक्तिपरक" प्रकार है और इसके कुल अंक 60 है।	**PART ONE** is Objective type and carries 40 Marks. **PART TWO** is subjective type and carries 60 Marks.
भाग एक के उत्तर, इस प्रश्न-पत्र के साथ दी गई **ओएमआर उत्तर-पुस्तिका** पर**,** उसमें दिये गए अनुदेशों के अनुसार ही दिये जाने है। **भाग दो** की उत्तर-पुस्तिका में **भाग एक** के उत्तर **नहीं** दिये जाने चाहिए।	**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 for **PART TWO**.
भाग एक के लिए अधिकतम समय सीमा **एक घण्टा** निर्धारित की गई है। **भाग दो** की उत्तर-पुस्तिका, **भाग एक** की उत्तर-पुस्तिका जमा कराने के पश्चात दी जाएगी। तथापि, निर्धारित एक घंटे से पहले **भाग एक** पूरा करने वाले परीक्षार्थी **भाग एक** की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, **भाग दो** की उत्तर-पुस्तिका ले सकते हैं।	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.**
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना एवं अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हाल नहीं छोड़ सकता हैं। ऐसा नही करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।	**Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his Answer sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.**
प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात एवं उत्तर देने से पहले उम्मीदवार यह जाँच कर यह सुनिश्चित कर ले कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question booklet is complete in all respect.

जब तक आपसे कहा न जाए तब तक प्रश्न-पुस्तिका न खोलें।

DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.

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 Which one is incorrect statement for C Language?
A) C compiler supports octal integer constant.
B) C compiler supports hexadecimal integer constant.
C) C compiler supports binary integer constant.
D) C compiler supports decimal integer constant.

1.2 What will be the output of the following code?

```
int main()
{
    int x,y,z;
    x='1'-'0';        /* line-1 */
    y='a'-'b';        /* line-2 */
    z=x+y;
    printf("%d",z);
}
```

A) 0
B) Error because of incorrect line-1 only.
C) Error because of incorrect line-1 and line-2.
D) Error because of incorrect line-2 only.

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

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

1.5 Which of the following cannot be used as identifiers?
A) spaces B) digits
C) underscores D) letters

1.6 How many times is a do while loop guaranteed to loop?
A) 0 B) Infinitely
C) 1 D) Variable

1.7 Precedence is used
A) To determine which operator evaluated first from left to right.
B) To determine the level of an operator in a program.
C) To determine how an expression involving more than one operator is evaluated.
D) To check the expression is valid or not.

1.8 Identify the correct sequence of steps to run a program
A) Link, Load, Code, Compile & Execute
B) Code, Compile, Link, Execute & Load
C) Code, Compile, Link, Load & Execute
D) Compile, Code, Link, Load & Execute

1.9 What will be the output of the following code?

```
main()
{
    int x = 0, y = 0;
    if(x > 0)
        if(y > 0)
            printf("True");
    else
        printf("False");
}
```

A) Blank screen
B) True
C) False
D) Error because of dangling else problem

1.10 What will be the output of the following code?

```
main()
{
   int i=2,*j;
   j=&i;
   printf("%d",i**j*i+*j);
}
```

A) Syntax error due to Invalid expression in printf
B) Print junk value
C) 16
D) 10

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

2.1 Two pointer variables cannot be subtracted.
2.2 1.0 is an example of double constant and float constant.
2.3 **#define** is used to define symbolic constant.
2.4 ***const*** is a keyword that is used to define symbolic constant.
2.5 Two dimensional array is stored in memory physically as one-dimensional array.
2.6 size of a pointer, which points to a structure, depends on size of a structure.
2.7 All the members of a union share the same memory location.
2.8 ***break*** keyword is mandatory in switch case structure.
2.9 Using ***fprintf*** function, we can print on the standard output device.
2.10 It is better to use array than a linked list, when there is a fixed size list in a program.

ROUGH WORK SPACE:

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	It is an operator that calculates size of a structure variable	**A.**	strrev
3.2	Function that reverse a string	**B.**	integer
3.3	Constant value 32767L is an example of	**C.**	Float
3.4	Address of arguments is passed in this method of passing	**D.**	goto
3.5	It is an unconditional jump statement	**E.**	Double quotation
3.6	Data type that can store only 0 and positive numbers	**F.**	Unsigned integers
3.7	All the string constant must be covered between this symbol	**G.**	typedef
3.8	It is a keyword used to assign alternative name to existing data type	**H.**	struct
3.9	Data type of 45.2f is	**I.**	long integer
3.10	Return type of printf function is	**J.**	sizeof
		K.	switch
		L.	pass by address
		M.	void

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

A.	semicolon	**B.**	conditional operator	**C.**	asterisk
D.	dot	**E.**	math.h	**F.**	scanf( )
G.	Linked list	**H.**	integer	**I.**	zero
J.	void	**K.**	array	**L.**	ctype.h
M.	constant pointer				

4.1 _____ symbol is used access the value pointed by a pointer.

4.2 When an array is declared, array name is defined as _____ to first element.

4.3 M_PI is a constant that represents 22/7 ratio. It is declared in _____ header file.

4.4 _____ function reads data from stdin stream.

4.5 Default return type of any user-defined function is _____.

4.6 In do…while loop, _____ symbol is required after condition.

4.7 We must use _____ symbol to access structure members.

4.8 _____ data structure facilitates to insert and delete data during the program execution.

4.9 Global variable is initialized to _____ by default.

4.10 A pair of question mark and colon is known as _____.

ROUGH WORK SPACE:

PART TWO
(Answer any FOUR questions)

5.

a) Write a program that accept an array of 10 integers and a number to be deleted from the array if found. Represent deleted element with -1 and display final array. If not found print appropriate message.
b) Explain the role of linker and loader in compilation.
c) Explain the relation of array and pointer with example.

(7+4+4)

6.

a) Draw a flow chart to print the factorials of numbers from 1 to n where n is entered by user.
b) Write a function to display the multiplication table of the number.
c) Write a function which accepts an array of size n containing integer values and returns average of all values. Call the function from main program.

(5+5+5)

7.

a) Write a program to print all the Krishnamurti number from 1 to *n*. Here, *n* is user dependent. A Krishnamurti number is a number whose sum of factorial of individual digits equals the number. For example, 145 = 1! + 4! + 5! = 1 + 24+ 120 = 145.
b) Define a structure Distance having two data members: cm and mm in integer. The program enters three variables and find which distance is the largest among them.

(8+7)

8.

a) Using a switch statement, write a function to count the number of vowels and number of blanks in a character array passed to it as an argument.
b) Which are the demerits of linked list data structure?
c) Explain working of bit-wise exclusive OR and shift left operators in C with example.

(7+4+4)

9.

a) Write a program to find greatest number in an array?
b) Explain the concept of recursion with example.
c) Explain the difference between Test mode and Binary mode files.

(8+3+4)

ROUGH WORK SPACE:

ROUGH WORK SPACE: