COMPUTER ORGANIZATION & ARCHITECTURE

Paper Code: ETCS-204	**L**	**T/P**	**C**
Paper: Computer Organization & Architecture	**3**	**1**	**4**

INSTRUCTIONS TO PAPER SETTERS: **MAXIMUM MARKS: 75**

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks

Objective: To understand the architecture and organization of computer in depth.

UNIT- I

Computer Arithmetic and Register transfer language:

Unsigned notation, signed notation, binary coded decimal, floating point numbers, IEEE 754 floating point standard, Micro-operation, Bus and Memory Transfers, Bus Architecture, Bus Arbitration, Arithmetic Logic, Shift Micro operation, Arithmetic Logic Shift Unit.

[T1,T2][No. of hrs. 11]

UNIT- II

Instruction set architecture & computer organization:

Levels of programming languages, assembly language instructions, 8085 instruction set architecture, Instruction Codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycle, Memory Reference Instructions, Input-Output and Interrupts

[T1,T2][No. of hrs. 11]

UNIT- III

Control Design:

Instruction sequencing & interpretation, Hardwired & Micro Programmed (Control Unit), Micrprogrammed computers, Microcoded CPU: Pentium processor. Specifying a CPU, Design & implementation of simple CPU, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Internal architecture of 8085 microprocessor.

[T1,T2][No. of hrs. 11]

UNIT- IV

Memory & Input/Output organization: Memory Technology, Main Memory (RAM and ROM Chips), Virtual memory, High-speed memories

Asynchronous Data Transfers, Programmed I/O, interrupts, Direct memory Access, Serial communication, UARTs, **RS-232-C & RS-422** standard

[T1,T2][No. of hrs. 11]

Text Books:

[T1] J. D. Carpinelli, "Computer Systems Organization and Architecture", Pearson Education, 2006.

[T2] J. P. Hayes, "Computer Architecture and Organization", McGraw Hill, 1988.

Reference Books:

[R1] J. L Hennessy and D. A. Patterson, "Computer Architecture: A quantitative approach", Morgon Kauffman, 1992.

[R2] W. Stallings, "Computer organization and Architecture", PHI, 7th ed, 2005.

[R3] B. Parhami, "Computer Architecture: From Microprocessors to Supercomputers", Oxford University press, 2006.