B1.3-R4: PROGRAMMING & PROBLEM SOLVING THROUGH 'C' LANGUAGE

अवधि: 03 घंटे

DURATION: 03 Hours

अधिकतम अंक: 100

MAXIMUM MARKS: 100

<table>
<tr><td>ओएमआर शीट सं.:
OMR Sheet No.:</td><td></td><td></td><td></td><td></td><td></td></tr>
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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 ध्यान पूर्वक पढ़ें।	Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet.
प्रश्न-पुस्तिका हिन्दी एवं अंग्रेजी भाषा में है। परीक्षार्थी किसी एक भाषा का चयन कर सकता है। (अर्थात, या तो हिन्दी या अंग्रेजी)	Question Paper is in Hindi and English language. Candidate can choose to answer in any one of the language (i.e., either Hindi or English)
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 हैं 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 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.

नोट: यदि हिन्दी संस्करण में कोई त्रुटि / विसंगति पाई जाती है, तो उस अवस्था में अँग्रेजी संस्करण ही मान्य होगा ।

Note: In case of any discrepancy found in Hindi version, English version will be treated as final.

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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 programming method is followed in C language?
A) Algorithm
B) Flow-charts
C) Procedural
D) Object Oriented

1.2 getchar() function is available in which header file?
A) stdio.h
B) conio.h
C) math.h
D) header.h

1.3 Find the output of following code
```
int main()
{
int i=-2;
printf("-i = %d",-i);
return 0;
}
```
A) -i=2
B) i=-2
C) -i=-2
D) -i=+2

1.4 Which numbering system is not handled directly by the printf() conversion specifiers?
A) Decimal
B) Binary
C) Octal
D) Hexadecimal

1.5 Which of the following is an incorrect assignment statement?
A) N=m=0
B) Value+=10
C) mySize=x<y?9:11
D) Value=+=10

1.6 What will be the output of the following program?
```
int main()
{
int x=5;
printf("%d %d %d",x,x<<2,x>>2); }
```
A) 1 20 5
B) 5 1 20
C) 5 20 1
D) 20 1 5

1.7 A programming construct in which a set of statement in a computer program can be executed repeatedly.
A) Loop statement
B) Conditional statement
C) Block statement
D) All of the above

1.8 What will be the output of following program?
```
int main()
{
for(int c=1;c<=5;++c);
printf("%d",c);
}
```
A) 1
B) 5
C) 6
D) 12345

1.9 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 the array
C) Base address of the array
D) Address of the last element of array

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

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 Function can be called either by value or reference.

2.2 A function cannot be defined inside another function.

2.3 Are the three declarations char **apple, char *apple[], and char apple[][] same?

2.4 A long double can be used if range of a double is not enough to accommodate a real number.

2.5 malloc() allocates memory from the heap and not from the stack.

2.6 While calling the fprintf() function in the format string conversion specifier %s can be used to write a character string in capital letters.

2.7 A union cannot be nested in a structure.

2.8 The modulus operator cannot be used with a long double.

2.9 If the file to be included doesn't exist, the preprocessor flashes an error message.

2.10 A linked list is a linear data structure where each element is a separate object.

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	Calls itself	A.	Infinite loop if no break statement inside the loop
3.2	String copy	B.	A user-defined data type in C which allows you to combine different data types to store a particular type of record.
3.3	Unary operator	C.	Modify the size of previously allocated space
3.4	while(2)	D.	Recursive functions
3.5	Structure	E.	strcpy()
3.6	realloc	F.	Explicit conversion
3.7	exit()	G.	--
3.8	Typecasting	H.	Collection of similar type of data elements
3.9	'\v ' used for	I.	logical operators
3.10	Array is a	J.	strcat()
		K.	Terminates program
		L.	Vertical space
		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.** (1x10)

A.	Const	B.	continue	C.	Two-dimensional
D.	Flowchart	E.	fputs	F.	2 bytes
G.	six	H.	break	I.	4 bytes
J.	sizeof	K.	Multi-dimensional	L.	*
M.	&				

4.1 Function _____ writes a line to a specified file.

4.2 Pictorial representation of an algorithm is _____.

4.3 A variable can be made constant by declaring it with the qualifier _____ at the time of initialization.

4.4 The _____ operator returns the number of byte the operand occupies.

4.5 By default, the real numbers are printed with a precision of _____ decimal places.

4.6 The _____ statement when executed in a switch statement causes immediate exit from the structure.

4.7 The _____ statement is used to skip a part of the statement in a loop.

4.8 An array that uses more than two subscript is referred to as _____ array.

4.9 After incrementing a float pointer ptr by 1 it would be incremented by _____.

4.10 The _____ operator return the value of the variable to which its operand points.

ROUGH WORK SPACE:

PART TWO
(Answer any FOUR questions)

5.
a) Write a 'C' program to display following pattern:
   A
   B B
   C C C
   D D D D
   E E E E E
b) Write a 'C' program that displays the recommended actions depending on the color of a traffic light using the switch statement.
c) What is function? Explain uses of function. Also, explain declaration, function call and function definition with example.

(4+4+7)

6.
a) Write a 'C' program to find the frequency of characters in a String.
b) Write a 'C' program to store information (title, author, subject and book_id) of a Book using structure and display it in appropriate format.
c) Write a 'C' program to find largest element of an Array.

(5+5+5)

7.
a) Draw a flowchart to find the Fibonacci series till term ≤ 1000.
b) Explain different storage classes available in 'C'.

(7+8)

8.
a) Explain about 'pointer to function' with suitable example.
b) What are the advantages and disadvantages of an Array?
c) Write a 'C' program to copy text of one file to another file.

(5+5+5)

9.
a) What is command line argument? Also, explain how to pass command line arguments to 'C' program.
b) What are preprocessor directives? Why do we need them? Explain various preprocessor directives?
c) Explain the difference between Text Mode and Binary Mode files.

(5+5+5)

ROUGH WORK SPACE:

ROUGH WORK SPACE: