

Printed Pages : 2

Roll No. ....

(ii) Questions : 7

Sub. Code : 

6	6	5	3
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Exam. Code : 

9	0	5
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B.Engg. 1<sup>st</sup> Semester

1125

**PROGRAMMING FUNDAMENTALS**

**Paper - CS-101**

**Time Allowed : Three Hours]**

**[Maximum Marks : 50**

**Note :-** Attempt **five** questions in all, including Q. No. 1 which is compulsory, selecting **two** questions from each Section.

1. (a) Differential algorithm from flowchart.
- (b) What do you mean by formatted input output ?
- (c) Differentiate while from do-while loop.
- (d) What are Macros ?
- (e) Give some functions available for accessing files MC.

5×2=10

**SECTION-A**

2. (a) Draw flowchart for FOR loop and DO-WHILE loop. 5
- (b) Explain in detail the associativity and precedence hierarchy being followed by C language. 5
3. Write a program to multiply two square matrices of same order. Make use of pointer to arrays instead of just a 2-Dimensional array. 10

6653/BHJ-32901

[Turn over

d) Structure, object and ...  
... note on object oriented ...

4. (a) Write a recursive program to calculate  $a^b$  i.e. "a raised power b".  
(b) Write program to differentiate call by value from call by reference.

### SECTION-B

5. Write a program to create a file to store the records of all the students present in the class. Then write functions to modify any information regarding any student and another function to display the information regarding any student. 10
6. (a) How pointer arithmetic is different from the simple arithmetic? 4  
(b) Write a program demonstrating pointer to structures. 6
7. Explain by writing program codes :  
(a) C-Preprocessor and Macros  
(b) Command line arguments. 2×5=10



21b  
Exam.Code:905  
Sub. Code: 7837

1016  
B.Engg. First Semester  
CS-101/201: Programming Fundamentals  
(Common)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. a) What do you mean by scope of a variable and how it can be defined in C?  
b) What is the escape sequence? Give examples.  
c) Write any four Linux Shell commands.  
d) What do you understand by low level and high level language? Give some examples.  
e) What is pointer and its use in a C language (5x2)

UNIT- I

- II. What is the function of memory in computing? Name various types of memory devices and discuss their merits, demerits and area of application. (10)
- III. Give syntax of various looping statements of C. Write a program that, for all positive integers i, j, k and L from 1 to 1000, finds and prints all combinations of i, j, k and L such that  $i + j + k = L$  and  $i < j < k < L$ . (10)
- IV. List the various operators supported by C. Discuss their precedence and associativity with example? (10)

UNIT- II

- V. a) Write a program to find the average of 10 integer numbers using an array.  
b) Write a program to swap two numbers using functions and pointers. (2x5)
- VI. Compare and contrast the terms:  
a) Call by Value and Call by Reference  
b) Macro and Function  
c) Binary and ASCII files  
d) Structure, object and class. (4x2½)
- VII. a) Write short note on object oriented programming.  
b) What is recursion? Write a recursive function to compute the factorial of a number, N. (5,5)

x-x-x

Exam.Code:905  
Sub. Code: 7890

1016  
B. Engg. First Semester  
Civil Engineering  
CS-101: Programming Fundamentals  
(Common with CSE and IT)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, selecting atleast two questions from each Unit.

x-x-x

**UNIT- I**

- I. a) Define the term operating system and Shell? Name various shells supported by Linux operating system and write the syntax of any four shell commands.  
b) What do you understand by the term Memory hierarchy and its need? Discuss in brief the various types of memories used in a Desktop system. (5,5)
- II. a) Describe the four basic data-types supported by C. What is their range, size and format? How could we extend the range of values they represent?  
b) Write an algorithm/program to print the sum of the following harmonic series for a given value of 'N' :  $1 + 1/2 + 1/3 + \dots + 1/N$ ; (5,5)
- III. a) List various constructs supported in C for two way selection. Using one of them design and develop a C program which will read a year as an input and find whether it is leap year or not. Also consider end of the centuries.  
b) Define the term function, scope and life time of a variable. Write a C function isprimev(num) that accepts an integer argument and returns 1 if the argument is prime, a 0 otherwise. (5,5)
- IV. Why and when do we array and pointer variables? Explain the declaration and initialization of one and two dimensional arrays with example. Also write a program to multiply to matrices A and B; each of size 6x6 and store the result in matrix C. (10)

**UNIT- II**

- V. What do you mean by the terms pointer to structure and array of structures? Write a C program to maintain a record of "n" student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Declare each field of an appropriate data type. Print the marks of the given student name as input. (10)

P.T.O.



(2)

- VI. a) Explain any five string manipulation library functions with examples. Write a function that scans a character string passed as an argument and prints its length.  
b) What do you mean by a Formatted I/Os? Explain in brief the various I/O statements and format specifiers supported by C language. (5,5)
- VII. a) What is file? How it is different from an array? Describe the various types of files supported by C language.  
b) Write a C program to read and display a text from the file. (5,5)
- VIII. List the key features of an object oriented Language. Is it same as object based language? Justify your answer. Explain the concept of Abstraction and Encapsulation in detail with suitable example. (10)

x-x-x

1128  
B. Engg.-1<sup>st</sup> Year (1<sup>st</sup> Semester)  
Information Technology  
IT-102: Programming Fundamental

Time allowed: 3 Hours

Max. Marks: 50

**Note:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part-A & B.

x-x-x

Qn 1.

- a) What is source code and object code?
  - b) Explain the difference between *break* and *continue* statement using suitable example.
  - c) Write and explain any two preprocessor directives in C.
  - d) What will happen if you assign a value to an element of an array whose subscript exceeds the size of the array: (i) element will be set to 0 (ii) other data may be overwritten (iii) error message from compiler (iv) nothing, it will be assigned desired value. Justify your answer.
  - e) How are Unions different from Structures?
- (5x2=10)

PART-A

- Qn 2. a) Write an algorithm and draw flowchart to find minimum of three numbers. (5,5)  
b) Compare and contrast: (i) Compiler, Interpreter, Debugger (ii) extern, global, static

- Qn 3 a) Write a program to generate the following pattern

```
1
1 2
1 2 3
1 2 3 4
1 2 3
1 2
1
```

- b) How is switch case statement different from if-else ladder? A program to read day number of the week and display name of the week day has to be written, given Day 1 is Monday. Write the program with the most suitable programming construct. (5,5)

- Qn 4. a) Explain the parameter passing mechanism and illustrate the difference between call by reference and call by value.  
b) Write a program to read five random numbers in an array and use a function to find the maximum number from the array. (5,5)

PART-B

- Qn 5. a) What are preprocessor statements? Also explain the significance of using *typedef* and *macros* with suitable examples.  
b) A car manufacturing company wants to store the following information about all the models launched like: *model\_no*, *model\_name*, *year*, *price*, *units\_sold*. Write a program to store the information using an array of structures. The program should also compute the total cars sold by the company. (5,5)

- Qn 6 a) How are pointers initialized? Mention the key advantages offered when processing strings using string pointers over arrays. Discuss the output of following:

```
void main()
{
    int a[] = {1,2,3,4,5,6,7,8,9};
    int *p = a+1;
    int *k=a+5;
    printf("\n %d", k-p);
}
```

- b) What different kinds of file types? Write a program to read data from a file and display on the screen. (5,5)

- Qn 7 a) Illustrate the working of three input and three output formatting commands with suitable examples. (5,5)  
b) What is error handling? Explain the *stderr* and *exit* functions.

x-x-x



(i) Printed Pages : 2

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(ii) Questions : 7

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Exam. Code : 

9	0	5
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**B.Engg. 1<sup>st</sup> Semester**

**1125**

**PROGRAMMING FUNDAMENTALS**

**Paper - CS-101**

**Time Allowed : Three Hours]**

**[Maximum Marks : 50**

**Note :-** Attempt **five** questions in all, including Q. No. 1 which is compulsory, selecting **two** questions from each Section.

1. (a) Differential algorithm from flowchart.  
(b) What do you mean by formatted input output ?  
(c) Differentiate while from do-while loop.  
(d) What are Macros ?  
(e) Give some functions available for accessing files MC.

5×2=10

**SECTION-A**

2. (a) Draw flowchart for FOR loop and DO-WHILE loop. 5  
(b) Explain in detail the associativity and precedence hierarchy being followed by C language. 5
3. Write a program to multiply two square matrices of same order. Make use of pointer to arrays instead of just a 2-Dimensional array. 10

4. (a) Write a recursive program to calculate  $a^b$  i.e. "a raised to power b".  
(b) Write program to differentiate call by value from call by reference.

### SECTION-B

5. Write a program to create a file to store the records of all the students present in the class. Then write functions to modify any information regarding any student and another function to display the information regarding any student. 10
6. (a) How pointer arithmetic is different from the simple arithmetic? 4  
(b) Write a program demonstrating pointer to structures. 6
7. Explain by writing program codes :  
(a) C-Preprocessor and Macros  
(b) Command line arguments.  $2 \times 5 = 10$



1016  
B. Engg. First Semester  
Civil Engineering  
CS-101: Programming Fundamentals  
(Common with CSE and IT)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, selecting atleast two questions from each Unit.

x-x-x

**UNIT- I**

- I. a) Define the term operating system and Shell? Name various shells supported by Linux operating system and write the syntax of any four shell commands.  
b) What do you understand by the term Memory hierarchy and its need? Discuss in brief the various types of memories used in a Desktop system. (5,5)
- II. a) Describe the four basic data-types supported by C. What is their range, size and format? How could we extend the range of values they represent?  
b) Write an algorithm/program to print the sum of the following harmonic series for a given value of 'N' :  $1 + 1/2 + 1/3 + \dots + 1/N$ ; (5,5)
- III. a) List various constructs supported in C for two way selection. Using one of them design and develop a C program which will read a year as an input and find whether it is leap year or not. Also consider end of the centuries.  
b) Define the term function, scope and life time of a variable. Write a C function isprimev(num) that accepts an integer argument and returns 1 if the argument is prime, a 0 otherwise. (5,5)
- IV. Why and when do we array and pointer variables? Explain the declaration and initialization of one and two dimensional arrays with example. Also write a program to multiply to matrices A and B; each of size 6x6 and store the result in matrix C. (10)

**UNIT- II**

- V. What do you mean by the terms pointer to structure and array of structures? Write a C program to maintain a record of "n" student details using an array of structures with four fields (Roll number, Name, Marks, and Grade). Declare each field of an appropriate data type. Print the marks of the given student name as input. (10)

P.T.O.

(2)

- VI. a) Explain any five string manipulation library functions with examples. Write a function that scans a character string passed as an argument and prints its length.  
b) What do you mean by a Formatted I/Os? Explain in brief the various I/O statements and format specifiers supported by C language. (5,5)
- VII. a) What is file? How it is different from an array? Describe the various types of files supported by C language.  
b) Write a C program to read and display a text from the file. (5,5)
- VIII. List the key features of an object oriented Language. Is it same as object based language? Justify your answer. Explain the concept of Abstraction and Encapsulation in detail with suitable example. (10)

x-x-x



J124

B.E. (Civil) First Semester  
CS-101: Programming Fundamentals  
(Common with CSE/IT)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 (Part-A) which is compulsory and selecting at least two questions each from Part B & C.

x-x-x

**Part-A**

- Q1. i) What are relational operators in C? (1)  
ii) What are main differences in while and do-while loop? (1)  
iii) What is type conversion? (1)  
iv) Briefly explain the concept of recursion. (1)  
v) How does the break statement provide a better control of loops? (1)  
vi) How is a pointer variable initialized? (1)  
vii) What are Structures in C? (1)  
viii) Briefly explain how error handling is done in C? (1)  
ix) What are Unions in C? (1)  
x) What is pointer arithmetic? Explain Briefly. (1)

**Part-B**

- Q2. i) Write a C program to find sum of the diagonal elements of a matrix. (6)  
ii) Explain the difference between Assembler, Compiler and Translator. (4)  
Q3. i) Write a C Program to sort n names alphabetically. (5)  
ii) Explain the difference between Call by Value and Call by reference with example (5)  
Q4. i) Write a C program to multiply two 3 x 3 matrices. (5)  
ii) Take an array of 10 numbers. Write a C program to reverse this array. of numbers (5)

**Part-C**

- Q5. i) Write a C program which reads input from a file named "program1.c" to count number of characters and words of the file. (6)  
ii) Explain difference between Pointer to array and Pointer to structure with example. (4)  
Q6. i) Explain the difference between structures and unions with suitable example (5)  
ii) Explain different input and output functions in C. (5)  
Q7. i) Write a C Program to compare two files, printing the first line where they differ. The Program should take name of files as command line arguments. (6)  
Q7. ii) Write short notes on C-Pre-Processor and Macros. (4)

x - x - x

1127  
B.E. (Civil) First Semester  
CS-101: Programming Fundamentals  
(Common with CSE)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.  
x-x-x

1. a) Where is the variable stored in the memory?
- b) What does the function toupper( ) do?
- c) How is the declaration `int *a[10]` different from `int(*a)[10]`?
- d) Differentiate between structure and union.
- e) What are the dynamic memory allocation operators? (5\*2=10)

**SECTION A**

2. a) Find the sum of all odd numbers that lie between 1 to n. (4)
- b) Write a program for matrix multiplication? (6)
3. a) What are the flow control statements? Explain selection statements in detail. (6)
- b) What are inline functions? How they are different from normal functions? (4)
4. a) Differentiate between call by value and call by references with suitable example in C. (5)
- b) Define High level language and Machine level languages. Explain advantages and disadvantages (5)

**SECTION B**

5. a) What is structure ? How a structure does is differ from array. (4)
- b) Write a program to design a structure named *info* to enter records of students, which contain data elements: *id\_no*, *name*, *address*, *age*. Program should display output in the ascending order of *id\_no* of students. (6)
6. a) What is pointer? How pointers are used with one dimensional array? (5)
- b) Write a program to convert a lower case character to an upper case character of a text file. (5)
7. Write a short note on
- a) macros
- b) stderr
- c) fread( )
- d) fputs( ) (2.5\* 4=10)



Exam.Code:0905  
Sub. Code: 6653

1128  
B.E. (Civil Engineering)  
First Semester  
CS-101: Programming Fundamentals  
(Common with CSE)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What is the purpose of main () function?
- b) Differentiate between system software and application software.
- c) What is the difference between ++a and a++?
- d) Differentiate between structure and union.
- e) Distinguish between printf() and fprintf() functions (5x2)

UNIT – I

- II. a) What are the flow control statements? Explain looping statements in detail.  
b) What are Arrays? Explain different types of arrays. (5,5)
- III. a) Write a program using while loop to reverse the digits of the number.  
b) What do you understand by operators? Explain increment and decrement operators. (5,5)
- IV. a) Differentiate between call by value and call by references with suitable example in C.  
b) Write a program to copy one string into another and count the number of character copied. (5,5)

UNIT – II

- V. a) What is structure? How can entire structure be passed to a function?  
b) Define a structure called Cricket that will describe the information *player\_name*, *team\_name*, *batting\_avg*. using Cricket declare an array player with 50 elements and write a program to read the information about all the 50 players and print a team\_wise list containing name of player with their batting\_avg. (4,6)

P.T.O.

**Sub. Code: 6653**

(2)

- VI. a) What is pointer? Discuss pointer arithmetic in detail?  
b) Write a program to read a character from one file and write it to another file. (5,5)
- VII. a) What is the purpose of the typedef feature? How this feature used in structure (4)  
b) What are the primary advantages of using a data files.  
c) How can a function return a pointer to its calling routine? (4,3,3)

x-x-x



**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What are Bitwise operators in C?
- b) Write a C program to find factorial of a given number using recursion.
- c) What is type conversion?
- d) List any two pre-processor directives in C.
- e) How does the break statement provide a better control of loops?
- f) Differentiate between pointers and references.
- g) Define a C function to exchange the content of two variables.
- h) Briefly explain how error handling is done in C?
- i) What is difference between a flowchart and an algorithm?
- j) Write the limitations of using getchar () and scanf () functions for reading strings.  
(10x2)

### UNIT – I

- II. a) Write a C program, to find transpose of a two dimensional square matrix M.  
b) Distinguish between compiler, interpreter and debugger. (2x5)
- III. a) Write a C program to reverse a given string.  
b) Explain the difference between Call by Value and Call by reference with example (2x5)
- IV. a) Write a C program to multiply two 3x3 matrices.  
b) Write a program in C to find the sum of the series 1+2+3+4+5+6.....n terms. (2x5)

### UNIT – II

- V. a) What is the self referential structure? Can a union be self-referenced? (3,2)  
b) Explain difference between Pointer to array and Pointer to structure with example. (5)

P.T.O.

1127  
B.E. (Civil) First Semester  
CS-101: Programming Fundamentals  
(Common with CSE)

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1. a) Where is the variable stored in the memory?
- b) What does the function toupper( ) do?
- c) How is the declaration `int *a[10]` different from `int(*a)[10]`?
- d) Differentiate between structure and union.
- e) What are the dynamic memory allocation operators? (5\*2=10)

SECTION A

2. a) Find the sum of all odd numbers that lie between 1 to n. (4)
- b) Write a program for matrix multiplication? (6)
3. a) What are the flow control statements? Explain selection statements in detail. (6)
- b) What are inline functions? How they are different from normal functions? (4)
4. a) Differentiate between call by value and call by references with suitable example in C. (5)
- b) Define High level language and Machine level languages. Explain advantages and disadvantages (5)

SECTION B

5. a) What is structure ? How a structure does is differ from array. (4)
- b) Write a program to design a structure named *info* to enter records of students, which contain data elements: *id\_no*, *name*, *address*, *age*. Program should display output in the ascending order of *id\_no* of students. (6)
6. a) What is pointer? How pointers are used with one dimensional array? (5)
- b) Write a program to convert a lower case character to an upper case character of a text file. (5)
7. Write a short note on
- a) macros
- b) stderr
- c) fread( )
- d) fputs( ) (2.5\* 4=10)

x-x-x