SEMESTER - V

MICROPROCESSOR THEORY & APPLICATIONS (EC(ID) - 5001)

Course Code	**EC(ID) – 5001**	Credits : 4	L-3, T-1, P-0
Name of the Course	**MICROPROCESSOR THEORY & APPLICATIONS**		
Lectures to be delivered	52 (1 Hr Each) (L = 39, T = 13 for each semester)		
Semester End Examination	**Max. Time: 3 hrs.**	**Max. Marks: 100**	**Min.Pass Marks: 40**
Continuous Assessment (based on sessional tests 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)	**Max. Marks: 50**		

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D & E. Section E will be compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C & D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.

2. **For candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of the question paper and all the subparts of the questions in Section E. Use of non-programmable calculators is allowed.

SECTION – A
Introduction:
- ♣ Evolution of microprocessor, General Architecture, resistors, ALU, System buses.
- ♣ Instruction cycle, fetch cycle, execute cycle, machine cycle, T states.
- ♣ Architecture of 8085, block diagram, pin diagram, instruction formats.
- ♣ Addressing Modes:- Direct addressing, indirect addressing, indexed, register direct, register indirect, implicit addressing mode, Timing diagrams.

SECTION – B
Instruction Set & Programming:

♣   Typical instruction set of 8085, data manipulation, data transfer, status management instructions.
♣   Development of Assembly language program.

SECTION – C
Interrupts & data transfer:-
♣   Interrupts: Hardware & Software Interrupts, polled and vectored interrupts, level and edge triggered interrupts, enabling, disabling and masking of interrupts.
♣   Data transfer schemes: DMA, memory mapped, I/o, mapped, schemes of I/o interfacing.
♣   Interfacing of RAM, ROM Chips with a microprocessor, bus condensation, concept of wait states.

SECTION – D
Peripheral devices & applications of microprocessor:
♣   Description of 8251, 8255, 8253, 8257, 8259, 8279.
♣   A temp. monitoring system, water level control, traffic control, Generation of square waves using I/o port and SOD lines.

Books Suggested:-
1.   Microprocessor & Architecture, programming and application by Gaonkar.
2.   Fundamentals of microprocessor & microcomputers – B.Ram.
3.   An introduction to microprocessor – A.P.Mathur.

Course Code	**IT (ID)– 5001**	Credits: 4	L-3, T-1, P-0
Name of the Course	**SOFTWARE ENGINEERING**		
Lectures to be delivered	**52 (1 Hr Each) (L = 39, T = 13 for each semester)**		
Semester End Examination	**Max. Time: 3 hrs.**	**Max. Marks: 100**	**Min. Pass Marks: 40**
Continuous Assessment (based on sessional tests 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)	**Max. Marks: 50**		

Instructions

1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D & E. Section E will be compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C & D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.

2. **For candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of the question paper and all the subparts of the questions in Section E. Use of non-programmable calculators is allowed.

Section A

Introduction- Need for software engineering, issue in the design of large software, software life cycle models, overview of software development process.

Software Requirement Analysis and Specification- Requirements Engineering, Crucial process step, State of the practice, problem analysis, Data dictionaries, Entity relationship diagram, code object diagram, approaches to problem analysis, Structured requirements definition, structured analysis & design techniques, Software prototyping, Software requirements specification, Nature of SRS, characteristics of good SRS. Organization of the SRS, Specifying behavioral requirements, finite state machines, decision tables & tree, PDL

Section B

Software Matrics: What and why: Definition, areas of applications, problems during implementation, size matrics, The basic information Flow Model, the more sophisticated information Flow Model, Metrics analysis using statistics for Assessment, Flow problems with metric data, The common of pool of data. A pattern for successful applications.

Software Project Planning: Cost estimation: Models , Static ,single variable model, Static multivariable model, The constructive cost model: Basic model, International model, Detailed COCOMO Model, The Putnam resource allocation model: The trade off- -of-time versus cost, development sub cycle, software risk management : what is Risk, typical software risks , Risk management Activities, Risk identification, Risk projection, Risk management activity.

Section C

Software testing techniques: Software testing fundamental testing objectives, testing principles, testability, test case design, White box testing, flow graph notation, cyclomatic complexity, driving test cases, graph matrices, black box testing, graph base testing methods, equalization partitioning, comparison testing, orthogonal Array testing, Testing for real time system.

Software Testing Strategies: Strategic approach to software testing, verification and validation, unit testing, unit test procedures, integration testing, top down integration, bottom up integration, regression testing, smoke testing, validation testing, alpha testing and beta testing, system testing, recovery testing, security testing, stress testing, performance testing.

Section D
Software maintenance: What is software maintenance; categories of maintenance, problem during maintenance, potential solution to maintenance problems, the maintenance process: program understanding, generating particular maintenance proposal, ripple effect, modified program testing, maintenance models: Quick fix model, iterative enhancement model, reuse oriented model, Boehm's model estimation of maintenance cost, Beladay and Lehman model, Boehm model, Configuration management activities, software version, Change control process.
Software quality Assurance: Quality concepts, Quality, Quality control, Quality assurance, cost of quality, SQA Activities, Cost impact of defects, defect amplication and removal, Review meeting, reporting and record keeping, statistical software quality assurance, software reliability, measure of reliability and availability.

Books:
1. Software Engineering- A practitioner's Approach, RogerS. Pressmen
2. Software Engineering-K.K. Aggarwal&Yogesh

SEMESTER – V
DATABASE MANAGEMENT SYSTEM (IT(ID)- 5002)

Course Code	**IT(ID)– 5002**	Credits: 4	L-3, T-1, P-0
Name of the Course	**DATABASE MANAGEMENT SYSTEM**		
Lectures to be delivered	**52 (1 Hr Each) (L = 39, T = 13 for each semester)**		
Semester End Examination	**Max. Time: 3 hrs.**	**Max. Marks: 100**	**Min. Pass Marks: 40**
Continuous Assessment (based on sessional tests 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)	**Max. Marks: 50**		

Instructions
1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D & E. Section E will be compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C & D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of the question paper and all the subparts of the questions in Section E. Use of non-programmable calculators is allowed.

Section A :
Overview of DBMS, Components of DBMS: (users, language, structure, data-dictionary, data manager, DBA, etc.). File processing versus Data Management, File Oriented approach versus Database Oriented approach. SPARC 3-level architecture. A brief overview of three traditional models (hierarchical mode, network model and relational model).

Section B:
Properties of relational model { Codd's 12 rules (integrity rules (concept of keys))}Relational algebra (select, project, cross product, joins (theta-join, equi-join, natural-join, outer join)), tuple relational calculus. Domain relational calculus, Entity-Relationalship model as a tool for conceptual design entities attributes and relationships, ER-Diagram, Converting ER-Model into relational schema.

Section C:
Functional Dependencies, Multi-valued Dependencies, Normalization (up to 5th level), Structured Query language (with special reference of SQL of Oracle): (INSERT, DELETE, UPDATE, VIEW definitions and use of Temporary tables, Nested queries, Correlated nested queries,integrity constraints : (not null, unique check, primary key, foreign key references), file organization (Sequential file, index sequential files ,.Direct files, Hashing, B-trees, index files).

Section D:
Query processing (Introduction, steps in Query processing, General Processing Strategies, Query Optimisation). Recovery and security, Introduction to Object-Oriented Database, C/S Database, Knowledge Based Database and Distributed Database Management System.

Books :
1. C.J. Date, " An introduction to data base System", 7th ed. Addison Wesly, 2000.
2. Abraham Silberschataz, Henry F. Korth S. Sudershan ,The McGraw Hill Companies, Inc., 1997.
3. Naveen prakash ,"Introduction to Database management systems",Tata McGraw hill .
4. Bipin C desai ,An introduction to database management system.

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SEMESTER – V
VISUAL PROGRAMMING (IT(ID)- 5004)

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Course Code	**IT(ID)– 5004**	Credits: 4	L-3, T-1, P-0
Name of the Course	**VISUAL PROGRAMMING**		
Lectures to be delivered	**52 (1 Hr Each) (L = 39, T = 13 for each semester)**		
Semester End Examination	**Max. Time: 3 hrs.**	**Max. Marks: 100**	**Min. Pass Marks: 40**
Continuous Assessment (based on sessional tests 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)	**Max. Marks: 50**		

Instructions
1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D & E. Section E will be compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C & D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of the question paper and all the subparts of the questions in Section E. Use of non-programmable calculators is allowed.

Section – A
VB environment, Properties, Methods, use of object browser, Basic Programming convention in VB, Menu and tool bars and programming fundamentals, flow control statements, dialog control, MS Common Control, MDI, Control Array.

Section -B
VB Design elements, concept of classes in VB procedures and function in VB, file handling, Shell Programming, OLE, ActiveX in VB, win 32 API in VB and API viewer.

Section-C
SQL query processing and Data base basics, Data Control and Data bound control, DAO and ADO, creating reports in VB, Data aware classes, ActiveX environment, packaging and development in VB.

Section – D
Advance VB (Developing Add in VB) CDO and MAPI Programming, Advance ADO Techniques, VB Script, and ASP in VB, VB and Internet Programming.

Books:
1. Brian Siler and Jeff spots: Using Visual basic 6 by PHI.
2. Professional Visual basic 6 Database Programming by WDOX publishers.
3. O'Reilly: Developing Visual Basic Add – ins by Romen pub.
4. Win 32 API Programming with Visual basic by Romen pub. O' Reilly.
5. Visual basic Shell Programming by Hamilton pub. O' Reilly.
6. Visual basic Oracle 8 Programmer's reference by Tretsch pub. O' Reilly.

SEMESTER – V
PRINCIPLES OF OPERATING SYSTEM (CS – 5001)

Course Code	**CS – 5001**	Credits: 4	L-3, T-1, P-0
Name of the Course	**Principles of Operating System**		
Lectures to be delivered	**52 (1 Hr Each) (L = 39, T = 13 for each semester)**		
Semester End Examination	**Max. Time: 3 hrs.**	**Max. Marks: 100**	**Min. Pass Marks: 40**
Continuous Assessment (based on sessional tests 50%, Tutorials/Assignments 30%, Quiz/Seminar 10%, Attendance 10%)	**Max. Marks: 50**		

Instructions
1. **For Paper Setters:** The question paper will consist of five sections A, B, C, D & E. Section E will be compulsory, it will consist of a single question with 10-20 subparts of short answer type, which will cover the entire syllabus and will carry 20% of the total marks of the semester end examination for the course. Section A, B, C & D will have two questions from the respective sections of the syllabus and each question will carry 20% of the total marks of the semester end examination for the course.
2. **For candidates:** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of the question paper and all the subparts of the questions in Section E. Use of non-programmable calculators is allowed.

Section – A
What is an Operating system? Simple Batch Systems; Multiprogrammed Batched Systems; Time-Sharing Systems; Personal-Computer Systems; Parallel Systems; Distributed Systems; Real-Time Systems.
System Components; System Calls, System Programs; System Structure; Virtual machines.
Process Concept; Process Scheduling; Operation on processes, Cooperating Processes, Threads, Interprocess Communication
CPU Scheduling fundamental Concepts, Scheduling Criteria; Scheduling Algorithms; Multi-processor Scheduling; Real-Time Scheduling.
Threads: Overview, Multithreading Models, Threading Issues.

Section – B
Deadlocks: System Model; Deadlock Characterization; Methods of Handling Deadlocks; Deadlock Prevention; Deadlock Avoidance; Deadlock Detection; Recovery from deadlock; Combined Approach to Deadlock Handling.

Protection: Goals of protection; Domain of protection; Access Matrix and its implementation; Revocation of Access Rights; Capability-Based Systems; Language-Based protection.
Security: The Security problem; Authentication; One-Time passwords; program Threats; System Threats; Threat Monitoring; Encryption and decryption; Computer-Security Classifications.

Section – C
Memory Management: Logical versus Physical Address Space; Swapping; Contiguous Allocation; paging; Segmentation; Segmentation with Paging.
Virtual Memory: Demand paging; Performance of Demand Paging; page Replacement; Page Replacement Algorithms; Allocation of Frames; Thrashing; Demand Segmentation.
Cache memory and implementation.
Secondary-Storage Structure: Disk Structure; Disk Scheduling; Disk Management; Swap-Space management; Disk Reliability; Stable-Storage Implementation.

Section – D
Process Synchronization: critical section problem, synchronization hardware, semaphore, classic problems of synchronizations, critical regions, atomic transactions.
File-System Interface: File Concept; Access Methods; Directory Structure; Protection; Consistency Semantics.
File-System Implementation: File-System Structure; Allocation Methods; Free-Space Management; Directory Implementation ; Efficiency and Performance; Recovery.

BOOKS:

1. Abrahanm Silberschatz, Peter Baer Galvin, "Operating system Concepts", John Wiley & Sons, Inc., Vth Eduction, 2000.

2. Deital H.M., "An Introduction to Operating systems", Addison Wesley Publishing Co., 1984.
3. Achyut G Godbole " Operating Systems ".
4. William Stallings "Operating Systems ".
5. A.S. Tanenbaum " Operating System Design & Implementation " .
6. Collin Ritcie "Operating Systems incorporating UNIX and Windows ".

SEMESTER – V
MICROPROCESSOR LAB (EC(ID) – 5006)

Course Code	EC(ID) - 5006	Credits : 3	L-0, T-0, P-3
Name of the Course	**MICROPROCESSOR LAB**		
Lectures to be delivered	**39 hours of Lab sessions**		
Semester End Examination	**Max. Time: 3 hrs**	**Max. Marks : 50**	**Min. Pass Marks : 20**
Laboratory	**Continuous Assessment (based on Lab work 30%, Lab record 25%, Viva 25%, Attendance 20%)**	**Max. Marks: 50**	**Min. Pass Marks: 25**

Instructions for paper setter/Candidates

Laboratory examination will consist of two parts:
   i)   Performing a practical examination assigned by the examiner (25 marks).
   ii) Viva-voce examination (25 marks).

Viva-voce examination will be related to the practical performed/projects executed by the candidate related to the paper during the course of the semester.

List of Experiments :

   1.   Study of 8085 Microprocessor Trainer kit.

   2.   Write a program using 8085 for

        (a) 8 bit two numbers addition.

(b) 16 bit two numbers addition

3.   Write a program using 8085 for

(a) Two 8 bit numbers subtraction

(b) Two 16 bit numbers subtraction

4.   Write a program for multiplication of two 8 bit numbers using 8085.

5.   Write a program for division of two 8 bit numbers division using 8085

6.   Write a program for sorting a list of numbers in ascending & descending order.

7.   Code conversion-Binding to Gray & Gray to binary .

8.   Write a program for finding square of a number using look up table & verify

9.   Write a program for temp control using 8085 & 8255 PPI

10.   Write a program for water level control using 8085 & 8255 PPI

11.   Generate different waveforms using DAC after interfacing it with a microprocessor kit-use 8255 PPI port.

SEMESTER – V
VISUAL PROGRAMMING LABORATORY (IT (ID) – 5006)

Course Code	IT(ID) – 5006		Credits: 2	L-0, T-0, P-2
Name of the Course	**VISUAL PROGRAMMING LABORATORY**			
Lectures to be delivered	**26 hours of Lab sessions**			
Semester End Examination	**Max. Time = 3 hrs.**		**Max. Marks: 50**	**Min. Pass Marks: 20**
Laboratory	**Continuous Assessment (based on Lab work 30%, Lab record 25%, Viva 25%, Attendance 20%)**		**Max. Marks: 50**	**Min. Pass Marks: 25**

Instructions for paper setter/Candidates
Laboratory examination will consist of two parts:
   i)   Performing a practical examination assigned by the examiner (25 marks).
   ii)   Viva-voce examination (25 marks).

Viva-voce examination will be related to the practicals performed/projects executed by the candidate related to the paper during the course of the semester.

List of Practical:

   (i)   Basic VB programming

   (ii)   ActiveX

   (iii)   Screen Saver

(iv)   Report Writing

(v)   ADO programming and Databases.

(vi)   VB Script and ASP LAYERS

(vii)   Business Objects

(viii) Classes in VB

Projects

1. Inventory Control using VB
2. Data conversion utility in VB
3. Editor and text handling Projects.
4. Creation of Dynamic site using ASP and VB script
5. Encryption control using ActiveX
6. Library transaction wizard.

SEMESTER – V
RDBMS LABORATORY (IT(ID) – 5007)

Course Code	**IT (ID)– 5007**	Credits: 2	L-0, T-0, P-2
Name of the Course	**RDBMS LABORATORY**		
Lectures to be delivered	**26 hours of Lab sessions**		
Semester End Examination	**Max. Time = 3 hrs.**	**Max. Marks : 50**	**Min. Pass Marks: 20**
Laboratory	**Continuous Assessment (based on Lab work 30%, Lab record 25%, Viva 25%, Attendance 20%)**	**Max. Marks: 50**	**Min. Pass Marks: 25**

Instructions for paper setter/Candidates
Laboratory examination will consist of two parts:
   i)   Performing a practical examination assigned by the examiner (25 marks).
   ii) Viva-voce examination (25 marks).

Viva-voce examination will be related to the practical performed/projects executed by the candidate related to the paper during the course of the semester. List of experiments:

1. Familiarization with RDBMS(ORACLE/FOXPRO) using VISUAL BASIC as front end) & developing a small application.
2. Create a database and write the programs to carry out the following operation:

        (i)   Add a record in the database.
        (ii)   Delete a record in the database.
        (iii)   Modify the record in the database.
        (iv)   Generate queries.
        (v)   Generate the report.
        (vi)   List all records of database in ascending order.

3. Develop a menu driven project management of database system:
   - (i) Library information system
     - (a) Engineering
     - (b) MCA
   - (ii) Inventory control system
     - (c) Computer Lab
     - (d) College Store
   - (iii) Student Information System
     - (e) Academic
     - (f) Finance
   - (iv) Time Table development system
     - (g) CSE, IT & MCA Departments.
     - (h) Electrical & Mechanical Departments.

Usage of S/W:
1. VB, ORACLE and/or DB2
2. VB,MS Acess.
3. VB, MS SQL SERVER 2002

Note: At least 5 or 10 more exercises to be given by the teacher concerned.

SEMESTER – V
PC LAB (HARDWARE) (CS – 5002)

Course Code	**CS – 5002**	Credits: 2	L-0, T-0, P-2
Name of the Course	**PC LAB HARDWARE**		
Lectures to be delivered	**26 hours of Lab sessions**		
Semester End Examination	**Max. Time = 3 hrs.**	**Max. Marks : 50**	**Min. Pass Marks: 20**
Laboratory	**Continuous Assessment (based on Lab work 30%, Lab record 25%, Viva 25%, Attendance 20%)**	**Max. Marks: 50**	**Min. Pass Marks: 25**

Instructions for paper setter/Candidates
Laboratory examination will consist of two parts:
   - i) Performing a practical examination assigned by the examiner (25 marks).
   - ii) Viva-voce examination (25 marks).

Viva-voce examination will be related to the practical performed/projects executed by the candidate related to the paper during the course of the semester.

LIST OF EXPERIMENTS:
1.   To check and measure various supply voltages of PC.

2. To make comparative study of motherboards.
3. To observe and study various cables, connections and parts used in computer communication.
4. To study various cards used in a system viz. display card, LAN card etc.
5. To remove, study and replace floppy disk drive.
6. To remove, study and replace hard disk.
7. To remove, study and replace CDROM drive.
8. To study monitor, its circuitry and some elementary fault detection.
9. To study printer assembly and elementary fault detection of DMP and laser printers.
10. To observe various cables and connectors used in networking.
11. To study parts of keyboard and mouse.
12. To assemble a PC.
13. Troubleshooting exercises related to various components of computer like monitor, drives, memory and printers etc.
14. Partitioning of Hard Disk .
15. Hard Disk Formatting and its maintenance.
16. To study SMPS.

Reference Books:
Complete PC upgrade & maintenance guide, Mark Mines, BPR publ.
PC Hardware: The complete reference, Craig Zacker & John Rouske, TMH
Upgrading and Repairing PCs, Scott Mueller,1999,PHI,

SEMESTER – V
INDUSTRIAL TRAINING (CS-5003)

Course Code	CS – 5003	Credits: 0	L-0, T-0, P-0
Name of the Course	**INDUSTRIAL TRAINING**		
Semester End Examination	**Max. Time = 3 hrs.**	**Max. Marks : 50**	**Min. Pass Marks: 40**
Continuous Assessment	**Lab work 30%, Lab record 25%, Viva 25%, Attendance 20%**	**Max. Marks: 50**	**Min. Pass Marks: 25**

Instructions for paper setter/Candidates:

This training will be related to industrial projects/ software projects to be undertaken under the guidance of faculty preferably at industry/ software park/ incubation center or related areas. This may also be undertaken with in the institute. This training will be undertaken during vacation. Student is supposed to submit the project report at the end of the training.

Evaluation will be based on project report, presentation and comprehensive viva-voce examination related to the project.