A3-R4/B1.3-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 : **Name of Candidate :** _____

परीक्षार्थी के हस्ताक्षर : **Signature of Candidate :** _____

परीक्षार्थियों के लिए निर्देश :	**Instructions for Candidate :**
कृपया प्रश्न-पुस्तिका, ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यानपूर्वक 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** 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 का 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, **ओएमआर उत्तर-पुस्तिका** पर 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. **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 पश्चात् 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** to the Invigilator.
परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना और अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हॉल/कमरा नहीं छोड़ सकते हैं। ऐसा नहीं 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/her 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 पश्चात् एवं उत्तर लिखना आरम्भ करने से पहले उम्मीदवार जाँच कर यह सुनिश्चित कर लें कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है।	After receiving the instruction to open the booklet and before starting to answer 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 of the following is **not** a valid variable name declaration ?

(A) int (B) abc_int

(C) abc (D) abc_abc

1.2 The format identifier '%i' is also used for _____ data type.

(A) char (B) float

(C) int (D) double

1.3 Library function pow() belongs to which header file ?

(A) math.h

(B) maths.h

(C) ctype.h

(D) powerofmaths.h

1.4 Prototype of a function means _____.

(A) Name of Function

(B) Output of Function

(C) Declaration of Function

(D) Input of a Function

1.5 Which of the following is **not** an example of looping statement ?

(A) for (B) switch

(C) while (D) do…while

1.6 What is the action of strcmp() function ?

(A) Compare two strings

(B) Copies one string over another

(C) Finds the length of a string

(D) Cut one string over another

1.7 Find output of the following program :

```
#include<stdio.h>
#include<conio.h>
void main()
{
 if(printf("C programming is "))
 {
      printf("Easy");
 }
else
{
      printf("Hard");
}
}
```

(A) Easy

(B) Hard

(C) C programming is Easy

(D) EasyHard

SPACE FOR ROUGH WORK

1.8 Find output of the following program :

```
#include<stdio.h>
#include<conio.h>
void main()
{
int i = 0, j = 0;
while(i < 5, j < 10)
{
    i++;
    j++;
}
printf("%d%d", i, j);
}
```

(A) 5 5 (B) 10 10

(C) 5 10 (D) 10 5

1.9 Which of the following is **not** a proper storage class in 'C' ?

(A) auto (B) dec

(C) static (D) extern

1.10 Identify the correct sequence of steps to run a program.

(A) link, load, code, compile and execute

(B) code, compile, link, execute and load

(C) code, compile, link, load and execute

(D) compile, code, link, load and execute

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 C programs are converted into machine language with the help of compiler.

2.2 The keyword void is a data type in C.

2.3 Functions can be called either by value or reference.

2.4 If return type for a function is not specified, it defaults to int.

2.5 Are the expression *ptr++ and ++*ptr are same.

2.6 malloc() returns a NULL if it fails to allocate the requested memory.

2.7 A union cannot be nested in a structure.

2.8 An array is a fixed-size non-sequential collection of elements of the different data type.

2.9 ftell() returns the current position of the pointer in a file stream.

2.10 Bit fields cannot be used in union.

SPACE FOR ROUGH WORK

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	Function call itself	**A.**	#define
3.2	Logical AND	**B.**	getw()
3.3	Reads a character from a file.	**C.**	malloc()
3.4	(type-name)expression	**D.**	recursion
3.5	exp1 ? exp2 : exp3	**E.**	&&
3.6	Dynamic memory allocation	**F.**	conditional operator
3.7	Copies one string over another	**G.**	explicit conversion
3.8	Defining Symbolic constant	**H.**	Union
3.9	String constants	**I.**	getc()
3.10	Reads an integer from file	**J.**	"final"
		K.	while
		L.	for
		M.	strcpy()

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.	flowchart	**B.**	automatic	**C.**	modular programming
D.	char	**E.**	switch	**F.**	Implementation
G.	Address of variable	**H.**	same	**I.**	different
J.	'\t'	**K.**	null	**L.**	#define
M.	C tokens				

4.1 In C program the smallest individual units are known as _____.

4.2 _____ backslash character constants.

4.3 _____ is a data type in C.

4.4 Pointer holds _____.

4.5 Pictorial representation of an algorithm is _____.

4.6 The Implicit type conversion is _____ type conversion.

4.7 A multiway decision statement in C known as a _____.

4.8 An Array is a fixed-size sequenced collection of element of the _____ data type.

4.9 In user defined function, function definition is also known as function _____.

4.10 A pointer that is pointing to nothing is called _____ pointer.

PART TWO

(Answer any FOUR questions)

5. (a) What do you mean by an algorithm ? Why algorithms are important for problem solving ? Write an algorithm to find the factorial of entered integer number.

(b) How to declare structure variable in C ? Explain the concept of Array of Structures and Array within structures with suitable example. **(7+8)**

6. (a) Explain the concept of multiway decision statement in C. Explain nested switch statement with suitable example.

(b) How to declare and initialize 2-Dimensional array in C ? Write any two advantages of an array. List the application of an array. Explain any one application with suitable example. **(7+8)**

7. (a) Write a program to add two integer numbers using following categories of function :

(i) Function with no argument and no return value

(ii) Function with an argument and a return value

(b) Draw a flowchart to find the Fibonacci series till term ≤ 1000.

(c) Write a program to count number of vowels in a string. **(5+5+5)**

8. (a) How to declare and initialize pointer in C ? Write a C program to swap two number using pointer.

(b) Write a program to print a following triangle using for looping statement.

1

2 2

3 3 3

4 4 4 4

5 5 5 5 5

(c) Explain Arithmetic Operators and Logical Operators with suitable example. **(5+5+5)**

9. Explain briefly **any three** from the following :

(a) What do you mean by dynamic memory allocation ? Explain free() and realloc() with example.

(b) What is the limitation of pointer ? Explain concept of pointer to function in C.

(c) Which are the operation that can perform on file in C ? Explain fprintf() and fscanf() with suitable example.

(d) Write a program to find the length of the entered string.
(Do not use inbuilt string function)

(3x5)

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SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK