

Anna University  
 B.E. DEGREE EXAMINATION, MAY 2012  
 Sixth Semester  
 Electrical and Electronics Engineering  
 EE 9028 COMPUTER ARCHITECTURE  
 Regulation 2008

Time 3 hours

Maximum 100 marks

Answer All Questions  
 PART A – (10 x 2 = 20 marks)

1. What is TLB?
2. What is a PTAR for?
3. What is the advantage of micro programmed control over hard wired control?
4. What is memory mapped I/O?
5. What is external fragmentation? How do you solve it?
6. What is thrashing?
7. What is DMA?
8. what are the different fields of an instruction of a model computer
9. What is the size of a micro instruction? List out the fields of it.
10. What is a UART? What is it used for?

PART B – (5 x 16 = 80 marks)

11 i) Explain the working of a sequencer of a micro-programmed control 12

11 ii) If a control memory is ranging from 0 to 512 for storing programs for various operations and if there are 32 different operations to be micro programmed, suggest a proper mapping function. Justify your suggestion 4

12 a i) Give the flow chart for the interrupt cycle and explain briefly how it works 8

12 a ii) Give the design of the AR register controls of a model computer. 8

OR

12 b i) A stack is implemented using 64 memory spaces of a computer. Stack pointer is a register having only 6 bits and initialized as 0. Empty and Full are 2 separate bits which are initialized as 1 and 0 respectively. Write proper pseudo code for PUSH and POP operations using this stack. 12

12 b ii) Can such a stack be used for storing the return address while executing programs? Give the disadvantage of such a stack for the above purpose. 4

13 a i) Explain briefly with examples the different addressing modes. Where are each of them used? 10

13 a ii) In what circumstances do we set the AVF bit based on the value of 2 other bits. When do we do so only checking one bit? Explain. In which situation do we set the AVF bit blindly to 0 and why? 6

OR

13 b i) Discuss RISC highlighting its advantages and disadvantages. What is pipeline processing? Explain with an example. 12

13 b ii) What is interleaved memory? What is its advantage? 4

14 a i) Using signed magnitude method, calculate  $-54 * 13$ . Present the result in a proper tabular form. Assume the sizes of the registers properly. 12

14 a ii) How does an array multiplier work? 4

OR

14 b i) In the floating point addition method, what is the purpose of bits  $A_s$   $B_s$  and  $A_1$ . What is biased representation? What is the use of it? 8

14 b ii) Give the working of the digit serial, bit serial decimal addition unit, with proper diagram. What is its advantage and disadvantage? 8

15 a i) Why is associative memory very costly? Explain in detail. 12

15 a ii) Give the schema of logical to physical address translation in paging scheme. 4

OR

15 a ii) Explain the different cache memory organizations with illustrations. 16