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III/IV B.E. DEGREE EXAMINATION.

First Semester

Electronics and Communication Engineering

COMPUTER ARCHITECTURE AND ORGANIZATION

(Common with EEE and EIE)

(Effective from the admitted batch of 2003–2004)

Time : Three hours   Maximum : 70 marks

Question No.1 is compulsory.

Answer any FOUR from the remaining.

All questions carry equal marks.

1. (a) Write about the different Logic micro operations.

    (b) Write in brief microprogrammed control and hardwired control.

    (c) Discuss about pipline register.

    (d) What are the different stack operations? Explain.

    (e) Explain in brief about Conditional Branch Instructions.

(f) What is the purpose and functions of Bootstrap loader?

(g) Write about various modes of Communication.

2. (a) Explain the operation of 4-bit adder-subtractor with a neat diagram.

(b) Discuss about various shift microoperations.

3. (a) Write about stored program organization.

(b) Explain in detail about control unit of basic computer with a neat diagram.

4. (a) Explain about various instruction formats used in general purpose computers.

(b) What are the different types of interrupts? Explain.

5. (a) Formulate a mapping procedure that provides eight consecutive microinstructions for each routine. The operation code has six bits and the control memory has 2048 words.

(b) A computer has 16 registers, an ALU (Arithmetic Logic Unit) with 32 operations, and a shifter with eight operations, all connected to a common bus system.

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(i) Formulate to a control word for a microoperation

(ii) Specify the number of bits in each field of the control word and give a general encoding scheme.

6. Explain in detail how a memory is connected to the CPU.

7. (a) What is the difference between isolated I/O and memory-mapped I/O? What are the advantages and disadvantages of each?

(b) Explain in detail about DMA.

8. (a) Discuss the difference between tightly coupled multiprocessors and loosely coupled multiprocessors from the view point of hardware organization and programming techniques.

(b) Write about Asynchronous Data transfer operation.