

## **NC5072 NETWORK PROCESSORS**

### DETAILED SYLLABUS

#### **OBJECTIVES**

The students should be made to:

- Learn network processors
- Study commercial network processors
- Understand network processor architecture

#### **UNIT I INTRODUCTION**

Traditional protocol processing Systems – Network processing Hardware – Basic Packet Processing Algorithms and data Structures- Packet processing functions– Protocol Software– Hardware Architectures for Protocol processing – Classification and Forwarding – Switching Fabrics.

#### **UNIT II NETWORK PROCESSOR TECHNOLOGY**

Network Processors: Motivation and purpose - Complexity of Network Processor Design – Network Processor Architectures architectural variety, architectural characteristics Peripheral Chips supporting Network Processors: Storage processors, Classification Processors, Search Engines, Switch Fabrics, Traffic Managers.

#### **UNIT III COMMERCIAL NETWORK PROCESSORS**

Multi-Chip Pipeline, Augmented RISC processor, Embedded Processor plus Coprocessors, Pipeline of Homogeneous processors. Configurable Instruction set processors – Pipeline of Heterogeneous processors – Extensive and Diverse processors – Flexible RISC plus Coprocessors – Scalability issues – Design Tradeoffs and consequences.

#### **UNIT IV NETWORK PROCESSOR: ARCHITECTURE AND PROGRAMMING**

Architecture: Intel Network Processor: Multi headed Architecture Overview – Features Embedded RISC processor - Packet Processor Hardware – Memory interfaces – System and Control Interface Components – Bus Interface. Programming Software Development Kit-IXP Instruction set – register formats – Micro Engine Programming – Intra thread and Inter-thread communication– thread synchronization – developing sample applications – control plane – ARM programming.

## **UNIT V IOS TECHNOLOGIES**

CISCO COS – Connectivity and scalability – high availability – IP routing – IP services – IPV6– Mobile IP – MPLS – IP Multicast 0 Manageability – QoS – Security – Switching – Layer VPN2.

## **REFERENCES**

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4. Panas C. Lekkas, “Network Processors: Architectgures, Protocols and Paradigms Telecom Engineering)”, McGraw Hill, Professional, 2003.
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