

4147 – MICROPROCESSOR (PD& I) - II										
Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)					
Lectures	Practical	Credits			Theory		Practical Ex.	Total		
3	2	5	25	25	3 Hrs	100		150		
Pre-requisite		Source			Theory	Test	Total	TW	PR	Gr Total
4142		EXN	Semester		75	25	100	25	—	125

Rationale: This subject deals with the study of peripheral and support chips that go into the designing and making of a computer system. It also provides an overview of various input/output devices. It also introduces some applications of Microprocessors.

COURSE CONTENTS	Hrs	Mks
1. PERIPHERALS CHIPS		
8155 multipurpose prog. Device— Block diagram & functional description, Control logic & I/O ports, Control word, Designing a square wave generator using the 8155 timer, 8155 I/O ports in handshake mode, Interfacing 7-segment LED output ports using 8155.	4	8
8255 prog. Peripheral interface-- Block diagram & functional description, Control logic, Control word description, Modes of operation mode 0, mode 1, mode 2, BSR mode, Programming the 8255, Interfacing using 8255	5	12
8253 programmable interval timer-- Block diagram & functional description, Programming & use of 8253 as a counter, Different modes of operation.	3	6
8279 prog. Keyboard/display interface-- Block diagram & functional description keyboard section, scan section, Display section, microprocessor interface section, Programming 8279 and interfacing to microprocessor	5	10
8251 prog. Communication interface-- Block diagram and functional description control logic & registers, transmitter section, receiver section, Initializing the 8251, Interfacing an RS-232 terminal using the 8251, Data transfer to a CRT terminal using the 8251.	6	10
8259 prog. Interrupt controller-- Functions of 8259 interrupt controller, Block diagram of 8259, Interrupt operation, Priority modes & features, Programming the 8259.	6	16
8257 DMA controller--- Concept of DMA mode of data transfer, Block diagram of DMA controller, Interfacing & working, Modes of operation, Slave & master mode	6	10
2. BUS STANDARDS		
RS-232 BUS STANDARD, GPIB interface bus (IEEE 488)	3	8
	6	15
3. PERIPHERAL DEVICES		
Floppy disc & hard disk-- Physical structures & capacities of floppy & hard disks, Preparation for use with the computer. Principle of working of different types of printers dot matrix, daisy wheel, line, inkjet, laser; Keyboard types -mechanical key switches, membrane keypads, capacitive keys, hall effect keys, encoded & non-encoded keyboards; Video display unit basic operation of a CRT	4	5
4. APPLICATIONS		
A/D and D/A conversion techniques. Temperature controls. Traffic light controller & Waveform generators	48	100
Total		

INSTRUCTIONS TO PAPER SETTER:

Pinout diagrams should be excluded from theory papers.

PRACTICALS:

- Study, interfacing and programming of the following chips- 8155, 8255, 8253, 8279, 8251, 8259, 8257
- Study of the following devices—Keyboard, Visual display unit, Floppy, Hard disk drive, Printer

REFERENCE BOOKS:

- Microprocessor architectures applications & programming by Ramesh Gaonkar
- Microprocessors & Interfacing by Douglas V. Hall
- Microprocessors 8086/8088 by Lin & Gibson
- Microprocessor Interfacing Techniques by Rodney Za
- An introduction to microprocessor by A.P Mathur
- Microprocessors & interfacing by V. Rajaraman