**SARDAR PATEL UNIVERSITY**
**Programme & Subject: M.Sc (Physics)**
**Semester: III**
**Syllabus with Effect from: June - 2014**

| Paper Code: PS03EPHY04 | Total Credit: 4 |
|---|---|
| **Title Of Paper: Microprocessors, Programming, Interfacing & Applications** | |

| Unit | Description in detail | Weightage (%) |
|---|---|---|
| I | Introduction to microprocessors; Organization and Architecture of Intel-8085, PIN diagram, Op-Code and Operands, Instruction word size. Fetch and Execute Operations. Timing diagrams Instruction set of Intel 8085: Data transfer group, Arithmetic group, Logical group, Branch control group, Stack I/O and Machine control group. Subroutine. Assembly language programming of 8085 Address space partitioning, Schemes of allocation of addresses, Memory and I/O interfacing. | 25% |
| II | Data transfer schemes; Synchronous, Asynchronous and Interrupt driven schemes. Interrupts of Intel-8085, Interrupt circuits and programming, Interfacing Devices and I/O Devices, I/O ports INTEL-8255, Architecture and operating modes of INTEL-8255. Programmable DMA controller Intel-8257, Programmable interrupt controller Intel-8259. Programmable counter/interval timer INTEL-8252. | 25% |
| III | Microprocessor based data acquisition system: A/D converter, Clock for A/D converter, sample and hold circuit IC LF-398, Analog multiplexer, ADC 0800- Interfacing and programming, Interfacing and Programming of ADC-0800, Analog Multiplexer AM-3705 and Sample and Hold circuit LF-398, ADC 0801 Series. D/A converter, Operating Principle, DAC0800- Interfacing, Realization of A/D converter using D/A converter. | 25% |
| IV | Microprocessor Applications: Delay subroutine, Display of decimal numbers, Display of Alphanumeric characters, Multiple Digital Display, Measurement of electrical and physical quantities:  Frequency, Frequency Measurement using SID line, Phase angle and Power Factor Measurement, Voltage, Current, Resistance measurement, Temperature measurement and control. Introduction to microcontroller Intel-8051. | 25% |

**Basic Text & Reference Books:-**

➢ Fundamentals of Microprocessors and Microcomputers
   B. Ram (Dhanpat Rai and Sons, Delhi).
➢ Microprocessor Architecture, Programming and Applications with the 8085/8080A
   R. S. Gaonkar, Wiley Eastern Ltd.
➢ Microprocessors: Theory and Applications
   M. Rafiquzzaman, Printice Hall International Inc.
➢ Introduction to Microprocessors
   A.P. Mathur, Tata Mac Graw Hill Publishing Co. Ltd. New Delhi.
➢ The 8051 Microcontroller, Architecture, Programming and Application
   Kenneth J Ayala, Penram International.