

SARDAR PATEL UNIVERSITY
Programme: MCA
Semester: III
Syllabus with effect from: June 2014

Paper Code: PS03CMCA05	Total Credit: 4
Title Of Paper: System Software	

Unit	Description in detail	Weighting (%)
1	<p>Introduction System software and its components, Evolution of system software Introduction to language processing, Comparison of machine languages, assembly languages and high-level, languages Internal architecture of a CPU (Intel 8086/88), List and use of all registers in 8086/88 Memory addressing in 8086/88 in depth with addressing modes, Interrupt processing The structure of a typical assembly language program (8086/88, MASM/TASM syntax)</p>	
2	<p>Assembly language fundamentals Data transfer instruction, Arithmetic instructions Bit manipulation instructions, Conditional and unconditional transfer of control Iteration control, Stack instructions Common system calls: Input and output of a character, input and output of a string, program termination Alternate syntaxes for the 8086/88 assembly language Ability to write complete assembly programs for simple numeric (integer only) and string processing</p>	
3	<p>Assemblers Elements of assembly language programming, overview of assembly process, Design of a two-pass assembler, Macros and Macro processors.</p>	
4	<p>Compilers Introduction to compilers and interpreters, Significance of compiler technology Differences between compilers and interpreters, Evolution of computer architectures, programming languages & compilers and interpreters Overview of the compilation process, phases and passes, front-end and back-end, other related software tools Introduction to all the phases of a compiler, Introduction to compiler development tools</p>	
5	<p>Other Common System Software Tools Loading, linking and relocation, Design of a linker Self-relocating programs, Loaders: their need, function, types, etc. Debuggers, profilers</p>	
6	<p>Embedded Systems An introduction to embedded systems, Applications of embedded systems The embedded system constraints: processing constraints, memory constraints, input/output constraints, response time constraints, predictability/reliability constraints, Microprocessors, microcontrollers, ASICs, DSPs, FPGAs Sensors – introduction and applications An introduction to microprocessor/microcontroller interfacing Introduction to embedded systems programming</p>	



Basic Text & Reference Books

- Dhamdhare, D M : “System programming and Operating system“, 2nd Revised edition, Tata McGraw-Hill Company Limited, 2004
- Hall, D. V. : “Microprocessor & Interfacing : programming and Hardware”, Tata McGraw-Hill, 2003
- Aho A. V., Sethi R., Ullman J. D. : Compilers - Principles, Techniques and Tools, Addition-Wesley Publishing Company, 1988
- Embedded Systems: Building and Programming Devices, Wikibook, <http://en.wikibook.org>
- Abel P. : IBM PC Asembly Language and Programming, 5th edition, Prentice-Hall of India Pvt. Ltd., 2001
- Internet resources

