[This question paper contains 3 printed pages.]

4699   *Your Roll No.* ....

Time : 3 Hours   *Maximum Marks : 38*

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

Attempt **all** *questions. Parts of a
question should be answered together.*

1.   Perform the following conversions :

   (i) $(987)_{10} \rightarrow (\quad)_8$

   (ii) $(\cdot 746)_{10} \rightarrow (\quad)_2$

   (iii) $(CFA)_{16} \rightarrow (\quad)_{10}$ (3)

2.   Represent 0.00010101 in normalized floating point
   format using 16 bits (9 bits for mantissa and 7 bits
   for exponent).   (3)

3.   Explain with the help of a diagram, working of
   magnetic hard disk.   (3)

P.T.O.

4. A computer has a single address instruction format, is word addressed, has 32 op-codes, and 32K addresses. Answer the following :

   (i) What is the length of instruction register ?

   (ii) What is the length of PC ?

   (iii) What is the length of ACC ?   (3)

5. Using theorems of Boolean algebra show that $(A+B).(A+C) = A + B \cdot C$.   (2)

6. Realize a three bit subtractor with the help of truth table. Give boolean expressions for difference and borrow bits.   (5)

7. Compare and contrast any two of the following methods of I/O to processor communication.

   (i) Program Controlled Transfer

   (ii) Program Controlled Interrupt Transfer

   (iii) Direct Memory Access   (3)

8. Write short notes on any two of the following :

   (i) Functions of O.S.

   (ii) Real time operating system

   (iii) Time Sharing Systems   (4)

9. Differentiate between the fixed partition and variable partition memory management schemes. Illustrate with the help of a suitable diagram.   (3)

10. Given the following process data. Draw the Gantt chart for each process and compute (i) Average turn around time (ii) Average waiting time for the processes, using FCFS scheduling algorithm.

Job	Estimated Run time
1	6
2	2
3	10
4	5
5	1

Assume that the jobs have arrived in the order shown above.   (3)

11. What is a process control block ? How is it used by the operating system for process management ?

                                                    (3)

12. What are the advantages of multilevel directory system over two level directory system ?   (3)