B1.3-R4: PROGRAMING & PROBLEM SOLVING THOUGH 'C' LANGUAGE

अवधिः 03 घंटे
DURATION: 03 Hours

अधिकतम अंकः 100
MAXIMUM MARKS: 100

ओएमआर शीट सं.:
OMR Sheet No.:

रोल नं.:
Roll No.:

उत्तर-पुस्तिका सं.:
Answer Sheet No.:

परीक्षार्थी का नामः
Name of Candidate: _____

परीक्षार्थी के हस्ताक्षरः
; **Signature of candidate:** _____

परीक्षार्थियों के लिए निर्देश:

Instructions for Candidates:

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 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** हैं। **भाग एक** में **चार** प्रश्न और **भाग दो** में **पाँच** प्रश्न हैं।	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 हैं।	**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 हैं। **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 और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल /कमरा नहीं छोड़ सकते 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 लिखना आरम्भ करने से पहले उम्मीदवार यह जाँच कर सुनिश्चित कर लें 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. (1×10)**

1.1 Which of the following is the correct order of evaluation for the below expression?

(A) * / % + – =

(B) = * / % + –

(C) / * % – + =

(D) * % / – + =

1.2 Which of the following is true for variable names in C ?

(A) They can contain alphanumeric characters as well as special characters.

(B) It is not an error to declare a variable to be one of the keywords(like goto, static).

(C) Variable names cannot start with a digit.

(D) Variable can be of any length.

1.3 What is the output of this C code ?

```
#include <stdio.h>
    int main()
    {
        int x = 2, y = 0;
        int z = y && (y |= 10);
        printf("%d\n", z);
        return 0;
    }
```

(A) 1

(B) 0

(C) Undefined behaviour due to order of evaluation.

(D) 2

1.4 Point out the error if any, in the while loop:

```
main()
{
int i=1;
while ()
{
printf("%d",i++);
if( i > 10)
break;
}}
```

(A) The condition in while loop is must.

(B) There should be a semicolon in the while loop.

(C) The while loop should be replaced by for loop.

(D) No error

1.5 What is right way to initialize arrays?
(A) intnum[6]={2,4,12,5,45,5};
(B) int n{}={2,4,12,5,45,5};
(C) int n{6}={2,4,12};
(D) int n(6)={2,4,12,5,45,5};

1.6 In C, if you pass an array as an argument to a function, what actually gets passed ?
(A) Value of elements in array
(B) First element of array
(C) Base address of array
(D) Address of the last element of array

1.7 *# include <stdio.h>*
void fun(int *ptr)
{
        *ptr = 30;
}
 int main()
{
  int y = 20;
  fun(&y);
  printf("%d", y);
  return 0;
}
The output of above program is:
(A) 20
(B) 30
(C) Compiler error
(D) Runtime Error

1.8 If the two strings are identical, then strcmp() function returns
(A) −1   (B) 1
(C) 0   (D) infinity

1.9 What is the maximum number of dimensions an array in C may have?
(A) 2
(B) 8
(C) 20
(D) Theoretically no limits. The only practical limits are memory and compilers.

1.10 Is the following statement declaration or definition:
        extern int i;
(A) Declaration   (B) Definition
(C) Function   (D) Error

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. (1×10)**

2.1 The expressions **ptr++* and *++*ptr* are same.

2.2 C provides the strcmp ( ) function to compare strings.

2.3 A function cannot be defined inside another function.

2.4 Goto can be used to jump from main function to other function.

2.5 The default parameter passing mechanism is call by value.

2.6 The expressions arr and &arr same for an array of 10 integers.

2.7 Memory allocation can be done by using keyword 'create'.

2.8 The expressions int fun(intarr[]); and int fun(intarr[2]); are same.

2.9 There can be two return statements inside a function.

2.10 Break statement can be used to exit a loop.

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. (1×10)

	X		Y
3.1	For is	A.	is another name for a variable
3.2	Float	B.	more priority than +
3.3	Reference	C.	cannot return array
3.4	# define directive	D.	is not a correct variable type
3.5	enum is	E.	an entry controlled loop
3.6	Function	F.	is used to signal the beginning and end of code blocks
3.7	Logical OR operator	G.	defines a macro
3.8	* has	H.	is a keyword
3.9	Real	I.	function all C programs must contain
3.10	Comments in 'C'	J.	is the correct operator to compare two variables
		K.	user defined data type
		L.	/* */
		M.	||

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. (1×10)

A.	Return	B.	Global	C.	Sequential
D.	Infinite	E.	do-while	F.	Union
G.	Null	H.	Ternary	I.	integer
J.	Pointer	K.	Auto	L.	prototype
M.	Argument				

4.1 An array elements are always stored in _____ order.

4.2 The value obtained in the function is given back to main by using _____ keyword.

4.3 By default, storage class of local variable is _____.

4.4 _____loop can be terminated using break statement.

4.5 _____ is a variable which holds the address of another variable.

4.6 Variables that are alive and active throughout the program are called _____ variables.

4.7 _____ is an exit control loop.

4.8 A pointer that does not point to any data object is _____.

4.9 The conditional operator (?:) is a _____.

4.10 In _____ all elements are stored in the same memory location.

PART TWO
(Answer any FOUR questions)

5. (a) Compare the use of switch statements with the use of nested if statements. Which is more convenient ?

(b) Explain break, continue and goto statements with example.

(c) Write a program to print all prime numbers from 1 to 100. Use nested loops, break or continue statement wherever necessary. **(6+4+5)**

6. (a) Explain the difference between = and = = operator with example.

(b) What will be the output of the following program segment?

main( )
{
int x=3,y=5;
   if(x= =3)
printf("\n%d",x);
   else;
printf("\n%d",y);
}

(c) Write a program to find the sum of the digits of a number. **(6+3+6)**

7. (a) What is call by value and call by reference? Write a program to swap two numbers using call by value.

(b) What do you understand by local, global and static variables? Explain.

(c) Compare the lifetime, Scope, Initial value and storage place of all storage classes.

(5+5+5)

8. (a) Write a program to add a new node to the beginning of a linked list and to the end of linked list.

(b) What is a file in C? Discuss various modes in which a file can be opened. Also discuss types of files. **(7+8)**

9. (a) Write a note on pointers and its uses. What do you mean by referencing and de-referencing of a pointer variable?

(b) Explain any five string handling functions in detail with example.

(c) Write a program to reverse an array. **(5+5+5)**

_____

SPACE FOR ROUGH WORK