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322414 (22)

BE (4th Semester)

Examination, April - May, 2021

Branch : CSE

COMPUTER SYSTEMS ARCHITECTURE

Time Allowed : Three Hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : All questions are compulsory. Part (a) of all

questions is compulsory and carries 2 marks.

Attempt any two parts from remaining (b), (c) &

(d) carries 7 marks.

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P.T.O.

(2)

Q. 1. (a) How is a number expressed in general

number system ?

2

(b) When a floating-point number is said to be

unnormalized ? How floating-point numbers

can be normalized ?

7

(c) What are addressing modes ? Explain

various addressing modes with suitable

example.

7

(d) Use 2's complement to determine the

values of :

7

(i) $(41)_5 - (32)_5$

(ii) $(-70)_{10} + (43)_{10}$

(3)

Q. 2. (a) What is the advantage of using Booth's

Algorithm ?

2

(b) Distinguish between integer & floating point

representation of numbers with their relative

advantages & disadvantages through

examples.

7

(c) Explain Booth algorithm for multiplication of

signed 2^n complement numbers.

7

(d) What is the difference between combinational

ALU & sequential ALU ?

7

Q. 3. (a) What prevents RISK pipeline to achieve

maximum speed ?

2

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(4)

(b) What are the design parameters for pipeline processor? Discuss the briefly with example.

7

(c) Explain the difference between hardwired control and micro-programmed control. Is it possible to have a hardwired control associated with a control memory?

7

(d) Write a short note on microinstruction and write the necessity of grouping of signals.

7

Q. 4. (a) What are the difference between Static memory & Dynamic memory?

2

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(5)

(b) Draw and explain direct mapping cache.

What is the disadvantage of direct mapping ?

7

(c) How many 128 bytes RAM chips are required to provide a memory of 2048 bytes ? Show details of connection clearly indicating address data & decoder configuration.

7

(d) A block set associative cache memory consist of 128 blocks divided into four block sets. The main memory consists of 16,384 blocks and each block contains 256 eight bit words.

7

(6)

(i) How many bits are required for addressing the main memory ?

(ii) How many bits needed to represent the

TAG, SET, WORD fields ?

Q. 5. (a) What is meant by software for programmed

I/O ?

2

(b) Draw and explain the block diagram of

typical DMA controller.

7

(c) Write short notes on :

7

(i) Fault tolerant system

(ii) Multiprocessor

(7)

(d) What is the basic advantage of using interrupt-initiated data transfer over transfer under program control without an interrupt?

7

