PVP 14

Code: CS4T5

II B.Tech - II Semester – Regular Examinations - May 2016

COMPUTER ORGANIZATION
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks

11 x 2 = 22 M

1)

a) Simplify the Boolean expression ABC + A ' B + A B C ' to a minimum number of literals.
b) How many rows and columns in the truth table for a logic circuit of 5-I/P & 2-O/P.
c) State the stack organization characteristics.
d) What are the advantage and disadvantage of one-address instructions.
e) How Asynchronous data transfer occurs?
f) What are the different kinds of DMA transfers?
g) State the meaning of locality of reference.
h) What is the need of virtual Memory?
i) What is the purpose of crossbar switch?
j) What is the role of Semaphore?
k) What is the advantage of Direct mapping cache memory?

PART – B

Answer any ***THREE*** questions. All questions carry equal marks. 3 x 16 = 48 M

2)

a) Simplify the following Boolean function in both Sum-of-products and product-of-sums form. 8 M

$$F(A,B,C,D) = \sum (0,1,2,5,8,9,10)$$

b) Explain how an SR Flip Flop can be converted into JK Flip Flop with relevant logic diagrams and truth tables. 8 M

3)

a) Write a program for the relatively simple CPU that can evaluate the arithmetic Expression
X = (A + B) * (C + D) by a three address, two address, one address and zero address instructions. Assume that the processor has the instructions: LOAD, STORE, MUL, ADD, MOV, PUSH, POP. 8 M

b) Discuss the characteristics of RISC and CISC computer. 8 M

4)

a) Describe asynchronous serial transfer between two units. 6 M

b) What is Direct Memory Access (DMA)? What is the need for DMA? Explain the working of DMA. Also mention its advantages. 10 M

5)

a) Consider a logical address space of 8 pages of 1024 words mapped onto a physical memory of 32 frames. 8 M
   i) How many bits are there in the logical address?
   ii) How many bits are there in the physical address?

b) Compare cache memory and virtual memory. 8 M

6)

a) Explain the characteristics of multiprocessors. 8 M

b) Design an 8 X 8 Omega network and derive the hardware complexity of it. 8 M