13/12/2024 IT SEM-IV C SCHEME COA QP CODE: 10070681

Time: 3 Hours **Max Marks: 80**

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

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

a. Explain Von-Neumann's architecture with diagram
b. Explain the working of JK flip-flop.
c. Convert $(- 10.125)_{10}$ in the IEEE 754 single precision standard.
d. Compare SRAM and DRAM.
e. Write a note on Amdahl's Law

Q. 2. a) Construct flowchart for Booth's Algorithm and multiply (-8) and (5) using the same. **(10)**
b) Explain Encoder and Decoder with one example. **(10)**

Q. 3. a) Reduce given Boolean expression using K-Map method.
$f(A,B,C,D) = \sum (0,1, 2 ,3,4,5,8,9,10,11,12,13)$ **(10)**
b) Write an assembly language program for an 8086 microprocessor to find largest 8 bit binary number. **(10)**

Q. 4. a) Discuss various cache memory mapping techniques with diagram **(10)**
b) Explain various pipeline hazards with example. **(10)**

Q. 5. a) Discuss the various characteristics of Memory. **(10)**
b) Explain design of control unit w.r.t. micro programmed and hardwired approach. **(10)**

Q. 6. a) Explain different addressing modes of 8086 microprocessors with examples. **(10)**
b) Describe DMA and explain its various data transfer techniques. **(10)**
