Long answers:

1. What is algorithm? What is flowchart? Write an algorithm and flowchart to check whether the given number is prime or not.
2. Explain the basic structure of C Program? Explain the different data types with range?
3. What is operator? Explain Arithmetical operators and Bitwise operators with example?
4. (a) Write an algorithm to check whether given no is Armstrong or not.
   (b) Write an algorithm to check whether given no is palindrome or not.
5. What is algorithm and flowchart? Write an algorithm and flowchart to find whether a given number is palindrome or not. (The reverse of number is same as the given no. then it is called palindrome ex:141)
6. What is operator? Explain the relational operators and the logical operators with an example.
7. Explain the basic structure of C program? Explain the different data types with range.
8. What is operator? Explain arithmetic operators and special operators with example.
9. A)i. Expalin the characteristics of an algorithm? Draw the flowchart to check whether given number is
   prime or not.
   ii. Define expression? Evaluate w=x++ * (y-z) / ++ x. where x=3, y=4, z=1 and what is the final value
   of w and x ?
   B)i. Explain ternary operator available in C, with example.
   ii. Explain Precedence and Associativity of operators in evaluation of expression.
10. State and explain various data types in C? And also discuss about associativity and expression evaluation with suitable example?
11. Explain logical operators and bitwise operators? Explain with suitable example.
12. Explain about computing environments.
13. Explain different types of operators in C with examples?

Short answes:

1. What are various computer languages?
2. Write a "C" statement to find the value of "n" when divided by 32 Without using arithmetic operator and store the result in variable "a"
3. What is printed by the following program

```
void  main()
        {
int  x=5,  y=10,z=10;
            x=y==z;
printf("%d", x);
getch();
         }
```

4. What is the difference between application software and system software?
5. If x=-2, y=5 & z=0 calculate the value of expression x-2*y+z/y*2%3 step by step.

6. Write a C statement to multiply the given number ‘n’ by 4 and store in another variable ‘a’ without using arithmetic operator.
7. What is the value of x when the following program fragment is executed?
   ```
   int  x=10,y=15;
       x=(x<y) ? (y+x) : (y-x);
   printf(“%d”,x);
   ```
8. Difference between compiler and interpreter
9. Write short notes on type cast operator.
10. Distinguish between variables and constants.
11. Write an algorithm to find whether the given number is even or odd?
12. What is an identifier? Write the rules for writing identifier.

Long answers:

1. Distinguish between while and do-while statements? Write a C program to generate prime numbers from 1
   to n.
2. What are type qualifiers? Write a program to find Fibonacci series of a given number using recursive and non recursive approaches.
3. Discuss array applications? Write a C program to find product of n*n matrices?
4. A) Explain while, for, do- while and switch statements with an example?
   B) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the
   user?
5. Write a C program to find product of two n X n matrices.
6. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. A. (i) Illustrate features of For loop, with flow chart and example.
   (ii) Compare If- Else – If Ladder with Switch statement.
8. B. (i) Explain switch statement with syntax, Write a C-Program to perform arithmetic operations using switch
   statement.
   (ii) Write a C program to print multiplication tables from ‘m’ to ‘n’ using while loop.
9. A. (i) Explain array of pointers and pointer to array with example.
   (ii) Write a C program to perform Matrix Multiplication which must read size of the matrix-A and
   matrix –B and verify the possibility.
10. A. Explain the else-if ladder with syntax and flowchart?
    B. Write a “C” program to find the average of 3 subject’s marks and display the result as follows

    AverageResult

>=40 and <=50	Third class
>50 and <=60	Second class
>60 and <=75	First class
>75 and <=100	Distinction

If marks in any subject is less than 40 then fail.

11. What is the difference between while and do-while loops? Write a "c" program to calculate the following sum

    Sum=1-x+ x^2-x^3+x^4…….n terms.
12. Explain the various unconditional statements with example programs.
13. Explain the nested if else with syntax and flowchart? Write a C program to find the smallest of three numbers using nested if else.
14. Write a C program to find multiplication of Two Matrices.
15. Write a C program to find both the largest and smallest number in the given list of integers.

Short answers:

1. Distinguish between if-else-ifladder and switch statements.
2. What is an array? Explain run time initialization of an array?
3. Differentiate between while and do-while?
4. Differentiate between break and continue?
5. What is an array? How to initialize two Dimensional array?
6. Write the importance of 'break' and 'continue' keywords.
7. Write the syntax of while-loop and do-while loop with suitable example.
8. Declare an array a1 to initialize " Hyderabad" and a2 to initialize 3 x 3 array with all zeroes.
9. What is the output of the following program?

```
void main()
        {
int m=1;
if(m==1)
            {
printf("Delhi");
if(m==2)
printf("Chennai");
else
printf("Banglore");
}
else
printf("end");
getch();
        }
```

10. What would be the o/p of the following program fragment

```
for(i=1; i<=10; i++);
            {
printf("%d", i);
            }
```

printf(“%d”, i);

11. (a) In an entry controlled loop if the body is executed “n” times, the test condition is evaluated ----------
    -------- times.
    (b) Draw the flowchart of do-while loop.
12. What would be the output of the following program fragment

```
inti;
for(i=1; i<=10; i++)
        {
if(i<5)
continue;
else
break;
printf(“KMIT”);
          }
```

    How many times KMIT gets printed?

13. Change the following for loop to while loop.

```
for(m=1;m<10;m++)
printf(“%d”,m);
```

14. What will be the output of the following program fragment when executed?

```
int x=10,y=20;
if((x<y)||(x+5)>10)
printf(“%d”,x);
else
printf(“%d”,y);
```

15. (a) In an exit controlled loop if the body is executed “n” times, the test condition is evaluated -----------
    times.
    (b) Draw the flowchart of while loop.
16. Assuming that y=1 initially, what will be their values after executing the following code segments.

```
switch(y)
                {
case 0: x=0;
                        y=0;
printf(“%d%d”,x,y);
case 2: x=2;
                        y=2;
printf(“%d%d”,x,y);
default: x=1;
                        y=2;
printf(“%d%d”,x,y);
                }
```

17. Define array?
18. What will be the o/p of the following program?

```
#include<stdio.h>
#include<conio.h>
void main()
{
int a[]={10,20,30,40,50};
printf("%d\n",a[3]);
getch();
 }
```

19. What is the difference b/w two-dimensional and multi-dimensional array?
20. What is the o/p of the following program?

```
 #include<stdio.h>
 #include<conio.h>
void main()
 {

int m[]={1,2,3,4,5};
intx,y=0;
clrscr();
for(x=0;x<5;x++)
      {
            y=y+m[x];
printf("%d\n", y);
 }
getch();
}
```

Long answers:

1. Define string? What are string manipulation functions? Explain with example.
2. What is string? Explain string handling functions?
3. i) Explain Dynamic memory allocation functions.
   ii) Define a) Pointers to pointers b) void pointer
4. i) Explain array of pointers and pointer to array with example.
5. Explain various string manipulation functions with examples.
6. Write a program to check whether string is a palindrome or not.
7. Write short notes on (a) pointers to void (b) pointers to functions.
8. Define string? Explain how strings are declared and initialized in C? Write a C program for finding the length of a given string.
9. Explain the difference between call-by-value and call-by-reference with suitable example.
10. Develop a C program to determine if the given string is a palindrome or not. (A palindrome is a message that reads same both forwards and backwards.) Ex: The string “madam” is palindrome.

Short answers:

1. Describe array of strings?
2. What operations can be performed on pointers?
3. List the valid and invalid operations on pointers?
4. List the dynamic memory allocation functions?
5. Define pointer to pointer?
6. What will be the output of the program?

```
#include <stdio.h>
void main( )
     {
inti=1, *j, k;
 j=&i;
printf("%d", i**j*i+*j);
   }
```

Long answers:

1. Discuss about declaration, initialization, and accessing of structures? And also discuss about self referential structures.
2. Explain about file status function? Write a C program which copies one file into another file.
3. Explain about enum, typedef with suitable examples.
4. What are command line arguments? Write a C program to copy content from one file to another file?
5. i) Difference between structure and union.
   ii) Write a C program to add two complex numbers (with real part and imaginary part) using functions,
   pointers as arguments and print the result.
6. i) Define a file and its modes.
   ii) Write a C program to read information about the student record containing student number, name, age
   and total marks and write the marks of each student in an output file.
7. Define structure? Give the syntax and declare the structure? Write a C program to read and display the student details using structure.
8. Write short notes on (a) Nested structure (b) Self referential structure.
9. (a) Discuss the difference between a structure and union in C with example.
   (b) Develop a C program that reads two complex numbers, calls a function for adding these two complex
   numbers and displays the result. Represent the complex number using a structure in C.
10. Write short notes on
(a) Union (b) Enumerated data type (c) Type def
11. Define file? What are file streams? Discuss state of file, opening and closing file with a sample C Program.

12. (a) What are the file error handling functions and give their syntax?
(b) Write a C program to display the contents of a file.
13. What is Linear search technique. Explain with one suitable example.
14. What is Binary search technique? Explain with one suitable example.
15. What is the basic algorithm to sort array of elements and how many types are there. Explain each sorting
algorithm with a suitable example.

Short answers:

1. Explain how to access the members of a structure.
2. What is self referential structure?
3. Write the syntax of fwrite ( ), fread( ) functions.
4. Explain Enumerated data type and typedeg.
5. What is the importance of self referentialstructure?
6. What will be the output of the program?

```
#include <stdio.h>
void main( )
   {   struct employee
       {
unsigned   id:8;
unsigned   sex:1;
unsigned   age:7;
       };
struct employee emp1={203, 1, 23};
clrscr();
printf("%d%d%d", emp1.id, emp1.sex, emp1.age);
   }
```

7. Which operator is used for accessing a structure element using a pointer?
8. What is file stream?
9. Write syntax to open a file and to perform append operation.
10. What will be the o/p of the following segment?

```
#include<stdio.h>
#include<conio.h>
void main()
{
char s1[]="New Delhi";
char s2[]="Bangalore";
clrscr();
strncpy(s1,s2,3);
printf("%s", s1);
getch();
}
```