

204202

May, 2019

BCA - II SEMESTER

Logical Organization of Computer-II (BCA-17-107)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Differentiate between asynchronous and synchronous sequential circuits. (1.5)
(b) Draw the excitation table of J-K Flip-flop. (1.5)
(c) What is meant by race around condition? How it is eliminated? (1.5)
(d) What is edge-triggered Flip flop? (1.5)
(e) What characteristic of RAM memory makes it not suitable for permanent storage? (1.5)
(f) Explain the term cache hit and cache miss. (1.5)
(g) Differentiate between latch and flip flop. (1.5)

- (h) What is meant by propagation delay? (1.5)
- (i) What are the advantages and disadvantages of fixed and variable instruction formats? (1.5)
- (j) What is meant by an instruction? (1.5)

PART-B

- 2. (a) Explain the operation of JK flip flop with a neat diagram. Write the state table, draw the state diagram and write the state equation. (8)
- (b) Convert S-R Flip Flop to J-K Flip Flop. (7)
- 3. Define the term register. Draw and explain 4-bit SISO, SIPO, PISO, PIPO registers with its waveforms. (15)
- 4. (a) Discuss the types of instructions that should be included into the instruction set of a general purpose computer. (10)
- (b) Differentiate between various interrupts. (5)
- 5. (a) A block set-associative cache consists of 64 blocks divided in 4 block sets. The main memory contains 4096 blocks, each consisting of 128 words of 16 bits length. How many bits are there in main memory? (5)
- (b) Discuss the need for addressing modes. Explain various addressing modes supported by general purpose CPU. (10)

- 6. (a) Differentiate between asynchronous and synchronous counters the help of diagrams. What are the advantages and disadvantages? (8)
- (b) Design mod-6 synchronous counter. Enumerate all the steps in design. (7)

7. Write short notes on any three the following :

- (i) Memory hierarchy.
- (ii) Optical and magnetic storage devices.
- (iii) Master slave Flip Flop.
- (iv) UP/DOWN counter. (15)