8082   *Your Roll No.* ....

                    B.Sc. (G) / I   **JS**

          COMPUTER SCIENCE – Paper II

   (Computer Organisation and Operating Systems)

          (Admissions of 1999 and onwards)

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 must be answered together.

1. Perform the following conversions :–

      (i) $(2457)_8$ to binary

      (ii) $(1000100101 \cdot 1101011)_2$ to decimal

      (iii) $(10001010101)_2$ to octal   (1+1+1=3)

2. Using eight bit register implementation and two's
    complement representation subtract :–

      (i) 3 from 5

      (ii) –3 from –5   (3)

                                          P.T.O.

3. Explain with the help of a diagram the working of a CDROM. (3)

4. How many bits are needed to represent an instruction in a computer that has 54 different instructions all of which are 2 address ? The computer has a memory unit of 65,000 words, each of 32 bits. What is the size of MAR and MDR of such a computer ? (3)

5. Prove De Morgan's law for 3 variables. (3)

6. With the help of truth table, show that Exclusive OR satisfies associative property i.e.

   (A EOR B) EOR C =
   A EOR (B EOR C). (3)

7. Explain in detail the working of DMA. What is the advantage of this method of I/O to processor communication. (4)

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

   (i) Functions of O.S.

   (ii) Timesharing Operating System

   (iii) Multiprogramming Operating System (4)

9. Compare simple paging with demand paging in the context of memory management. (3)

10. Given the following process data, draw the Gantt chart for each process. Compute average turnaround time and average waiting time for FCFS scheduling algorithm. The jobs have arrived in the given order.

Job	Estimated run time
1	10
2	50
3	25
4	200
5	5

(3)

11. What are the different states of a process ? Illustrate with the help of a suitable diagram. (3)

12. Discuss the technique that MS-DOS uses for allocation of file space on disk. (3)