Full Marks-50   **Time-2hrs**

MODULE –I

1. **(a) Write down the Algorithm for a program to sort an array of numbers in ascending order.**   **15**
    OR
    (b) Write down the Algorithm for a program to perform addition of two square matrices.   **15**
2. **Answer any 5 questions:**   **5x2**
    a. **Which type of language is C?**
    b. **What is a compiler?**
    c. **How many Keywords (reserve words) are in C?**
    d. **What is a Constant and types of constants in C?**
    e. **What is the output of the below code snippet?**

```c
#include<stdio.h>

main()
{
    for()printf("Hello");
}
```

A - Infinite loop

B - Prints "Hello" once.

C - No output

D - Compile error

   f.   **What is the output of the following program?**

```c
#include<stdio.h>

main()
{
    int i = 1;

    while(i++<=5);
        printf("%d ",i++);
}
```

A - 4

B - 6

C - 2 6

D - 2 4

   g.   **What is the output of the following statement?**

```c
#include<stdio.h>

main()
{
    printf("%d", !0<2);
}
```

A - 0   B – 1   C - False   D - True

MODULE –II

1. (a) Draw the circuit diagrams for fabrication of an OPAMP as an inverting amplifier. Write down the working formula for the same. 10+5

   OR

1. (b) Draw the circuit diagrams for fabrication of an OPAMP as a differential amplifier. Write down the working formula for the same. 10+5

2. Answer any five questions: 5x2

a) **A differential amplifier ……………..**
   1. is a part of an Op-amp
   2. has one input and one output
   3. has two outputs
   4. answers (1) and (2)

b) **Of the values listed, the most realistic value for open-loop voltage gain of an OP-amp is ……**
   1. 1
   2. 2000
   3. 80 dB
   4. 100,000

c) **For an Op-amp with negative feedback, the output is …….**
   1. equal to the input
   2. increased
   3. fed back to the inverting input
   4. fed back to the non-inverting input

d) **A certain noninverting amplifier has R_i of 1 kΩ and R_f of 100 kΩ. The closed-loop voltage gain is ………**
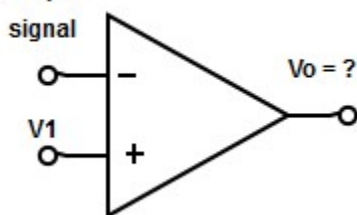   1. 100,000
   2. 1000
   3. 101
   4. 100

e) **The Op-amp can amplify**
   1. a.c. signals only
   2. d.c. signals only
   3. both a.c. and d.c. signals
   4. neither d.c. nor a.c. signals

f) **Determine the output from the following circuit**

V2 = input signal

V1

Vo = ?

   1. 180° in phase with input signal
   2. 180° out of phase with input signal
   3. Same as that of input signal
   4. Output signal cannot be determined

g) **Find the output voltage of an ideal op-amp. If V_1 and V_2 are the two input voltages**
   1. $V_O = V_1 - V_2$
   2. $V_O = A \times (V_1 - V_2)$
   3. $V_O = A \times (V_1 + V_2)$
   4. $V_O = V_1 \times V_2$