

## Subject: Digital Logic and Computer Architecture

5 /10 Marks questions

Topic : Combinational Circuits

- Design Half, full adder and subtractor (using K map)
- Implementation of given expression using Multiplexer/De multiplexer
- Write short note on Priority encoder.
- Write short note on encoder and decoder.

Topic: Flip-flops

- Truth table of all flip-flops : SR f/f, JK f/f, D f/f, T f/f
- Draw backs of SR flip-flops
- Explain Race around Condition
- Draw master-slave JK f/f
- Use of Clock, Preset, Clear pin of f/f

Topic: Processor Organization

- Explain Register organization in detail [10M]
- Define MAR, MBR/MDR, SP, PC, Status Register [2M -5M]
- Explain different addressing modes with example [10M]
- Short Note on Instruction and its types [5M]
- Draw and explain Instruction cycle [5-10M]
- Write short notes on Instruction formats [5M]
- Write short note on addressing modes. [10M]
- Define Instruction sequencing and Interpretation [5M]

Topic: Control unit design

- Write Short note on Hardwired control unit design method (state table method/ Delay element method) [10 M]
- Write short note on Microprogrammed control unit [5-10M]
- Differentiate between Hardwired control unit and Microprogrammed control unit [5M]
- Draw and explain Wilke's Design of microprogrammed control unit [10M]

- Define Micro- Instruction formats [5M]
- Compare Horizontal and Vertical Micro Instruction Formats [10M]
- Compare RISC and CISC [5-10] 277
- Write short note on Nano programming [5M]
- Define : Micro operation, Micro instruction, Micro Program [5M]
- Write Micro program for [5M]
  - Fetch cycle
  - ADD R1, R2
  - SUB R1, R2 i.e  $R1 \leftarrow R1 - R2$
  - MUL R1, R2 i.e.  $R1 \leftarrow R1 * R2$

#### Topic: Memory

- Explain memory Hierarchy [5M]
- Explain characteristics of memory [10M]
- Write short note on two level memory characteristics [10M]
- Types of memory
- Compare SRAM and DRAM

#### Topic: Cache Memory

- What is locality of reference with respect to cache memory [5M]
- Write short note on cache write policies [10M]
- What cache mapping technique? Explain any one cache mapping technique in detail [10M]
- Examples solved on cache mapping technique [10M]
- Write short note on Interleaved Memory [5M]
- Write short note on Associative Memory [5M]

#### Topic: Principle's of advance processor

- What is pipelining? [5M]
- Draw and explain 3/4/6 stages of pipelining and compare with Non Pipelining processor [10M]
- Explain pipelining hazards with examples [10M]
- What is Amdahl's law? [10M]

- ✓ • Write short note on Flynn's classification [10M]
- ✓ • What is Bus Contention ? and explain Bus arbitration. [10M]
- ✓ • Explain Multicore processor [5M]
- ✓ • Write short note on different types of Buses. [5M]