APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FOURTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2017

CS202: COMPUTER ORGANISATION AND ARCHITECTURE (CS, IT)

Time: 3 hrs

Max. Marks: 100

PART A

Answer all questions. Each carries 3 marks.

1. Write notes on condition codes.
2. Explain indirect addressing with an example.
3. Draw the flow chart for Booth's Multiplication algorithm.
4. Explain the process of storing a word in memory using a single bus organization. Specify which all control signals will be activated.

PART B

Answer any two questions. Each carries 9 marks.

5. a) Briefly explain the memory access instructions and addressing modes of ARM processor (4)
   b) Write notes on multiple bus organization (5)
6. Explain the terms processor stack, stack frame and frame pointer with relation to subroutine processing. Use a relevant example.
7. Draw and explain the flow charts for floating point multiplication and division.

PART C

Answer all questions. Each carries 3 marks.

8. Differentiate between programmed I/O and interrupt driven I/O.
9. Define the terms a)Latency b)Bandwidth c)Memory cycle time
10. Why do dynamic RAMs need constant refreshing? How is this done?
11. Explain Direct Memory Access. What is burst mode DMA?

PART D

Answer any two questions. Each carries 9 marks.

12. a) Distinguish between centralized and distributed bus arbitration? (4)
    b) Write notes on set associative cache mapping. (5)

13. a) Distinguish between synchronous and asynchronous DRAMs (4)
    b) Explain the important Data transfer signals on the PCI bus. (5)
14. a) Describe the different types of ROMs. (4)
    b) Explain the procedure and the packets used for an output transfer in USB interface (5)

PART E

Answer any four questions. Each carries 10 marks.

15. Describe processor organization with diagram using a) scratchpad memory b) Two port memory. (10)

16. Design a 4bit Arithmetic unit which performs the following operations on two inputs A and B, controlled by selection variables s_1 and s_0 and input carry C_{in}: (10)

s_1	s_0	$C_{in} = 0$	$C_{in} = 1$
0	0	F=A	F=A+1
0	1	F=A+B	F=A+B+1
1	0	F=A+B'	F=A+B'+1
1	1	F=A-1	F=A

17. a) Write notes on status register. (5)
    b) Distinguish between horizontal and vertical microinstructions. (5)
18. What is the significance of a micro program sequencer? Explain its working with the help of a diagram.
19. Explain micro programmed CPU organization with the help of a diagram.
20. With the help of a block diagram, describe a complete processor unit with all components and appropriate control variables. Show with an example, how a control word for the processor can be defined.

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