(3 Hours) **[Total Marks: 80]**

N.B. 1. Question No 1 is compulsory.
2. Solve any **three** questions out of remaining five questions.
3. Assume suitable data if necessary.
4. Figures to right indicate marks.

Q. 1. Solve any **four** out of five. (4*5=20)

a) Draw and explain memory hierarchy.

b) Differentiate between MIN and MAX mode of 8086 Microprocessor.

c) Discuss the importance of Nano Programming.

d) Express $(15.125)_{10}$ in IEE 754 single precision floating point representation.

e) Explain following instructions of 8086 microprocessor – OR, DAA, INC, JNZ, POP

Q. 2 a) Draw and explain internal architecture of 8086 microprocessor. . [10]

b) Draw the flowchart of Booths algorithm and perform -7 X 3. [10]

Q. 3 a) Perform 18 divided by 5 using Restoring division algorithm. [10]

b) What is the need of DMA in computer system? Explain in detail its operation in various modes.. [10]

Q. 4 a) Discuss various memory characteristics in detail. [10]

b) Compare Hardwired and Microprogrammed Control Unit. [10]

Q. 5 a) Explain Direct Cache Memory mapping in detail with example. [10]

b) Write assembly language program for 8086 microprocessor to find whether a 8 bit number stored at 1000H is even or odd number. Store the 00H or 01H at 1001H if the number is even or odd respectively. [10]

Q. 6 a) Explain with example addressing modes of 8086 microprocessor [10]

b) Draw and explain the various pipeline hazards. [10]