

Code: 15A04511

B.Tech III Year I Semester (R15) Regular Examinations November/December 2017

COMPUTER ORGANIZATION (Electronics and Communication Engineering)

Time: 3 hours

Max. Marks:

70

PART – A (Compulsory Question)

1 .Answer the following: (10 X 02 = 20 Marks)

- (a) List the role of registers involved in instruction execution.
- (b) What is the difference between linker and loader?
- (c) Draw the diagram of one stage Arithmetic Logic Shift Unit.
- (d) Draw the timing diagram for Register Transfer Language.
- (e) Convert the binary number 1001012 to decimal.
- (f) What is the difference between hardwired and micro-programmed control?
- (g) Define HIT and MISS ratio in memory.
- (h) Differentiate virtual address from logical address.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain different functional units of a digital computer with neat sketch.

OR

3 State and explain different types of addressing modes.

UNIT – II

4 (a) Explain shift micro operations and draw 4 bit combinational circuit shifter.

(b) Draw and explain logic micro operation in detail.

OR

5 Explain in detail about data transfer and data manipulation instruction.

UNIT – III

6 Write the Booth multiplication algorithm. Draw the flowchart and explain with an example.

OR

7 What is micro-programmed control? Explain in detail.

UNIT – IV

- 8 (a) Discuss the function of TLB with neat sketch.
(b) Explain in detail Direct Memory Access (DMA).

OR

- 9 Explain the basic concepts of virtual and cache memory techniques.

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**B.Tech III Year I Semester (R15) Regular & Supplementary Examinations November/December
2018 COMPUTER ORGANIZATION (Electronics and Communication Engineering)**

Time: 3 hours

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70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)

- (a) What are the four main components of any general-purpose computer?
(b) Draw the diagram of basic instruction cycle.
(c) Specify the best internal hardware organization of a digital computer.
(d) Write a short note on two-address instructions.
(e) Define control address register.
(f) Write an algorithm for adding numbers in signed-2's complement representation.
(g) Draw the block diagram of source-initiated transfer using handshaking.
(h) What is First-In First-Out Buffer?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Discuss in detail about Addressing modes and Instructions.
(b) List and explain about data types.

OR

- 3 (a) Briefly explain about loaders and linkers.
(b) Write short notes on subroutines.

UNIT – II

4 An instruction is stored at location 300 with its address field at location 301. The address field has the value 400. A processor register R1 contains the number 200. Evaluate the effective address if the addressing mode of the instruction is direct, immediate and relative with R1 as the index register.

OR

5 (a) What are shift micro operations? Explain about three types of shifts.

(b) Enumerate the process of evaluation of arithmetic expression $3 * 4 + 5 * 6$ by using stack operations.

UNIT – III

6 Explain in detail about Booth multiplication algorithm with example.

OR

7 (a) Specify the format of microinstruction. Explain in detail about microinstruction code format.

(b) Illustrate the differences between hardwired control and microprogrammed control.

UNIT – IV

8 Briefly discuss about direct memory access.

OR

9 Draw and explain block diagram of associative memory.

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B.Tech III Year I Semester (R15) Supplementary Examinations June/July 2019

COMPUTER ORGANIZATION (Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

PART – A (Compulsory Question)

1 Answer the following: (10 X 02 = 20 Marks)

(a) What are the four main functions of a computer?

(b) Draw the diagram of Bus interconnection scheme.

(c) Specify the block diagram of a register and explain about control function.

(d) Write a short note on Zero-Address instructions.

(e) Define control memory.

(f) Draw the diagram of one stage of a decimal arithmetic unit.

(g) Expand ASCII.

(h) What is Asynchronous serial transfer?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) List and explain important main memory operations.
(b) Briefly explain about instruction formats and instruction sequences.

OR

- 3 (a) Discuss in detail about languages and translators.
(b) Write a short note on Pushdown stacks.

UNIT – II

4 An 8-bit register contains the binary value 10011100. What is the register value after arithmetic shift right? Starting from the initial number 10011100, determine the register value after an arithmetic shift left and state whether there is an overflow.

OR

- 5 (a) Explain in detail about one stage of arithmetic logic shift unit.
(b) List and explain any five logical and Bit Manipulation instructions with examples.

UNIT – III

6 Discuss in detail about flowchart for add and subtract operations along with example.

OR

- 7 (a) Elaborate the process of selection of address for control memory.
(b) Illustrate the differences between microprocessor and a microprogram.

UNIT – IV

8 Briefly discuss about modes of transfer.

OR

9 Draw and explain block diagram of typical RAM and ROM chip.

B.Tech III Year I Semester (R13) Supplementary Examinations June 2017
COMPUTER ORGANIZATION & ARCHITECTURE
 (Common to ECE and EIE)

Time: 3 hours

Max. Marks: 70

PART – A
 (Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- List out components of a CPU.
 - Why do you need interfacing in CO?
 - Write about decimal arithmetic unit.
 - State various algorithms available for multiplication and division operations.
 - Explain how shift micro operations.
 - What are the uses of register transfer language?
 - Discuss about possible modes of data transfer.
 - Mention the functions of associative memory.
 - What is parallel processing?
 - Describe the need for Inter Processor Communication.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 What is an instruction set? Explain how an instruction set architecture design works.

OR

- 3 (a) Describe about memory subsystem organization.
 (b) Write the differences between RISC and CISC.

UNIT – II

- 4 (a) Discuss about steps involved in instruction cycle with interrupt enabled.
 (b) State any two Floating point Arithmetic operations.

- 5 (a) Explain the steps needed for storing a single word in memory.
 (b) Draw a flowchart for adding and subtracting two fixed point binary numbers where negative numbers are signed 1's complement presentation.

UNIT – III

- 6 (a) Write the procedure to mitigate number of bits in micro instructions.
 (b) Explain how control memory functions.

OR

- 7 What is a micro-operation of list and explain the four categories of the most common micro-operations?

UNIT – IV

- 8 Construct an associative memory page table with number of words equal to the number of blocks in the main memory.

OR

- 9 Explain the Strobe Control method of Asynchronous data transfer. What are the disadvantages of this method?

UNIT – V

- 10 What is pipelining? Name the two pipeline organizations. Explain about the arithmetic pipeline with the help of an example.

OR

concept used in Inter processor communication.

B.Tech III Year I Semester (R13) Supplementary Examinations June 2017

COMPUTER ORGANIZATION & ARCHITECTURE

(Common to ECE and EIE)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) List out components of a CPU.
 - (b) Why do you need interfacing in CO?
 - (c) Write about decimal arithmetic unit.
 - (d) State various algorithms available for multiplication and division operations.
 - (e) Explain how shift micro operations.
 - (f) What are the uses of register transfer language?
 - (g) Discuss about possible modes of data transfer.
 - (h) Mention the functions of associative memory.
 - (i) What is parallel processing?
 - (j) Describe the need for Inter Processor Communication.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

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UNIT – III

- 6 (a) Write the procedure to mitigate number of bits in micro instructions.
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- 9 Explain the Strobe Control method of Asynchronous data transfer. What are the disadvantages of this method?

UNIT – V

- 10 What is pipelining? Name the two pipeline organizations. Explain about the arithmetic pipeline with the help of an example.

OR

- 11 Describe the need for Inter processor communication. Elaborate the synchronization concept used in Inter processor communication.

B.Tech III Year I Semester (R15) Supplementary Examinations June 2018

COMPUTER ORGANIZATION

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 70

PART – A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- When an interrupt signal is raised?
 - What is a subroutine?
 - Draw the graphical symbol for three-state buffer.
 - What is stack pointer?
 - What is the use of control address register and control data register?
 - Describe dividend alignment.
 - What is handshaking?
 - Define virtual memory.
 - When data dependency conflicts arise.
 - Describe polling in a bus system.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 (a) Draw and explain the functional unit of a computer system.
(b) With suitable example, explain assembly language notation.
- OR**
- 3 (a) List and explain various types of computers in detail.
(b) Explain register mode and absolute mode with suitable examples.

UNIT – II

- 4 (a) What are the various shift micro operations? Explain about them in detail.
(b) Perform the logic AND, OR and XOR with the two binary strings 10011100 and 10101010.

OR

- 5 Design the common bus system for four registers with a neat diagram.

UNIT – III

- 6 Illustrate Booth algorithm and show the step-by-step multiplication process using Booth algorithm to multiply the following number. Assume 5-bit registers that hold signed numbers. The multiplicand is +15.
(+15) X(+13)

OR

- 7 Illustrate addition and subtraction of two floating point binary numbers with a flow chart.

UNIT – IV

- 8 (a) How many characters per second can be transmitted over a 1200-baud line in each of the following modes? (Assume a character code of eight bits). (i) Synchronous serial transmission. (ii) Asynchronous serial transmission with two stop bits. (iii) Asynchronous serial transmission with one stop bit.
(b) Explain the memory hierarchy of a computer system with a neat diagram.

OR

- 9 What is the use of DMA? Explain about the DMA controller with a block diagram.

UNIT – V

- 10 (a) A non-pipeline system takes 50ns to process a task. The same task can be processed in a six-segment pipeline with a clock cycle of 10ns. Determine the speedup ratio of the pipeline for 100 tasks. What is the maximum speed up that can be achieved?
(b) What is Interprocessor synchronization? Explain briefly about it.

OR

- 11 ~~(a) What are the various fields in instruction format of a vector processor? Explain.~~
(b) Describe briefly about the Hypercube interconnection.