Anna University
B.E. DEGREE EXAMINATION. November. 2012
Semester 7
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 thrashing?
2. What is the size of a micro instruction? List out the fields of it.
3. What is TLB?
4. What is a PTAR for?
5. What is the advantage of micro programmed control over hard wired control?
6. What is memory mapped I/O?
7. What is external fragmentation? How do you solve it?
8. What is DMA?
9. what are the different fields of an instruction of a model computer
10. What is a UART? What is it used for?

PART B – (5 x 16 – 80 marks)

11) Explain the different cache memory organizations with illustrations.   16

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 with examples the different addressing modes. Where are they 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 As Bs and A1. 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

<center>OR</center>

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