Code No: R1631041 **R16** SET - 1

III B. Tech I Semester Regular Examinations, October/November - 2018

COMPUTER ARCHITECTURE AND ORGANIZATION

(**Common to** Electronics and Communication Engineering, Electronics and Instrumentation Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Define digital computer? Describe the type of computers.	[2M]
	b)	What are four types of operations performed by computer instructions?	[2M]
	c)	Write a note on register operands of an arithmetic instruction.	[2M]
	d)	Define interrupt and interrupt service routine.	[3M]
	e)	Discuss briefly about read only memory.	[3M]
	f)	Describe the timing of the control signal during the Add step.	[2M]

PART -B

2.	a)	Draw the connections between the processor and main memory and explain the basic operational concepts.	[7M]
	b)	Write a note on arithmetic and logical unit.	[7M]
3.	a)	Explain the following addressing modes i) Register mode ii) Immediate mode iii) Indirect mode iv) Absolute mode.	[7M]
	b)	Discuss briefly about Assembly language notations.	[7M]
4.	a)	List the types of component instruction and explain it.	[7M]
	b)	Explain input/output operations of computer architecture.	[7M]
5.	a)	Draw the input-output interface for an input device and explain accessing of input-output device.	[7M]
	b)	Discuss briefly about universal serial bus (USB).	[7M]
6.	a)	Explain briefly about Associate-mapped and set-associate mapped cache.	[7M]
	b)	Write a short note on flash memory.	[7M]
7.	a)	Draw and explain the hardwired control unit organization and encoding function.	[7M]
	b)	Define the term micro programmed control? Draw the basic organization of a micro programmed control unit and explain it.	[7M]

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PART –A

1. a) Define program? Explain about the term input unit. [2M]
b) Define and discuss about straight-line sequencing. [2M]
c) Write a note on immediate operands of an arithmetic operands. [2M]
d) Define interrupt-acknowledge signal and interrupt latency. [3M]
e) Discuss briefly about PROM. [3M]
f) What action are required for executing this instruction Add (R3),R1. [2M]

PART –B

2. a) Draw and explain single bus structure. [7M]
b) Draw the functional unit of a computer and discuss about the control unit in details. [7M]

3. a) Explain the following addressing modes. [7M]
i) Index mode ii) Auto increment mode iii) Auto decrement mode.
b) Write a short note on rotate instructions. [7M]

4. a) Write a short note on branch instruction. [7M]
b) Discuss briefly about secondary storage devices. [7M]

5. a) Discuss about Synchronous bus and draw the timing diagram of input transfer of synchronous bus. [7M]
b) Discuss briefly about peripheral component interconnect (PCI). [7M]

6. a) Define locality of reference and explain use of a cache memory and direct – mapped cache. [7M]
b) Write a short note on interleaving. [7M]

7. a) Define ALU? Explain the arithmetic and logical operation. [7M]
b) Draw the microinstruction-sequencing organization of next-address field and explain it. [7M]

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Code No: R1631041 **R16** SET - 3

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2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Describe the term memory unit.	[2M]
	b)	Define and discuss about instruction execute.	[2M]
	c)	Write a note on shifted immediate operand.	[2M]
	d)	Write a note on DMA.	[3M]
	e)	Discuss briefly about EPROM.	[3M]
	f)	Write the control sequence for execution of the instruction Add(R3),R1.	[2M]

PART –B

2.	a)	Write about the history of development of the computer.	[7M]
	b)	Define system software? Discuss briefly about software and its processor time.	[7M]
3.	a)	Discuss briefly about basic input/output operations.	[7M]
	b)	Write a note on shift instruction.	[7M]
4.	a)	List and explain any three types of addressing modes of computer organization.	[7M]
	b)	What are logic Instructions? Explain.	[7M]
5.	a)	Write a note on enabling and disabling interrupts.	[7M]
	b)	Discuss about Interface Circuits.	[7M]
6.	a)	Draw and explain a block diagram of a 4M*32 memory unit using 1M*4DRAM chips.	[7M]
	b)	Write a short note on optical disks.	[7M]
7.	a)	Write a short note on register transfers.	[7M]
	b)	Draw the flowchart of a micro program for the Add scr, Rdst instruction.	[7M]

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Time: 3 hours Max. Marks: 70

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2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Define the term processor and discuss about output unit.	[2M]
	b)	Discuss about Condition Register (CR) and Integer Exception Register (XER).	[2M]
	c)	Write a note on condition codes for branch instruction.	[2M]
	d)	Discuss about interrupt vector.	[3M]
	e)	Discuss briefly about EEPROM.	[3M]
	f)	Write the control sequence for an unconditional branch instruction.	[2M]

PART –B

2.	a)	Discuss the basic aspects of computer performance.	[7M]
	b)	Draw and explain the Read and Write requests and timing diagram of a read operation of CPU and external bus transfer.	[7M]
3.	a)	Explain the role of stack and queues in computer programming equation.	[7M]
	b)	Write a note on logic instructions.	[7M]
4.	a)	Explain about Arithmetic Instructions	[7M]
	b)	What is the significance of Addressing modes? Explain.	[7M]
5.	a)	Define DMA and draw the two-channel DMA controller and explain it.	[7M]
	b)	Draw and explain input/output interface circuit connecting a keyboard to an asynchronous bus.	[7M]
6.	a)	Discuss briefly about basic memory circuits.	[7M]
	b)	Write a short note on magnetic hard disks.	[7M]
7.	a)	Discuss how to fetch a word from memory.	[7M]
	b)	Explain the microinstructions of the micro programmed control.	[7M]

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