



R20 Regulation

Subject code: 3P4EB

**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**

(Autonomous, Accredited by NAAC with 'A' Grade)

**B.Tech IV Semester Regular Examinations, July 2022**

## **COMPUTER ORGANIZATION AND ARCHITECTURE** (COMPUTER SCIENCE & ENGINEERING)

**Maximum Marks: 70**

Date:22.07.2022 Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
  2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
  3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
  4. Each question carries 10 marks and may have a, b, c, d as sub questions.

### Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Sketch the internal organization of CPU.
- 2 What is an Interrupt?
- 3 How the Compatibility between CPU & Bidirectional IO components are devised?
- 4 Write about hierarchy of buses, bus signals and its functionalities.
- 5 Write a Memory-Reference instructions with examples.
- 6 Tabulate the Input-Output Instructions using register transfer notations?
- 7 Write about Auxiliary memory devices.
- 8 Define the possible modes of data transfer.
- 9 Classify organization of computers using Flynn's criteria.
- 10 Write about crossbar switching.

### Part-B

Answer All the following questions.

(10MX 5=50Marks)

- 11 Identify the crucial features to design the instruction set architecture for a specific purpose processor? Describe the Instruction set Architecture of simple computer. [10]

OR

- 12 Elaborate how CPU is concordant with its Input & Output devices and explain the interfacing modules involved? Demonstrate how the Compatibility between CPU & Bidirectional IO components are devised using its interfacing modules. [10]

- 13 Draw and explain the schematic of 8086 architecture with a neat block diagram. [10]

OR

- 14 Illustrate the basic addressing modes of 8086 architecture with the use of Memory and Register. [10]

- 15 Elaborate on Registers configuration for Arithmetic operations on Floating Point Arithmetic. [10]

OR

- 16 Write about Interrupt and its types? Illustrate the phases of Interrupt Cycle with a neat flowchart. [10]

- 17 Elaborate how DMA bypasses CPU and speeds up the memory operation? With a neat schematic, Explain about DMA controller and its mode of data transfer. [10]
- OR
- 18 What is virtual memory? Explain the relation between address space and memory space in a virtual memory system along with its memory table for mapping? [10]
- 19 Explain Inter processor communication and synchronization in a Shared Multiprocessor environment. [10]
- OR
- 20 Illustrate the behavior of a pipeline using space-time diagram. [10]