

SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 119.



SYLLABUS

**BACHELOR OF TECHNOLOGY PROGRAMME
IN
INFORMATION TECHNOLOGY (8 SEMESTERS)
REGULATIONS 2010**

SATHYABAMA UNIVERSITY

REGULATIONS – 2010

Effective from the academic year 2010-2011 and applicable to the students admitted to the Degree of Bachelor of Engineering / Technology. (Eight Semesters)

1. Structure of Programme

- 1.1 Every Programme will have a curriculum with syllabi consisting of theory and practical such as:
 - (i) General core courses comprising Mathematics, Basic Sciences, Engineering Sciences.
 - (ii) Core course of Engineering / Technology.
 - (iii) Elective course for specialization in related fields.
 - (iv) Workshop practice, Computer Practice, Engineering Graphics, Laboratory Work, Industrial Training, Seminar Presentation, Project Work, Educational Tours, Camps etc.
- 1.2 Each semester curriculum shall normally have a blend of lecture courses not exceeding 7 and practical courses not exceeding 4.
- 1.3 The medium of instruction, examinations and project report will be in English.

2. Duration of the Programme

A student is normally expected to complete the B.E/B.Tech. Programme in 8 semesters **but in any case not more than 12 consecutive semesters from the time of commencement of the course (not more than 10 semesters for those who join 3rd semester under Lateral entry system)** The Head of the Department shall ensure that every teacher imparts instruction as per the number of hours specified in the syllabus and that the teacher teaches the full content of the specified syllabus for the course being taught.

3. Requirements for Completion of a Semester

A candidate who has fulfilled the following conditions shall be deemed to have satisfied the requirement for completion of a semester.

- 3.1 He/She secures not less than 90% of overall attendance in that semester.
- 3.2 Candidates who do not have the requisite attendance for the semester will not be permitted to write the University Exams.

4. Examinations

The examinations shall normally be conducted between October and December during the odd semesters and between March and May in the even semesters. The maximum marks for each theory and practical course (including the project work and Viva Voce examination in the Eighth Semester) shall be 100 with the following breakup.

- (i) **Theory Courses**
Internal Assessment : 20 Marks
University Exams : 80 Marks
- (ii) **Practical Courses**
Internal Assessment : - -
University Exams : 100 Marks

5. Passing requirements

- (i) A candidate who secures not less than 50% of total marks prescribed for the course (For all courses including Theory, Practicals and Project work) with a minimum of 35 marks out of 80 in the University Theory Examinations, shall be declared to have passed in the Examination.
- (ii) If a candidate fails to secure a Pass in a particular course, it is mandatory that he/she shall reappear for the examination in that course during the next semester when examination is conducted in that course. However the Internal Assessment marks obtained by the candidate in the first attempt shall be retained and considered valid for all subsequent attempts.

6. Eligibility for the Award of Degree

A student shall be declared to be eligible for the award of the B.E/B.Tech. degree provided the student has successfully completed the course requirements and has passed all the prescribed examinations in all the 8 semesters within the maximum period specified in clause 2.

7. Award of Credits and Grades

All assessments of a course will be done on absolute marks basis. However, for the purpose of reporting the performance of a candidate, Letter Grades will be awarded as per the range of total marks (out of 100) obtained by the candidate as given below:

RANGE OF MARKS FOR GRADES

| Range of Marks | Grade | Grade Points (GP) |
|----------------|-------|-------------------|
| 90-100 | A++ | 10 |
| 80-89 | A+ | 9 |
| 70-79 | B++ | 8 |
| 60-69 | B+ | 7 |
| 50-59 | C | 6 |
| 00-49 | F | 0 |
| ABSENT | W | 0 |

CUMULATIVE GRADE POINT AVERAGE CALCULATION

The CGPA calculation on a 10 scale basis is used to describe the overall performance of a student in all courses from first semester to the last semester. F and W grades will be excluded for calculating GPA and CGPA.

$$CGPA = \frac{\sum_i C_i GP_i}{\sum_i C_i}$$

where C_i - Credits for the subject

GP_i - Grade Point for the subject

\sum_i - Sum of all subjects successfully cleared during all the semesters

8. Classification of the Degree Awarded

1. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the semesters in **his/her first appearance** within a maximum period of 8 consecutive semesters after commencement of study (maximum of 6 semesters for Lateral entry system who join the course in the third semester) securing a **CGPA not less than 9.0** shall be declared to have passed the examination in **First Class – Exemplary**.

2. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the semesters in **his/her first appearance** within a maximum period of 8 consecutive semesters after commencement of study (maximum of 6 semesters for Lateral entry system who join the course in the third semester) securing a **CGPA not less than 7.5** shall be declared to have passed the examination in **First Class with Distinction**.
3. A candidate who qualifies for the award of the Degree having passed the examination in all the courses of all the semesters within a maximum period of 8 consecutive semesters after commencement of study (maximum of 6 semesters for Lateral entry system who join the course in the third semester) securing a **CGPA not less than 6.0** shall be declared to have passed the examination in **First Class**.
4. All other candidates who qualify for the award of the Degree having passed the examination in all the courses of all the 8 semesters within a maximum period of 12 consecutive semesters (10 consecutive semesters for Lateral Entry system who join the course in the third semester) after his/her commencement of study securing a **CGPA not less than 5.0** shall be declared to have passed the examination in **Second Class**.
5. A candidate who is absent in semester examination in a course/project work after having registered for the same, shall be considered to have appeared in that examination for the purpose of classification of degree. **For all the above mentioned classification of Degree, the break of study during the programme, will be counted for the purpose of classification of degree.**
6. A candidate can apply for revaluation of his/her semester examination answer paper in a theory course, within 1 week from the declaration of results, on payment of a prescribed fee along with prescribed application to the Controller of Examinations through the Head of Department. The Controller of Examination will arrange for the revaluation and the result will be intimated to the candidate concerned through the Head of the Department. Revaluation is not permitted for practical courses and for project work.

Final Degree is awarded based on the following:

| | |
|--|---------------------------------------|
| CGPA \geq 9.0 | - First Class - Exemplary |
| CGPA \geq 7.50 < 9.0 | - First Class with Distinction |
| CGPA \geq 6.00 < 7.50 | - First Class |
| CGPA \geq 5.00 < 6.00 | - Second Class |

Minimum CGPA requirements for award of Degree is 5.0 CGPA.

9. Discipline

Every student is required to observe disciplined and decorous behaviour both inside and outside the University and not to indulge in any activity which will tend to bring down the prestige of the University. If a student indulges in malpractice in any of the University theory / practical examination, he/she shall be liable for punitive action as prescribed by the University from time to time.

10. Revision of Regulations and Curriculum

The University may revise, amend or change the regulations, scheme of examinations and syllabi from time to time, if found necessary.

**B.Tech - INFORMATION TECHNOLOGY
REGULATIONS 2010 - CURRICULUM
SEMESTER I**

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--------------------------|--------------|-------------------------------------|---|---|---|---|----------|
| THEORY | | | | | | | |
| 1 | SHSX1001 | English for Science and Technology | 3 | 0 | 0 | 3 | 1 |
| 2 | SMTX1001 | Engineering Mathematics – I | 3 | 1 | 0 | 4 | 2 |
| 3 | SPHX1001 | Physics of Materials | 3 | 0 | 0 | 3 | 3 |
| 4 | SCYX1001 | Engineering Chemistry | 3 | 0 | 0 | 3 | 4 |
| 5 | SCHX1001 | Environmental Science & Engineering | 3 | 0 | 0 | 3 | 5 |
| 6 | SCSX1001 | Design and Analysis of Algorithms | 3 | 0 | 0 | 3 | 6 |
| 7 | SCSX1002 | Programming in C | 3 | 0 | 0 | 3 | 7 |
| PRACTICAL | | | | | | | |
| 1 | SPHX4001 | Physics Lab – I | 0 | 0 | 2 | 1 | 8 |
| 2 | SCYX4001 | Chemistry Lab – I | 0 | 0 | 2 | 1 | 8 |
| 3 | SCSX4001 | Programming In C Lab | 0 | 0 | 4 | 2 | 8 |
| Total Credits: 26 | | | | | | | |

SEMESTER II

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--------------------------|--------------|-------------------------------------|---|---|---|---|----------|
| THEORY | | | | | | | |
| 1 | SMTX1002 | Engineering Mathematics – II | 3 | 0 | 0 | 4 | 9 |
| 2 | SPHX1002 | Applied Physics | 3 | 0 | 0 | 3 | 10 |
| 3 | SCYX1002 | Chemistry Of Electronic Materials | 3 | 0 | 0 | 3 | 11 |
| 4 | SMEX1002 | Engineering Graphics | 1 | 2 | 0 | 3 | 12 |
| 5 | SEEX1003 | Electrical Engineering | 2 | 1 | 0 | 3 | 13 |
| 6 | SECX1008 | Electronic Devices & Circuits | 3 | 0 | 0 | 3 | 14 |
| 7 | SCSX1003 | Programming In C++ | 3 | 0 | 0 | 3 | 15 |
| PRACTICAL | | | | | | | |
| 1 | SECX4002 | Electronic Devices And Circuits Lab | 0 | 0 | 4 | 2 | 16 |
| 2 | SCSX4003 | Programming In C++Lab | 0 | 0 | 4 | 2 | 16 |
| Total Credits: 26 | | | | | | | |

L - Lecture hours; T - Tutorial hours; P - Practical hours; C - Credits

SEMESTER III

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--------------------------|--------------|--|---|---|---|---|----------|
| THEORY | | | | | | | |
| 1 | SMTX1009 | Engineering Mathematics- III | 3 | 1 | 0 | 4 | 17 |
| 2 | SCSX1004 | Software Engineering | 3 | 0 | 0 | 3 | 18 |
| 3 | SECX1009 | Microprocessor & Microcontroller Based Systems | 3 | 0 | 0 | 3 | 19 |
| 4 | SCSX1005 | Data Structures and Algorithms | 3 | 0 | 0 | 4 | 20 |
| 5 | SCSX1006 | Digital Computer Fundamentals | 3 | 0 | 0 | 3 | 21 |
| 6 | SCSX1007 | Java Programming | 3 | 0 | 0 | 3 | 22 |
| 7 | SECX1017 | Principles of Communication Engineering | 3 | 0 | 0 | 3 | 23 |
| PRACTICAL | | | | | | | |
| 1 | SCSX4004 | Data Structures Lab | 0 | 0 | 4 | 2 | 24 |
| 2 | SECX4007 | Microprocessor and Communication Lab | 0 | 0 | 4 | 2 | 24 |
| Total Credits: 27 | | | | | | | |

SEMESTER IV

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--------------------------|--------------|---|---|---|---|---|----------|
| THEORY | | | | | | | |
| 1 | SMTX1010 | Engineering Mathematics – IV | 3 | 1 | 0 | 4 | 25 |
| 2 | SCSX1008 | C# & .Net | 3 | 0 | 0 | 3 | 26 |
| 3 | SCSX1009 | Computer Architecture & Parallel Processing | 3 | 0 | 0 | 3 | 27 |
| 4 | SCSX1010 | Object Oriented Analysis and Design | 3 | 0 | 0 | 3 | 28 |
| 5 | SCSX1011 | Operating Systems | 3 | 0 | 0 | 4 | 29 |
| 6 | SECX1063 | Principles of Digital Signal Processing | 3 | 0 | 0 | 3 | 30 |
| PRACTICAL | | | | | | | |
| 1 | SCSX4013 | Operating System Lab | 0 | 0 | 4 | 2 | 31 |
| 2 | SCSX4006 | C# & .Net Lab | 0 | 0 | 4 | 2 | 31 |
| Total Credits: 24 | | | | | | | |

SEMESTER V

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--------------------------|--------------|--|---|---|---|---|----------|
| THEORY | | | | | | | |
| 1 | SMTX1013 | Discrete Mathematics & Numerical Methods | 3 | 1 | 0 | 4 | 32 |
| 2 | SCSX1017 | Data Communication & Computer Networks | 3 | 0 | 0 | 4 | 33 |
| 3 | SECX1044 | Information Theory and Coding | 3 | 0 | 0 | 3 | 34 |
| 4 | SECX1046 | Telecommunication Switching Techniques | 3 | 0 | 0 | 3 | 35 |
| 5 | SCSX1018 | Database System | 3 | 0 | 0 | 4 | 36 |
| 6 | SCSX1019 | System Programming | 3 | 0 | 0 | 3 | 37 |
| 7 | SCSX1023 | Computer Graphics & Multimedia Systems | 3 | 0 | 0 | 3 | 38 |
| PRACTICAL | | | | | | | |
| 1 | SITX4001 | Multimedia Lab | 0 | 0 | 4 | 2 | 39 |
| 2 | SCSX4011 | RDBMS Lab | 0 | 0 | 4 | 2 | 39 |
| Total Credits: 28 | | | | | | | |

SEMESTER VI

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--------------------------|--------------|----------------------------------|---|---|---|---|----------|
| THEORY | | | | | | | |
| 1 | SMTX1014 | Probability & Statistics | 3 | 1 | 0 | 4 | 40 |
| 2 | SITX1001 | Internet Programming | 3 | 0 | 0 | 3 | 41 |
| 3 | SCSX1024 | Network Programming & Management | 3 | 0 | 0 | 3 | 42 |
| 4 | SCSX1020 | Component Based Technologies | 3 | 0 | 0 | 3 | 43 |
| 5 | | Elective – I | 3 | 0 | 0 | 3 | |
| 6 | | Elective- II | 3 | 0 | 0 | 3 | |
| PRACTICAL | | | | | | | |
| 1 | SITX4002 | Internet Programming Lab | 0 | 0 | 4 | 2 | 44 |
| 2 | SCSX4012 | Network Programming Lab | 0 | 0 | 4 | 2 | 44 |
| Total Credits: 23 | | | | | | | |

SEMESTER VII

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|------------------|--------------|---------------------------------|---|---|---|---|--------------------------|
| THEORY | | | | | | | |
| 1 | SMEX1017 | Resource Management Techniques | 3 | 0 | 0 | 3 | 45 |
| 2 | SITX1002 | Web Services | 3 | 0 | 0 | 3 | 46 |
| 3 | SCSX1025 | Wireless & Mobile Networks | 3 | 0 | 0 | 3 | 47 |
| 4 | SCSX1026 | Cryptography & Network Security | 3 | 0 | 0 | 3 | 48 |
| 5 | | Elective – III | 3 | 0 | 0 | 3 | |
| 6 | | Elective – IV | 3 | 0 | 0 | 3 | |
| PRACTICAL | | | | | | | |
| 1 | SITX4003 | Software Components Lab | 0 | 0 | 4 | 2 | 52 |
| | | | | | | | Total Credits: 20 |

SEMESTER VIII

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--|--------------|--|---|---|----|----|--------------------------|
| THEORY | | | | | | | |
| 1 | SBAX1001 | Principles Of Management And Professional Ethics | 3 | 0 | 0 | 3 | 49 |
| 2 | SCSX1028 | Distributed Computing | 3 | 0 | 0 | 3 | 50 |
| 3 | SCSX1029 | Soft Computing | 3 | 0 | 0 | 3 | 51 |
| PRACTICAL | | | | | | | |
| 1 | SITX4004 | Case Tools & Software Development Lab | 0 | 0 | 4 | 2 | 52 |
| 2 | S12XPROJ | Project & Viva Voce | 0 | 0 | 30 | 15 | 52 |
| | | | | | | | Total Credits: 26 |
| Total Credits for the Course: 200 | | | | | | | |

LIST OF ELECTIVES

Note: ONE SUBJECT IS TO BE CHOSEN FROM EACH GROUP COMPULSORILY

| SI.NO | SUBJECT CODE | SUBJECT TITLE | L | T | P | C | Page No. |
|--|--------------|--|---|---|---|---|----------|
| Group I: INFORMATION MANAGEMENT | | | | | | | |
| 1 | SCSX1030 | DataMining and Warehousing | 3 | 0 | 0 | 3 | 53 |
| 2 | SCSX1032 | Management Information System | 3 | 0 | 0 | 3 | 54 |
| 3 | SCSX1033 | Natural Language Processing | 3 | 0 | 0 | 3 | 55 |
| 4 | SCSX1034 | Image Processing | 3 | 0 | 0 | 3 | 56 |
| 5 | SCSX1035 | On-Line Transaction Processing | 3 | 0 | 0 | 3 | 57 |
| 6 | SCSX1036 | Free/Open Source Software | 3 | 0 | 0 | 3 | 58 |
| 7 | SITX1006 | Windows Programming Using VC++ | 3 | 0 | 0 | 3 | 59 |
| 8 | SITX1004 | E- Computing | 3 | 0 | 0 | 3 | 60 |
| 9 | SCSX1022 | J2EE | 3 | 0 | 0 | 3 | 61 |
| 10 | SITX1005 | Online and Real Time Systems | 3 | 0 | 0 | 3 | 62 |
| Group II: SOFTWARE ENGINEERING | | | | | | | |
| 11 | SCSX1038 | Software Quality Assurance And Testing | 3 | 0 | 0 | 3 | 63 |
| 12 | SITX1003 | Enterprise Resource Planning | 3 | 0 | 0 | 3 | 64 |
| Group III: OPERATING SYSTEMS | | | | | | | |
| 13 | SCSX1042 | Robotics | 3 | 0 | 0 | 3 | 65 |
| 14 | SCSX1043 | Unix Internals | 3 | 0 | 0 | 3 | 66 |
| 15 | SITX1007 | Embedded Architecture | 3 | 0 | 0 | 3 | 67 |
| Group IV: NETWORK MANAGEMENT | | | | | | | |
| 16 | SCSX1047 | High Performance Network | 3 | 0 | 0 | 3 | 68 |
| 17 | SCSX1048 | Grid Computing | 3 | 0 | 0 | 3 | 69 |
| 18 | SCSX1049 | Client Server Architecture | 3 | 0 | 0 | 3 | 70 |
| 19 | SCSX1050 | TCP/IP and Socket Programming | 3 | 0 | 0 | 3 | 71 |
| 20 | SCSX1057 | Cloud Computing | 3 | 0 | 0 | 3 | 72 |
| 21 | SECX1020 | Nano Electronics | 3 | 0 | 0 | 3 | 73 |

| | | | | | | |
|----------|---|---|---|---|---------|-------------|
| SHSX1001 | ENGLISH FOR SCIENCE AND TECHNOLOGY (Common to all branches of B.E / B.Tech.) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I **10 hrs.**

Reading comprehension- Skimming and Scanning - Transcoding -Bar diagram, Tables and Pie chart –Discussing topics of general interest or on current topics and making a presentation in the class - Conjunctions and discourse markers- cloze reading- affixes – definitions- tense- voice – jumbled sentences.

UNIT II **10 hrs.**

Subject verb agreement - Idioms and phrases, reading passages to answer evaluative, inferential and hypothetical type of questions- Listening - Creative thinking and speaking- Formal letters - application for job- resume preparation- inviting dignitaries to department workshops, symposium and university functions - Letter to the editor.

UNIT III **10 hrs.**

Reading and summarising reports - Writing a project proposal - Editing - Checking punctuation and grammatical errors- Types of Sentences – preparation of Check List- formulating questions and answers - communicating politely.

UNIT IV **10 hrs.**

Reported speech- Parts of speech- confusable words - Report on industrial visit - project report - Making effective Power Point presentations - speaking about the future plans-expressing opinions-reading and guessing meanings of unknown words from the context – using appropriate verb forms

UNIT V **10 hrs.**

Modal auxiliaries – Presentation of problems and solutions – wh- questions- question tags- punctuation- hyponymy- listening and taking notes – study skills – preparing notes

TEXT / REFERENCE BOOKS:

1. Aeda Abidi & Ritu Chowdary, "English For Engineers Made Easy", Cengage India Learning Limited, New Delhi, 2010
2. Geetha Nagaraj, "A Course In Grammar and Composition", Foundation Books Pvt. Ltd., New Delhi, 2006.
3. Hewings. M, "Advanced English Grammar", Cambridge University Press, Chennai, 2000.
4. Nagini, P S et al, "Excellence Through communication", Shri Jai Publications, Chennai, 2005.
5. Raman M & Sangeetha Sharma, "Technical Communication", Oxford University Press, USA, 2005.
6. Reddy Devika and Chowdhary S, "Technical English", Mac Millan, Chennai. 2009
7. Rizvi, M.A., "Effective Technical Communication", Tata McGRaw Hill Publishing Company Limited, New Delhi, 2006.
8. Verma. Shivendra K, "Interactive Grammar of Modern English", Frank Brothers & Company, India, 2000.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 10 Questions of 2 marks each – no choice

20 marks

Part B: 6 Questions from the five units with internal choice, each carrying 10 marks

60 marks

| SMTX1001 | ENGINEERING MATHEMATICS – I (Common to all branches except Bio Groups) | L | T | P | Credits | Total Marks |
|----------|---|---|---|---|---------|-------------|
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I TRIGONOMETRY**10 hrs.**

Review of Complex numbers and De Moivre's Theorem. Expansions of $\sin n\theta$ and $\cos n\theta$; $\sin\theta$ and $\cos\theta$ in powers of θ , $\sin^n\theta$ and $\cos^n\theta$ in terms of multiples of θ . Hyperbolic functions – Inverse hyperbolic functions. Separation into real and imaginary parts of complex functions

UNIT II MATRICES**10 hrs.**

Characteristic equation of a square matrix - Eigen values and Eigen vectors of a real matrix- properties of Eigen values and Eigen vectors, Cayley-Hamilton theorem (without proof) verification – Finding inverse and power of a matrix. Diagonalisation of a matrix using similarity transformation (concept only) , Orthogonal transformation – Reduction of quadratic form to canonical form by orthogonal transformation.

UNIT III GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS**10 hrs.**

Curvature –centre, radius and circle of curvature in Cartesian co-ordinates only – Involute and evolute – envelope of family of curves with one and two parameters – properties of envelopes and evolutes – evolutes as envelope of normal.

UNIT IV FUNCTIONS OF SEVERAL VARIABLES**10 hrs.**

Functions of two variables – partial derivatives – Euler's theorem and problems - Total differential – Taylor's expansion – Maxima and minima – Constrained maxima and minima – Lagrange's multiplier method – Jacobian – Differentiation under integral sign.

UNIT V ORDINARY DIFFERENTIAL EQUATION**10 hrs.**

Second order linear differential equation with constant coefficients – Particular Integrals for e^{ax} , $\sin ax$, $\cos ax$, x^n , $x^n e^{ax}$, $e^{ax} \sin bx$, $e^{ax} \cos bx$. Equations reducible to Linear equations with constant co-efficient using $x=e^t$. Simultaneous first order linear equations with constant coefficients - Method of Variations of Parameters.

TEXT / REFERENCE BOOKS:

1. Veerarajan. T , "Engineering Mathematics for First Year", Tata McGraw Hill Publishers ,II Edition ,2008.
2. Kandaswamy.P. & co., "Engineering Mathematics for First Year", S.Chand & Co Pub., IX revised edition, 2010.
3. Moorthy M.B.K, Senthilvadivu. K , "Engineering Mathematics-I", VRB Pub., Revised Edition, 2010.
4. Arumugam. S & co. "Engineering Mathematics Vol-I", SciTech Pub., Revised Edition, 2010.
5. Venkataraman M.K., "Engineering Mathematics – First Year" (2nd edition), National Publishing Co., 2000.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

PART A : 2 Questions from each unit, each carrying 2 marks

20 marks

PART B : 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

| SPHX1001 | PHYSICS OF MATERIALS (Common to all Branches of B.E / B.Tech) | L | T | P | Credits | Total Marks |
|----------|--|---|---|---|---------|-------------|
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I CONDUCTING AND SUPERCONDUCTING MATERIALS**10 hrs.**

Classical Free electron theory of Metals-Derivation of Electrical and Thermal Conductivity- Deduction of Wiedemann Franz law-Lorentz number. Introduction to Band theory, Difference between Conductors, Semiconductors and Insulators - Superconductivity-Transition temperature - occurrence of superconductivity - BCS Theory(Qualitative), properties of superconductors -Type I &Type II superconductors, High T_c superconductors, AC & DC Josephson effects. Applications of superconductors – basic concepts of SQUID, cryotron, magnetic levitation.

UNIT II MAGNETIC AND DIELECTRIC MATERIALS**10 hrs.**

Types based on spin. Hard and soft magnetic materials, domain theory of Ferromagnetism, magnetic bubbles, formation and propagation of magnetic bubbles, applications of magnetic materials - Magnetic storage devices. Dielectric parameters, polarization, polarisability, types of polarization. Internal or local electric field - derivation of Lorentz Equation and Clausius - Mossotti Equation, dielectric loss and breakdown, types of dielectric breakdown, types of dielectric materials, applications.

UNIT III OPTICAL MATERIALS**10 hrs.**

Optical processes and Excitons - types, Traps - Trapping and recombination, types, Point defects –Frenkel and Schottky defects - Colour centers - types and their mechanisms, Luminescence - Photoluminescence - Types-Fluorescence and Phosphorescence- Mechanism and its applications, Cathodoluminescence, Electroluminescence. Non-linear Optical Materials – Basic Principle, Classifications, Properties - Frequency Doubling or Tripling, Optical Mixing - Applications.

UNIT IV MODERN ENGINEERING MATERIALS**10 hrs.**

Metals and alloys – steel and its properties - Iron-carbon phase diagram, Titanium and Aluminium based alloys - Introduction, properties and Applications. Shape Memory Alloys (SMA) - Principle of shape memory effects, Hysteresis curve, Two way shape memory alloys, super-elasticity and thermo-mechanical behavior. Characterization methods to identify the phase transformation of SMA, commercial SMA – Ni-Ti alloys, copper alloys and Cu-Al alloys, Applications. Ceramics – Classification, Properties, fabrication, advanced ceramics and applications. Composites – particle reinforced composites and fiber reinforced composites – processing and applications.

UNIT V CHARACTERIZATION OF MATERIALS**10 hrs.**

Structural characterization – X-ray diffraction, electron diffraction and neutron diffraction – Determination of crystal structure. Difference among these diffraction techniques. Micro structural characterization – optical microscope, scanning electron microscope, transmission electron microscope, atomic force microscopy, micro and nano hardness testing – principle and applications.

REFERENCE BOOKS :

1. Ragavan.V, Material science and Engineering, 5th Edition, Eastern Eco, 2004.
2. Suresh.R and Jayakumar.V, Materials Science, 1st Edition, Lakshmi Publication, 2003.
3. Wilson.J and Hawkes.J.F.B, Optoelectronics- An Introduction, 2nd Edition, Prentice-Hall of India, 2001.
4. Dr.Arumugam M., Semiconductor Physics and Opto electronics, 1st Edition, Anuradha Publishers, 2003.
5. Gaur.R.K and Gupta.S.L, Engineering Physics, 8th Edition, Dhanbat Rai Publications,2007.
6. Palanisamy.P.K, Engineering Physics, 1st Edition, SCITECH Publications, 2007.
7. Sankar.B.N and Pillai.S.O, A text book of Engineering Physics, 1st Edition, New Age international Publishers, 2007.
8. Rajendran.V, Engineering Physics, 2nd Edition, Tata McGraw-Hill, 2008.
9. Avadhanulu.M.N and P.G. Kshirsagar.P.G, Engineering Physics, 2nd Edition, S. Chand & Company, 2007.
10. Dr. Arumugam M., Engineering Physics, 2nd Edition, Anuradha Publications, 2002.
11. William D.Callister,Jr, Materials Science and Engineering An introduction, 6th Edition, John-Wiley and Sons,2004.
12. Cullity.B.D, Principles of X-ray diffraction, 3rd Edition, Prentice Hall, 2001

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks: 80

Exam Duration: 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Out of 20 marks, maximum of 10% problems may be asked.

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

Out of 60 marks, maximum of 10% problems may be asked**'Applications' mentioned in the syllabus refer to the basic applications and not to any specific case.**

| | | | | | | |
|----------|---|---|---|---|---------|-------------|
| SCYX1001 | ENGINEERING CHEMISTRY (Common to All Branches) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I WATER TECHNOLOGY**10 hrs.**

Introduction: Impurities present in water, Hardness: Types of hardness, Expression, Units. Estimation of hardness by EDTA method, Problems. Boiler Troubles: Sludge & Scales, Boiler Corrosion. Water Softening: Zeolite process, Demineralization process, Merits and Demerits. Reverse osmosis, Merits and Demerits. Domestic water treatment: Flow chart diagram only.

UNIT II BATTERIES AND FUEL CELLS**10 hrs.**

Introduction - Battery terminology: Primary cells, Secondary batteries, Charging and Discharging characteristics, Capacity, Energy density, Cycle life, Internal resistance. Secondary batteries: Lead-acid accumulator, Nickel-cadmium batteries, Lithium primary cells: Lithium-thionyl chloride cell, Lithium-iodine cell. Lithium secondary batteries: Lithium-ion batteries. Fuel cells: Hydrogen-Oxygen fuel cell, Solid oxide fuel cell (SOFC): Principle, construction, anode cathode and electrolyte. Proton Exchange Membrane Fuel Cell.

UNIT III CORROSION SCIENCE**10 hrs.**

Introduction - Electrochemical cell representation. Electrochemical series: Significance. Galvanic series.

Corrosion: Definition of corrosion, Dry corrosion: Mechanism of Dry corrosion, Pilling-Bedworth rule, Wet Corrosion: Mechanism. Types of corrosion: Galvanic corrosion, Differential aeration corrosion, Pitting corrosion, Microbial Corrosion. Factors influencing corrosion: Nature of the metal, nature of the environment. Corrosion control: Material selection and Design, Cathodic protection. Corrosion inhibitors: Anodic, cathodic and Vapour phase inhibitors.

UNIT IV EXPLOSIVES AND ROCKET PROPELLANTS**10 hrs.**

Introduction - Explosives: Requirements, Classification of Explosives: Low explosives, primary explosives and high explosives. Assessment of explosives.

Rocket engines: Types of rocket engines. Basic principle, Mass fraction, Specific impulse, Thrust, Effective exhaust velocity, Specific propellant consumption. Chemical propellants: Requirements, Classification: Liquid fuels, Liquid oxidizers, Solid fuels, Solid oxidizers.

UNIT V SURFACE CHEMISTRY**10 hrs.**

Introduction. Adsorption: Types, Adsorption of gases on solids, Adsorption of solutes from solution. Adsorption isotherms: Freundlich adsorption isotherm, Langmuir adsorption isotherm. Industrial adsorbent materials: Role of adsorbents in catalysis and water softening. Emulsion: Types: water/oil, oil/water. Applications of adsorption: Cottrell's precipitator, Coating of rubber on metals, Electrostatic painting.

TEXT / REFERENCE BOOKS:

1. Jain P.C. and Monica Jain, Engineering Chemistry, 15th Edition Dhanpat Rai Publishing Co. 2009
2. Dara S.S., Text Book of Engineering Chemistry, S.Chand & Co, 2008
3. Sheik Mideen A., Engineering Chemistry (I & II), 13th Edition, Shruthi Publishers, 2010
4. Parameswara Murthy C, Agarwal C V, Andra Naidu, Textbook of Engineering Chemistry, B S Publications, 2006
5. Kuriakose J.C. and Rajaram J., Chemistry in Engineering and Technology, Vol.1 & 2, 5th reprint, Tata McGraw Hill Publishing Company (P) Ltd., 2010.
6. Sharma B.K., Engineering Chemistry, 2nd Edition, Krishna Prakasam Media (P) Ltd., 2001
7. Puri Br, Sharma Lr, Madhan S Pathania, Principles of Physical Chemistry, 41st Edition, Vishal Publishing Co., 2004
8. Mars G Fontana, Corrosion Engineering, 3rd Edition, Tata McGraw Hill, 2008
9. David Linden, Thomas B Reddy, Handbook of Batteries, 4th Edition, McGraw-Hill, 2010
10. George Paul Sutton, Oscar Biblarz, Rocket Propulsion Elements, 8th Edition, John Wiley & Sons, 2010

UNIVERSITY EXAM QUESTION PAPER PATTERN:

Max. Marks: 80

Exam Duration: 3 hrs

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

One problem for 5 marks may be asked in Unit 1 - Water Technology

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|----------|--|---|---|---|---------|-------------|
| SCHX1001 | ENVIRONMENTAL SCIENCE AND ENGINEERING (Common to All Branches) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO ENVIRONMENTAL STUDIES AND NATURAL RESOURCES 12 hrs.

Definition, scope and importance - need for public awareness - forest resources: use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams, floods, drought, conflicts over water, dams-benefits and problems - mineral resources: use effects on forests and tribal people - water resources: use and over-utilization of surface and ground water - exploitation, environmental effects of extracting and using mineral resources, case studies - food resources: world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies - energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies - land resources: land as a resource, land degradation, man induced landslides, soil erosion and desertification - role of an individual in conservation of natural resources - equitable use of resources for sustainable lifestyles.

UNIT II ECOSYSTEMS AND BIODIVERSITY 12 hrs.

Concept of an ecosystem - structure and function of an ecosystem - producers, consumers and decomposers - energy flow in the ecosystem - ecological succession - food chains, food webs and ecological pyramids - introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) - introduction to biodiversity: definition: genetic, species and ecosystem diversity - biogeographical classification of India - value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values - biodiversity at global, national and local levels - India as a mega-diversity nation - hot-spots of biodiversity - threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts - endangered and endemic species of India - conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.

UNIT III ENVIRONMENTAL POLLUTION 10 hrs.

Definition - causes, effects and control measures of: (a) air pollution (b) water pollution (c) soil pollution (d) marine pollution (e) noise pollution (f) thermal pollution (g) nuclear hazards - solid waste management: causes, effects and control measures of urban and industrial wastes - role of an individual in prevention of pollution - pollution case studies - disaster management: floods, earthquake, cyclone and landslides.

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT 8 hrs.

From unsustainable to sustainable development - urban problems related to energy - water conservation, rain water harvesting, watershed management - resettlement and rehabilitation of people; its problems and concerns, case studies - environmental ethics: issues and possible solutions - climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. - wasteland reclamation - consumerism and waste products - environment protection act - air (prevention and control of pollution) act - water (prevention and control of pollution) act - wildlife protection act - forest conservation act - issues involved in enforcement of environmental legislation - public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT 8 hrs.

Population growth, variation among nations - population explosion - family welfare programme - environment and human health - human rights - value education - HIV / AIDS - women and child welfare - role of information technology in environment and human health - case studies.

Visit to a local area to document environmental assets-river/forest/grassland/hill/mountain. Visit to a local polluted site-urban/rural/ industrial/agricultural-study of common plants, insects, birds-study of simple ecosystems-pond, river, hill slopes etc.

TEXTBOOK / REFERENCE BOOKS:

1. Meenakshi.P, Elements of Environmental Science and Engineering, 1st edition, PHI New Delhi, 2009.
2. Ravikrishnan. A, Environmental Science & Engineering, 3rd edition, Sri Krishna Publications, Chennai.
3. Wrigh.R.T & Nebel B.J, Environmental science-towards a sustainable future by Richard 8th edition, prentice hall of India, Newdelhi
4. Erach Bharucha ,Text Book of Environmental Studies, University Press, Chennai.
5. Anjanayelu.Y, Introduction to Environmental Engineering, B.S.Publications.

UNIVERSITY EXAM QUESTION PAPER PATTERN:

Max. Marks: 80

Exam Duration: 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1001 | DESIGN AND ANALYSIS OF ALGORITHMS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO COMPUTER PROBLEM SOLVING**10 hrs.**

Introduction - The Problem-Solving aspect, top-down design-Implementation of Algorithms-program verification-The efficiency of algorithms-The analysis of algorithms-Fundamental Algorithms: Introduction-Exchanging the values of two variables-Counting-Summation of a set of Numbers-factorial computation-Sine function computation-Generation of the Fibonacci sequence-Reversing the digits of an integer, base conversion-Character to Number conversion.

UNIT II FACTORING METHOD**10 hrs.**

Introduction - Finding the square root of a number-The smallest divisor of an integer-The greatest common divisor of two integers-Generating Prime Numbers-Computing the Prime Factors of an integer-Generation of Pseudo-random Numbers-Raising a Number to a Large Power-Computing the nth Fibonacci Number.

UNIT III ARRAY TECHNIQUES**10 hrs.**

Introduction - Array Order Reversal-Array Counting or Histogramming-Finding the maximum Number in a Set-Removal of Duplicates from an Ordered Array-Partitioning an Array-Finding the kth smallest Element-Longest Monotone Subsequence.

UNIT IV MERGING SORTING AND SEARCHING**10 hrs.**

Introduction - The Two-way Merge-Sorting by Selection-Sorting by Exchange-Sorting by Insertion-Sorting by Diminishing Increment-Sorting by Partitioning-Binary Search-Hash Searching.

UNIT V TEXT PROCESSING AND PATTERN SEARCHING**10 hrs.**

Introduction -Text Line Length Adjustment-Left and Right Justification of Text-Keyword Searching in Text-Text Line Editing-Linear Pattern search-Sublinear Pattern Search.

REFERENCE BOOKS:

1. Dromey.R.G, "How to Solve it by Computer", Prentice-Hall of India, 1996.
2. Aho.A.V., Hopcroft.J.E and Ullman.J.D, "The Design and Analysis of Computer Algorithms", Pearson education, 2004
3. Knuth,D.E., "The Art of computer programming Vol 1:Fundamental Algorithms", 3rd Edition, Addison Wesley, 1997
4. Knuth,D.E., "Mathematical Analysis of algorithms", Proceedings IFIP congress, 1971

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

| SCSX1002 | PROGRAMMING IN C (Common to all Branches of B.E / B.Tech.) | L | T | P | Credits | Total Marks |
|----------|---|---|---|---|---------|-------------|
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I **10 hrs.**

Introduction: Algorithms & flowcharts-Overview of C-Features of C-IDE of C Structure of C program-Compilation & execution of C program-Identifiers, variables, expression, keywords, data types, constants, scope and life of variables, local and global variables. Operators: arithmetic, logical, relational, conditional and bitwise operators- Special operators: size of () & comma (,) operator-Precedence and associativity of operators & Type conversion in expressions.

Basic input/output and library functions: Single character input/output i.e. getch(), getchar(), getche() & putchar()-Formatted input/output: printf() and scanf()-Library Functions: concepts, mathematical and character functions.

UNIT II **10 hrs.**

Control structures: Conditional control-Loop control and Unconditional control structures.

Functions: The Need of a function-User defined and library function- Prototype of a function-Calling of a function-Function argument-Passing arguments to function- Return values-Nesting of function- main()-Command line arguments and recursion. Storage class specifier – auto, extern, static, & register.

UNIT III **10 hrs.**

Arrays: Single and multidimensional arrays-Array declaration and initialization of arrays-Array as function arguments.

Strings: Declaration-Initialization and string handling functions.

Structure and Union: Defining structure-Declaration of structure variable-Accessing structure members-Nested structures-Array of structures-Structure assignment-Structure as function argument-Function that returns structure- Union.

UNIT IV **10 hrs.**

Pointers: The '&' and * operators-Pointers expressions-Pointers vs arrays-Pointer to functions-Function returning pointers-Static and dynamic memory allocation in C.

DMA functions: malloc(), calloc(), sizeof(), free() and realloc()-Preprocessor directives.

UNIT V **10 hrs.**

File management: Defining, opening & closing a file, text file and binary file- Functions for file handling: fopen, fclose, gets, puts, fprintf, fscanf, getw, putw, fputs, fgets, fread, fwrite-Random access to files: fseek, ftell, rewind-File name as Command Line Argument.

Graphics in PC: Initialize Graphics Mode-Functions used In Graphics - Drawing a Point on the Screen-Drawing lines, rectangles, ovals, circles, arcs, polygon, filling colors-Using Text in Graphics Display.

REFERENCE BOOKS:

1. Balaguruswami.E, 'Programming in C', TMH Publications,1997
2. Behrouz A. Forouzan & Richard F. Gilberg, "Computer Science A Structured Programming using C", Cengage Learning, 3rd Edition, 2007
3. Gottfried , 'Programming with C', schaums outline series, TMH publications,1997
4. Mahapatra , 'Thinking in C', PHI publications, 2nd Edition, 1998.
5. Stevens , 'Graphics programming in C', BPB publication, 2006
6. Subbura.R , 'Programming in C', Vikas publishing, 1st Edition, 2000

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|-----------------|---|---|---|---------|-------------|
| SPHX4001 | PHYSICS LAB - I | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 2 | 1 | 50 |

LIST OF EXPERIMENTS

1. Torsional pendulum- Determination of MI of the disc and rigidity modulus of the wire.
2. Quincke's method - Determination of magnetic susceptibility of a liquid
3. Semiconductor diode - Determination of width of the forbidden energy gap
4. Ultrasonic interferometer – Determination of Compressibility of liquid
5. Lees disc - Determination of thermal conductivity of a bad conductor.
6. Optical Fiber – Determination of Numerical aperture and attenuation loss.

| | | | | | | |
|----------|-------------------|---|---|---|---------|-------------|
| SCYX4001 | CHEMISTRY LAB - I | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 2 | 1 | 50 |

LIST OF EXPERIMENTS

1. Determination of total, permanent and temporary hardness of a water sample.
2. Estimation of copper in an ore by iodometric titration.
3. Determination of strength of HCl by conductometric titration.
4. Estimation of the amount of ferrous ion by titrating with chromate ion using potentiometer.
5. Verification of the Freundlich isotherm by using acetic acid adsorption on charcoal.
6. Determination of the rate of corrosion of iron metal by hydrogen evolution method.

| | | | | | | |
|----------|----------------------|---|---|---|---------|-------------|
| SCSX4001 | PROGRAMMING IN C LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

LIST OF EXPERIMENTS

1. (a) Implementation of Sine series.
(b) Generation of Fibonacci series
(c) Reversing the digits of an integer
2. Conversion of decimal number to octal number
3. Conversion of character integer to decimal number
4. Finding the square root of a given number by applying algorithm
5. (a) Find GCD of two numbers
(b) Generate Prime numbers between 1 and n.
6. Removal of duplicates from array and finding the maximum number in an array.
7. Given a set of n numbers, find the length of the longest monotone increasing subsequence.
8. Sort by exchange, selection and partitioning method
9. Linear and binary search.
10. Pattern matching
11. Files operations.

| SMTX1002 | ENGINEERING MATHEMATICS II (Common to all branches Except BIO Groups) | L | T | P | Credits | Total Marks |
|----------|--|---|---|---|---------|-------------|
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I THEORY OF EQUATIONS**10 hrs.**

Relation between roots and Co-efficient of equations – Symmetry function of roots – Formation of equations – To increase or decrease the roots of a given equation by a given quantity – Reciprocal equations – Descartes rule of signs – Cardon's method of solving cubic equations.

UNIT II THREE DIMENSIONAL ANALYTICAL GEOMETRY**10 hrs.**

Direction cosines and ratios – The equation of a plane – Equation to a straight line – Shortest distance between two skew lines – Coplanar lines – Sphere – Tangent line – Plane section of a sphere – Orthogonal spheres.

UNIT III INTEGRAL CALCULUS**10 hrs.**

Double integrals – Change of order of integration – Change of Variables from Cartesian to Polar coordinates – Area - using double integral - Triple integrals - Volume using Triple integrals.

UNIT IV BETA AND GAMMA FUNCTIONS**10 hrs.**

Properties of definite Integrals – Related definite Integrals – Reduction formulae for e^{ax} , $x^n \sin ax$, $x^n \cos ax$, $\sin^n x$, $\cos^n x$ and $\sin^m x \cos^n x$. Definitions of Beta and Gamma integrals – Relation between them – Properties – Evaluation of definite integrals in terms of Beta and Gamma function – Simple applications.

UNIT V VECTOR CALCULUS**10 hrs.**

Differentiation of a vector function – Gradient, divergence and curl – Directional derivative – Identities (without proof) - Irrotational and Solenoidal fields, Vector Integration – Line, Surface and Volume Integrals, Integral theorems (without proof), Green's theorem (in the plane), Gauss divergence theorem and Stoke's theorem – Simple applications involving rectangles and cuboids.

TEXT / REFERENCE BOOKS:

1. Veerarajan.T, "Engineering Mathematics for First Year", 2nd Edition , Tata McGrawHill Publications ,2008
2. Kandaswamy. P & co., "Engineering Mathematics for First Year", 9th revised Edition, S.Chand & Co Pub., 2010
3. Arumugam.S & co, "Engineering Mathematics Vol-II", Revised Edition, SciTech Pub., 2010
4. Grewal. B.S, "Higher Engineering Mathematics", 40th Edition, Khanna Publications, 2007
5. Chandrika Prasad, "Text book on Algebra and theory of equations", Pothishala Private Ltd., Allahabad, 2009

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

| SPHX1002 | APPLIED PHYSICS (Common For All Branches) | L | T | P | Credits | Total Marks |
|----------|--|---|---|---|---------|-------------|
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I FIBER OPTICS**10 hrs.**

Introduction - Principle and structure of optical fibers-Acceptance angle-Numerical aperture-Types of optical fibers-Preparation of fiber – Double crucible technique-Types of rays-Theory of propagation of light-Energy loss in optical fiber- Attenuation and distortion-Fiber splicing – Fusion and mechanical splicing-Fiber connectors -Butt joint and expanded beam connectors-Optical fiber communication system (block diagram) - Advantages and its applications.

UNIT II ACOUSTICS OF BUILDINGS**10 hrs.**

Introduction – Musical sound & noise-Characteristics of musical sound : pitch, loudness, quality – Weber-Fechner law-Relation between pitch & frequency-Factors on which intensity & loudness depend-Decibel scale-Sound intensity level and sound pressure level-Sound absorption-OWU-Sound absorption coefficient and its measurements – Reverberation - Reverberation time – Standard Reverberation time – Sabine’s formula to determine the Reverberation time (Jaegar method)- Factors affecting the acoustics of a building and the remedies-Principles to be followed in the acoustical design of a good auditorium.

UNIT III FUNDAMENTALS OF DIGITAL ELECTRONICS**10 hrs.**

Number systems - Binary, decimal, Hexadecimal and Octadecimale-Conversion from one number system to another-Binary addition-Subtraction - Subtraction by 1's & 2's complement- BCD-ASCII-Excess 3 code and gray code.

UNIT IV NANO DEVICES**10 hrs.**

Definition-Fabrication-Top down approach and bottom up approach-Nanomagnets – Particulate Nanomagnets, Geometrical Nanomagnets-Magneto Resistance – Ordinary Magneto Resistance, Giant Magneto Resistance, Tunneling Magneto Resistance- Probing Nanomagnetic Materials-Nanomagnetism in Technology-Nano Devices – Injection Laser – Quantum Cascade Laser – Optical Memories and Coulomb Blockade Devices

UNIT V MEDICAL PHYSICS**10 hrs.**

Ultrasonics –Introduction- Production of ultrasonic waves - Piezo-electric method-properties-Doppler effect - Blood flow meter – Determination of upward and downward transit time- A- scan, B-scan and M-scan-X-rays – Introduction-Units of X-rays- Diagnostic technologies of X-rays – Radiography-Fluoroscopy-Image intensifier-Nuclear medicine – Introduction-units of radioactivity, ^{99m}Tc generator, nuclear medicine imaging devices - Gamma camera.

REFERENCE BOOKS :

1. Mathur.D.S, Heat and Thermodynamics, 5th Edition, Sultan Chand & Sons, 2004.
2. Gerd Keiser, Optical fiber communication, 3rd Edition, Tata Mc Graw Hill, 2000.
3. John M. Senior, Optical fiber communications - Principle and Practice, 2nd Edition, Pearson Education, 2006.
4. Franz J.H, Jain V.K, Optical communication – Components and Systems,1st Edition, Narosa Publications, 2001.
5. Malvino,Leach & Gautam Saha, Digital Principles and applications, 6th Edition, McGraw Hill, 2006.
6. William H. Gothman, Digital electronics – An int. to theory and practice,2nd Edition, PHL of India, 2007.
7. Roy, Medical Bio Physics, 1st Edition, Saras Publications, 2001.
8. Vasantha Pattabhi, Bio Physics, 1st Edition, Narosa, 2004.
9. Gaur. R.K. and Gupta. S.L., Engineering Physics, 8th edition, Dhanbat Rai Publications,2007.
10. Avadhanulu. M.N. and. Kshirsagar. P.G, Engineering Physics, 2nd edition, S. Chand & Company, 2007.
11. Dr. Arumugam M., Engineering Physics, 2nd edition, Anuradha Publications, 2002.
12. William D.Callister, Jr, Materials Science and Engineering An introduction, 6th Edition, John-Wiley and Sons, 2004.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks: 80

Exam Duration: 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Out of 20 marks, maximum of 10% problems may be asked

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

Out of 60 marks, maximum of 10% problems may be asked**'Applications' mentioned in the syllabus refer to the basic applications and not to any specific case**

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|----------|--|---|---|---|---------|-------------|
| SCYX1002 | CHEMISTRY OF ELECTRONIC MATERIALS (Common to CSE, IT, EEE, ECE, ETCE, E&I and E&C) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I POLYMER MATERIALS**10 hrs.**

Introduction - Functionality of monomer and its significance. Types of Polymerisation: Addition, Condensation and Copolymerisation. Plastics: Thermoplastics, Thermosetting plastics. Moulding constituents of plastics. Moulding methods: Compression moulding, Injection moulding, Extrusion moulding. Conducting polymers: definition, Examples with applications of Polyacetylene and Polyaniline. Optical fibers: Definition, Principle. Plastic optical fibers: Polymethyl methacrylate, Perfluorinated polymers. Biodegradable polymers: Definition, Classification and application.

UNIT II INTRODUCTION TO NANOMATERIALS**10 hrs.**

Introduction - Nanomaterials: definition, properties. Types: Nanoparticles, Synthesis by Chemical reduction method. Nanoporous materials: Synthesis by Sol-gel method. Nanowires: Synthesis by VLS mechanism. Carbon Nanotubes: Singlewalled and multiwalled nanotubes. Mechanical and electrical properties .Applications. Synthesis: Electric arc discharge method , Physical Vapour Deposition (PVD), Chemical Vapour Deposition (CVD), Laser Ablation method.

UNIT III INSTRUMENTAL METHODS OF ANALYSIS**10 hrs.**

Beer - Lambert's law. Spectrophotometer: Principles, Instrumentation (block diagram only). DSC, X - ray Diffractometer, TGA, DTA, SEM: Principle, block diagram and applications. Sensors: Oxygen sensor and Glucose sensor.

UNIT IV MAGNETIC AND INSULATING MATERIALS**10 hrs.**

Magnetic materials: Introduction. Types: Ferro magnetic, Ferri magnetic, Antiferro magnetic, Para and diamagnetic materials with examples. Magnetically soft and hard materials.

Insulating materials: Classification: Heat Insulating materials, Characteristics. Types: Organic and inorganic insulators. Sound Insulating materials: Characteristics, Types: Soft, Semi-hard and Hard materials. Electrical Insulating materials (dielectrics): Characteristics, Types: Solid, Liquid and Gaseous materials.

UNIT V ELECTRICAL AND ELECTRONIC MATERIALS**10 hrs.**

Electrical Materials: Resistivity, heating elements with examples(Nichrome, Molybdenum silicide)

Electronic Materials: Types of Semiconductors: Intrinsic and Extrinsic Types, Non-Elemental semi-conducting materials. Preparation of Pure Ge/ Si: Distillation, Zone Refining, Czochralski Crystal Pulling Technique, Doping Techniques, Epitaxy, Diffusion and Ion- Implantation Techniques. Applications.

TEXT / REFERENCE BOOKS:

- Jain P.C. and Monica Jain, Engineering Chemistry, 15th Edition, Dhanpat Rai Publishing Co. 2009
- Parameswara Murthy C, Agarwal C V, Andra Naidu, Textbook of Engineering Chemistry, B S Publications, 2006
- Charles P.Poole Jr, and Frank J Owens, Introduction to Nanotechnology, John Wiley and Sons 2006.
- Sheik Mideen A., Engineering Chemistry (I & II), 13th Edition, Shruthi Publishers, 2010
- Dara S.S., Text Book of Engineering Chemistry, Reprint, S.Chand & Co, 2009
- Kuriakose J.C. and Rajaram J., Chemistry in Engineering and Technology",. Vol.1 & 2, 5th Reprint, Tata McGraw Hill Publishing Company (P) Ltd., 2010
- Rajput R.K., Textbook of Engineering Materials, 2nd Edition (revised), S. Chand & Co 2004
- Skoog, Holler and Nieman, Principles of Instrumental Analysis, 5th Edition, Thomas Inc., 2003.
- Willard Merit Dean Settle, Instrumental Methods of Analysis, Seventh Edition, CBS Publishers and Distributors

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

| SMEX1001 | ENGINEERING GRAPHICS (Common to all Branches of B.E / B.Tech) | L | T | P | Credits | Total Marks |
|----------|--|---|---|---|---------|-------------|
| | | 1 | 2 | 0 | 3 | 100 |

UNIT I CONSTRUCTION OF PLANE CURVES**10 hrs.**

Introduction - Importance of graphics in engineering applications – Use of drafting instruments – BIS specifications and conventions – Size, layout and folding of drawing sheets – Lettering and dimensioning- Polygons used in engineering practice– methods of construction of pentagon and hexagon– Construction of ellipse, parabola and hyperbola.

UNIT II PROJECTION OF POINTS AND LINES**10 hrs.**

General principles of orthographic projection – first angle projection – layout of views – projections of points, straight lines located in the first quadrant – Determination of true lengths of lines and their inclinations to the planes of projection – Traces

UNIT III PROJECTION OF SOLIDS AND SECTION OF SOLIDS**10 hrs.**

Projection of solids like prism, pyramid, cylinder and cone when the axis is inclined to only one plane of projection – Change of position method only - Sectioning of above mentioned solids in simple vertical positions by cutting plane inclined to one reference plane and perpendicular to the other – True shapes of sections

UNIT IV DEVELOPMENT OF SURFACES AND FREE HAND SKETCHING**10 hrs.**

Need for development of surfaces – Development of lateral surfaces of simple and truncated solids – Prisms, pyramids, cylinders and cones.- Pictorial representation of engineering objects – Representation of three dimensional objects in two dimensional media – Need for multiple views – Developing visualization skills through free hand sketching of three dimensional objects.

UNIT V ISOMETRIC PROJECTIONS & PERSPECTIVE PROJECTIONS**10 hrs.**

Principles of isometric projection – Isometric scale – Isometric projections of simple solids and combination of solids - Prisms, pyramids, cylinders, cones and spheres (excluding isometric projections of truncated solids) - Perspective projections - Simple objects like – cube, prisms, pyramids by Vanishing point method & Visual Ray method (excluding perspective projections of truncated solids)

TEXT BOOKS / REFERENCE BOOKS:

1. Natarajan, K.V, " A Textbook of Engineering Graphics", Dhanalakshmi Publishers, Chennai, 2006 .
2. Venugopal, K. and Prabhu Raja, V., "Engineering Graphics", New Age International(P) Ltd.,2008.
3. Ramachandran. S, Pandian. K, Ramanamurthy. E.V.V. and Devaraj. R "Engineering Graphics", AirWalk Publications, Chennai, 2009
4. IS 10711-2001: Technical Products Documentation – Size and Layout of Drawing Sheets
5. IS 9609 (Parts 0 & 1)-2001: Technical Products Documentation – Lettering
6. IS 10714(Part 20)-2001 & SP 46 -2003: Lines for Technical Drawings
7. IS 11669-1986 & SP 46-2003: Dimensioning of Technical Drawings
8. IS 15021(Parts 1 to 4)-2001: Technical Drawings-Projection Methods

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

Part B - Split up:

Unit 1: 1 question from construction of hexagon / pentagon / ellipse &

1 question from construction of parabola / hyperbola

Unit 2: 1 question from projection of points & 1 question from projection of lines inclined to both the planes.

Unit 3: 1 question from projection of solids & 1 question from section of solids.

Unit 4: 1 question from development of surfaces & 1 question from orthographic projection.

Unit 5: 1 question from isometric projection & 1 question from perspective projection.

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|----------|--|---|---|---|---------|-------------|
| SEEX1003 | ELECTRICAL ENGINEERING (Common to CSE, IT & BIO MED) | L | T | P | Credits | Total Marks |
| | | 2 | 1 | 0 | 3 | 100 |

UNIT I D.C.CIRCUITS**12 hrs.**

Electrical quantities-Ohm's Law-Resistors – Series and parallel combinations -Kirchoff's laws-Node and Mesh Analysis-Star delta Transformation.

UNIT II A.C.CIRCUITS**10 hrs.**

Sinusoidal functions – RMS (effective) and Average values- Phasor representation – J operator – Sinusoidal excitation applied to purely resistive, inductive and capacitive circuits – RL, RC and RLC series and parallel circuits – Power and power factor.

UNIT III NETWORK THEOREMS (BOTH DC & AC)**10 hrs.**

Superposition Theorem – Reciprocity Theorem – Thevenin's Theorem – Norton's Theorem – Maximum Power Transfer Theorem.

UNIT IV MAGNETIC CIRCUITS**10 hrs.**

Definition of MMF, Flux and reluctance – Leakage factor – Reluctances in series and parallel (series and parallel magnetic circuits) – Electromagnetic induction – Fleming's rule – Lenz's law – Faraday's laws – Statically and dynamically induced EMF – Self and mutual inductance– Analogy of electric and magnetic circuits.

UNIT V INTRODUCTION TO MACHINES**8 hrs.**

Construction and principle of DC Generator – Emf equation – Types, Principle of DC Motor – Types, Construction and principle of single phase Transformer, Stepper motor, AC and DC servomotor.

TEXT BOOKS

1. Mittle. B.N, Aravind Mittle, "Basic Electrical Engineering" , Tata McGraw Hill", 2nd Edition, Reprint 2009.
- 2 Theraja. L, "Fundamentals of Electrical Engineering and Electronics", S.Chand & Co., First Multi colour Edition, 2006.

REFERENCE BOOKS :

1. Smarajit Ghosh, "Fundamentals of Electrical and Electronics Engineering", 2nd Edition, PHI Learning Private Ltd, 2010.
2. Wadhwa. C.L, "Basic Electrical Engineering" , New Age International, 4th Edition, 2007.
3. Sivanagaraju S, G.Kishor & Srinivasa Rao. C, "Electrical Circuit Analysis", Cengage Learning, 1st Edition, 2010.
4. Nitin Saxena, " Electrical Engineering", Laxmi Publications Pvt Ltd, 2nd Edition 2010.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

(Distribution may be 60% Theory & 40 % Numerical)

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|----------|--|---|---|---|---------|-------------|
| SECX1008 | ELECTRONIC DEVICES AND CIRCUITS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I SEMICONDUCTOR DEVICES**10 hrs.**

Energy band diagram in solids - Review of intrinsic and extrinsic semiconductors - Charge density in semiconductor - Mobility and Conductivity - Conductivity Modulation - Hall effect - Drift and diffusion current - Operation of PN junction - Breakdown in PN junction - Theory of junction capacitance - VI characteristics of junction diode - Zener diode - Varactor diode - Tunnel diode - SCR - UJT-Photo diode - Phototransistor - Rectifiers.

UNIT II TRANSISTORS**10 hrs.**

Principles of NPN and PNP transistor - Input and Output characteristics of CE,CB,CC configuration - Base width modulation - Small and large signal models - Hybrid parameter for CE configuration - Thermal runaway problems - JFET -operation and characteristics-Parameters of JFET-Small signal model - MOSFET- Enhancement and Depletion mode operation - characteristics-comparison of MOSFET and JFET, comparison of BJT and JFET.

UNIT III AMPLIFIERS**10 hrs.**

Biasing of BJT - Self biasing - DC and AC load line analysis - Analysis of CE and CC amplifiers - Frequency response - Class A and Class B power amplifiers - Efficiency - Single Tuned Amplifier - Double tuned amplifier.

UNIT IV FEEDBACK AMPLIFIERS AND OSCILLATORS**10 hrs.**

Negative Feedback - Types of Feedback - Characteristics of Negative Feedback amplifiers - Oscillators - Analysis of RC Phase Shift Oscillators - Hartly and Colpitt's Oscillators - Operation of Bistable, Monostable and Astable Multivibrators.

UNIT V LINEAR INTEGRATED CIRCUITS**10 hrs.**

Differential Amplifier - Basic building blocks of OP Amp - Characteristics and parameters of OP Amp - Applications of OP Amp - Summer, Subtractor, Integrator, Differentiator, Comparator - IC 555 Timer, Multivibrator using IC 555 Timer - Converters.

TEXT BOOKS:

1. Milman and Halkias, Electronic Devices and Circuits, Mc Graw Hill Publication,1991.
2. Mithal. G.K., Basic Electronic Devices and Circuits, G.K.Publishers Pvt.Ltd.,1998

REFERENCE BOOKS:

1. David Bell, Fundamentals of Electronic Devices and Circuits, 5th Edition, Oxford University Press, 2008.
2. Robert L.Bolyestad, Electronic Devices and Circuit Theory, 6th Edition, PHI,1998.
3. Ben G Streetman and Sanjay Banerjee, Solid State Electronic Devices, 6th Edition, Pearson Education,2005.
4. Edward S. Yang, Fundamentals of Semiconductor Devices, 2nd Edition, McGraw Hill,1979.
5. Roody & Coolen, Electronic Communication, PHI, 1995.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1003 | PROGRAMMING IN C++ (Common to all Branches) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO C++**10 hrs.**

Object Oriented Programming Paradigms - Comparison of Programming Paradigms – Object Oriented Languages
 - Benefits of Object Oriented Programming - Comparison with C - Overview of C++ -Pointers-References and Structures
 - Functions - Scope and Namespaces - Source Files and Programs.

UNIT II CLASSES AND OBJECTS**10 hrs.**

Working with classes – Classes and objects – Class specification-Class objects-Accessing class members-Defining class members-Inline functions-Accessing member functions within class-Data hiding-Class member accessibility-Empty classes, constructors-Parameterized constructors-Constructor overloading-Copy constructors-new, delete operators-“this” pointer-friend classes and friend functions-Function overloading-Operator overloading.

UNIT III DERIVED CLASSES**10 hrs.**

Base class and derived class relationship-Derived class declaration-Forms of inheritance-Inheritance and member accessibility- Constructors in derived class-Destructors in derived class-Multiple inheritance-Multi level inheritance-Hybrid inheritance-Virtual base classes-Member function overriding-Virtual functions.

UNIT IV I/O AND LIBRARY ORGANIZATION**10 hrs.**

I/O Stream - File I/O - Exception Handling - Templates - STL – Library Organization and Containers – Standard Containers - Overview of Standard Algorithms-Iterators and Allocators.

UNIT V OBJECT ORIENTED DESIGN**10 hrs.**

Development Process – Management - Object Identification – Components - Object Oriented Design Fundamentals – Case Studies.

TEXT BOOKS:

1. Balagurusamy, "Object Oriented Programming with C++", Tata McGraw Hill,4th Edition,2010
2. Venu Gopal.K.R, Ravishankar.T, and Raj kumar, "Mastering C++", Tata McGraw Hill,1999.

REFERENCE BOOKS:

1. Bjarne Stroustrup, "The C++ programming language", Addison Wesley, 3rd Edition,1998.
2. John R Hubbard, "Programming with C++", Schaums Outline Series, McGraw Hill, 2nd edition, 2009.
3. James Martin & James J.Odell,"Object Oriented methods-A foundation",Prentice Hall,1997.
4. Grady Booch, "Object Oriented Analysis and Design with application", Addison Wesley, 2nd Edition ,1994.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SECX4002 | ELECTRONIC DEVICES AND CIRCUITS LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

LIST OF EXPERIMENTS

1. Study of CRO and Circuit Components
2. Characteristics of Semiconductor Diode
3. Characteristics of Zener Diode
4. Characteristics of Transistor under Common Emitter Configuration
5. Characteristics of Transistor under Common Base Configuration
6. Characteristics of SCR
7. Characteristics of DIAC
8. Characteristics of a Astable Multivibrator
9. Half Wave Rectifier with and without filter
10. Full Wave Rectifier with and without filter
11. Characteristics of LDR
12. Characteristics of UJT

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| SCSX4003 | PROGRAMMING IN C++ LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

LIST OF EXPERIMENTS

1. Write a program to calculate final velocity using the formula: $v=u + a*t$, with initial velocity, acceleration and time as input.
2. Write a program to swap two characters of different data types using function overloading concept.
3. Write a program to change the sign of an operands using unary operator overloading concept.
4. Write a program to add two complex numbers using binary operator overloading concept.
5. Write a program to find mean value of two integers using friend function concept.
6. Write a program to multiple and divide two different data type using inline function concept.
7. Write a program to Implement Matrix class with dynamic memory allocation and necessary methods. Give proper constructor, destructor, copy constructor, and overloading of assignment operator.
8. Write a program to enter the sale value and print the agent's commission using single inheritance.
9. Write a program to enter salary and output income tax and net salary using multiple inheritance concept.
10. Write a program to enter the unit reading and output the customer's telephone bill using hierarchical inheritance.
11. Write a program to find the grade of the students based on academic marks and sports using multilevel inheritance.
12. Write a program having student as an abstract class and create many derived classes such as Engineering, Medical etc from student's class. Create their objects and process them.
13. Write a program to count the words and characters in given text using virtual function.
14. Write a program to calculate net pay of employee using virtual base class concept.
15. Write a program to calculate division of two number with a try block to detect and throw an exception if the condition "divide -by-zero" occurs.

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| SMTX1009 | ENGINEERING MATHEMATICS III (Common to All Branches Except Bioinformatics) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I LAPLACE TRANSFORM**10 hrs.**

Transforms of simple functions – properties of transforms – Transforms of derivatives and Integrals – Periodic functions – Inverse transforms – Convolution theorems – Initial and final value theorems

UNIT II APPLICATIONS OF LAPLACE TRANSFORM**10 hrs.**

Application of Laplace Transforms for solving : linear ordinary differential equations – simultaneous differential equations – integral equations.

UNIT III COMPLEX VARIABLES**10 hrs.**

Analytic functions – Cauchy – Riemann equations in Cartesian and Polar form – properties of analytic functions – construction of analytic functions – conformal mapping – standard types – bilinear transformations.

UNIT IV COMPLEX INTEGRATION**10 hrs.**

Cauchy's integral theorem – integral formula – Taylor's and Laurent's series (without proof) – Residues – Cauchy's residue theorem – Contour integration and the circle and semi circular contours.

UNIT V THEORY OF SAMPLING AND TEST OF HYPOTHESIS**10 hrs.**

Test of Hypothesis – Large sample – test of significance – single proportion - difference of proportions – Single mean - difference of means. Small sample – students 't' test – single mean – difference of means – Fisher's test – difference of variance, Exact sample – Chi square test – goodness of fit – independence of attributes.

TEXT / REFERENCE BOOKS:

1. Kandasamy, P., Thilagavathy, K., and Gunavathy, K., "Engineering Mathematics", Volumes II & III (4th Revised Edition), S. Chand & Co., New Delhi, 2001.
2. Venkataraman, M.K. "Engineering Mathematics" Volumes III - A & B, 13th Edition National Publishing Company, Chennai, 1998.
3. Veerarajan, T., "Engineering Mathematics", Tata McGraw Hill Publishing Co., NewDelhi, 1999.
4. Grewal, B.S., "Higher Engineering Mathematics" (35th Edition), Khanna Publishers, Delhi, 2000.
5. Kreyszig, E., "Advanced Engineering Mathematics" (8th Edition), John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 2001.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1004 | SOFTWARE ENGINEERING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

SW engineering paradigm –Life cycle models – Water fall – Incremental – Spiral – Evolutionary – Prototyping – Object oriented – System engineering – Computer based system – Verification – Validation – Life cycle process – Development process – System engineering hierarchy – Introduction to CMM – Levels of CMM.

UNIT II SOFTWARE ENGINEERING PROCESS**10 hrs.**

Functional And Non-Functional – User – System – Requirement Engineering Process – Feasibility Studies –Requirements – Elicitation – Validation and management – Fundamental of requirement analysis – Analysis principles – Software prototyping – Prototyping in the Software Process – Rapid Prototyping Techniques – User Interface Prototyping – S/W Document Analysis and Modeling – Data – Functional and Behavioral Models – Structured Analysis and Data Dictionary.

UNIT III DESIGN PROCESS AND CONCEPTS**10 hrs.**

Modular design – Design heuristic – Design model and document – Architectural design – Software architecture – Data design – Architecture data – Transform and transaction mapping – User interface design – User interface design principles.

UNIT IV BASIC CONCEPTS OF SOFTWARE TESTING**10 hrs.**

Levels - Test activities - Types of s/w test - Black box testing - Testing boundary condition - Structural testing - Test coverage criteria based on data flow mechanisms - Regression testing - Testing in the large- S/W testing strategies - Strategic approach and issues - Unit testing - Integration testing - Validation testing - System testing and debugging. Case studies – Writing black box and white box testing.

UNIT V COST ESTIMATION & MAINTENENCE**10 hrs.**

Software cost estimation – Function point models – COCOMO model – Quality management – Quality concepts – SQA – Software reviews – Formal technical reviews – Formal approaches of SQA and software reliability – Error tracking – Software maintenance – SCM - Need for SCM - Version control - Introduction to SCM process - Software configuration items. Re-Engineering – Software reengineering – Reverse engineering – Restructuring – Forward engineering.

REFERENCE BOOKS:

1. Pressman, "Software Engineering and Application", 6th Edition, Mcgraw International Edition, 2005.
2. Shooman. M.C , "Software Engineering Design", Mcgraw International Edition, 1985.
3. Richardairley, " SoftwareEngineering-Design, Reliability And Management", Mcgraw International Edition, 1983.
4. Sommerville, "Software Engineering", 6th Edition, Pearson Education, 2000.
5. Pfleeger, "Software Engineering", 6th Edition, Prentice Hall of India, 2005
6. Ghezzi, "Software Engineering", 2nd Edition, Prentice Hall of India, 2005.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

| SECX1009 | MICROPROCESSOR AND MICROCONTROLLER BASED SYSTEMS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
|----------|---|---|---|---|---------|-------------|
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I BASIC CONCEPTS**10 hrs.**

8085 Microprocessor - Architecture and its operation, Concept of instruction execution and timing diagrams, fundamentals of memory interface - Addressing modes.

UNIT II 8085 INSTRUCTION SET AND ASSEMBLY LANGUAGE PROGRAMMING**10 hrs.**

Instruction classifications, Writing and executing simple programs - Arithmetic and logic operations - Data transfer - Branching - Looping - Indexing - Counter and time delays - Writing subroutine - Conditional call and return instruction, simple programs.

UNIT III I/O INTERFACING**10 hrs.**

Basic Interface concepts, memory mapped I/O and I/O mapped I/O, Interrupt and vectored interrupt, Programmable peripheral interface 8255 - Programmable Interval timer 8253 - Programmable interrupt controller 8259 - Programmable DMA controller 8257.

UNIT IV 8086 ARCHITECTURE**10 hrs.**

Architecture - Minimum mode and Maximum mode operation - Address Generation - Addressing modes - Overview of 8086 instruction set - Instruction format - Assembler Directives - Designing a Single Board Computer.

UNIT V 8051 MICROCONTROLLER**10 hrs.**

Introduction - Architecture of 8051 - Memory organization - Addressing modes - Instruction set - Assembly Language Programming - Jump, Loop and Call Instructions - Arithmetic and Logic Instructions - Bit Operations - Programs - Case study - Microcontroller based Washing Machine.

TEXT BOOKS:

1. Ramesh Goankar, "Microprocessor architecture programming and applications with 8085 / 8088", 5th Edition, Penram International Publishing.
2. A.K.Ray and Bhurchandi, "Advanced Microprocessor", 1st Edition, TMH Publication
3. Kenneth J.Ayala, "The 8051 microcontroller Architecture, Programming and applications" 2nd Edition ,Penram international.

REFERENCE BOOKS:

1. Douglas V.Hall, "Microprocessors and Digital system", 2nd Editon, Mc Graw Hill,1983.
2. Md.Rafiquzzaman, "Microprocessors and Microcomputer based system design", 2nd Editon,Universal Book Stall, 1992.
3. "Hardware Reference Manual for 80X86 family", Intel Corporation, 1990.
4. Muhammad Ali Mazidi and Janice Gillispie Mazidi, "The 8051 Microcontroller and Embedded Systems", 2nd Edition, Pearson Education, New Delhi, 2004.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max.Marks:80

Exam Duration : 3 hrs

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--|---|---|---|---------|-------------|
| SCSX1005 | DATA STRUCTURES AND ALGORITHMS (Common to CSE, IT & BIOINFO) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I INTRODUCTION TO ALGORITHMS & LINEAR DATA STRUCTURE**10 hrs.**

Introduction to algorithms – Algorithms vs programs – Algorithmic notation – Performance analysis of an algorithm – Information and storage representation – Linear Data Structures – Lists – Array – Linked representation – Singly linked list – Cursor based linked list – Doubly linked list – Circular linked list – Applications of list – Stacks – Queues – Circular queue implementation – Priority queue implementation – Applications of stacks and queues.

UNIT II TREES**10 hrs.**

Trees – Binary trees – Basic concepts – Implementation – Traversal – Applications – Binary search tree – Balanced search trees – B trees – AVL trees – Tries.

UNIT III GRAPHS**10 hrs.**

Graphs – Basic concepts – Representation – Traversal – Minimum spanning tree – Applications – Networks – Single source shortest path algorithm – All pairs shortest path algorithm – Topological sort – String pattern matching techniques – Naive string matching algorithm – Rabin Karp algorithm.

UNIT IV SORTING & SEARCHING**10 hrs.**

Internal sorting – Selection sort – Insertion sort – Bubble sort – Quick sort – Heap sort – Merge sort – Analysis of sorting techniques – External sorting – Tape sort – Disk sort – Searching – Quantity based searching – Linear search – Binary search – Density based searching – Hash search – Hashing – Hash function – Hashing methods – Collision resolution techniques.

UNIT V ALGORITHM DESIGN TECHNIQUES**10 hrs.**

Greedy method – Divide and conquer strategy – Dynamic programming – Backtracking – Branch and bound – Approximation algorithms – Introduction to NP – Completeness.

REFERENCE BOOKS:

1. Thomas H Corman, E Leiserson, Ron Rivest, "Introduction to Algorithms", MIT Press, 2nd Edition, Jan 2001.
2. Alfred V Aho, J D Ullman, J E Hopcroft, "Data Structures and Algorithms", Addison Wesley Longman, 1983.
3. Mark Allen Weiss, "Data Structures in C++", Addison Wesley Longman, 2nd Edition, 1998.
4. Horowitz E and Sahni S, "Fundamentals of Computer Algorithms", Computer Science Press, 1984.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1006 | DIGITAL COMPUTER FUNDAMENTALS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I NUMBER SYSTEMS, COMPLIMENTS AND CODES**10 hrs.**

Number Systems – Conversion from one base to another – Complements – Algorithms for r's and (r-1)'s complements – Sign, Floating Point Representations- Signed Arithmetic –BCD number representation – Alphanumeric codes ASCII/EBCDIC – Parity Check – Error Detection, Hamming Code- Generation, Error Correction, Reflection and Self Complementary codes.

UNIT II BOOLEAN ALGEBRA**10 hrs.**

Gates – OR – AND – NOT- NAND & NOR – Fundamental Concept of Boolean Algebra – Basic Laws of Boolean Algebra – De Morgan's Theorem – Derivation of Boolean expression – Inter Connection of Gates – Canonical form of expression – SOP and POS – Don't Cares – Simplification of Boolean Expressions: Karnaugh maps – Quine – McClusky method.

UNIT III COMBINATIONAL LOGIC DESIGN**10 hrs.**

Adder – Subtractor – Code Conversion – Analysing a Combinational – Logic Design using NAND/NOR, NAND-to -AND and NOR -to- OR gate networks – Binary parallel adder – Decimal adder – BCD adder – Magnitude Comparator – Decoders – Demultiplexer – Encoder – Multiplexers

UNIT IV SEQUENTIAL LOGIC DESIGN**10 hrs.**

Flip Flops – Analyzing a sequential circuit –State Diagram, State Table,State Equations– State Reduction– Synchronous and Asynchronous Circuits- Design of Synchronous Counters – Binary and BCD Counters – Ripple Counters-Binary Ripple Counter, BCD Ripple Counter-Shift Registers

UNIT V MEMORY UNIT**10 hrs.**

Memory Unit – ROM – PROM, EPROM, EEPROM – RAM – SRAM,DRAM – Storage Hierarchy – Virtual Memory – Cache Memory Design of Simple Computer-Design of Arithmetic Unit- Design of Logic Unit- Processor Unit

REFERENCE BOOKS:

1. Morris Mano, "Digital Logic & Computer Design", Prentice Hall of India, 2006
2. Thomas.C.Bartee, "Computer Architecture & Logic Design", McGraw-Hill, 1991
3. A.P.Malvino and D.P.Leach, "Digital Principles and Applications", 6th Edition, McGraw-Hill, 2006.
4. Thomas L Floyd, "Digital Fundamentals", 10th Edition, Pearson Education, 2009
5. Thomas C. Bartee, "Computer Architecture Logic Design", 3rd Edition, 2002

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1007 | JAVA PROGRAMMING (Common to CSE, IT, E&C, BIOINFO & BIOMED) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Classes and Objects – Class Fundamentals – Declaring Objects – Methods – Constructors – Garbage Collection - Inheritance – Basics – Using Super – Method Overriding – Abstract Classes – Using final with inheritance - String Handling – String class – String buffer class.

UNIT II PACKAGES AND INTERFACES**10 hrs.**

Using Packages – Importing packages – Access protection – Interfaces – Exception Handling & I/O Streams – Exception Types – Using try, catch, throw, throws and finally – Byte and Character Streams – Multithreading – JavaThreadModel – Main thread – Creating multiple thread – Thread priorities – Synchronization.

UNIT III APPLET PROGRAMMING**10 hrs.**

Java.lang package – Simple type wrappers – Runtime – System – Object – Class – Math thread – Using clone() and the Cloneable Interface – Applet Class – Applet basics – Applet architecture – HTML APPLET tag – Passing parameters to applets.

UNIT IV EVENT HANDLING**10 hrs.**

Delegation Event Model – Handling Mouse and Keyboard Events – Adapter Classes – AWT – AWT Classes – Window Fundamentals – Graphics, Fonts – AWT Controls – Layout Managers – Menus – Dialog Boxes.

UNIT V NETWORKING**10 hrs.**

Basics – Inet address – TCP/ IP – URL – UDP - Java beans and swings – Bean concepts - Events in bean box – Developing a simple Bean using JDK – Swing components.

TEXT / REFERENCE BOOKS:

1. Herbert Schildt, "The Complete Reference JAVA2", 5th Edition, Tata McgrawHill, 2006.
2. Bruce Eckel, "Thinking in Java", Pearson Education, 2000.
3. Clayton Walnum, "Java By Example", QUE Publications, 2000.
4. Subrahmanyam Allamaraju and Cedric Buest, "Professional Java Server Programming", J2EE 1.3 Edition, APRESS, 2007.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 Hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

| SECX1017 | PRINCIPLES OF COMMUNICATION ENGINEERING (Common to CSE, IT & EEE) | L | T | P | Credits | Total Marks |
|----------|--|---|---|---|---------|-------------|
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I AMPLITUDE MODULATION**12 hrs.**

Need of modulation – Mathematical representation of AM (AM, DSB SC AM, SSB SC AM, VSB AM) - frequency spectrum- band width – power relation – generation of AM – square law modulator – balanced modulator- generation of SSC-SC AM – AM transmitter – Detection of AM - square law detector – Envelope detector – Synchronous detector – AM receiver – TRF & super heterodyne receiver.

UNIT II FREQUENCY MODULATION**12 hrs.**

Angle modulation – mathematical representation of FM – frequency spectrum – bandwidth- generation of FM – varactor diode modulator- Reactance tube modulator, Armstrong modulator – FM transmitter- FM detection – foster seeley discriminator – ratio detector- FM receiver.

UNIT III ANALOG PULSE MODULATION**12 hrs.**

Sampling – Sampling theorem – quantization – quantization error – encoding & decoding of PAM, PWM, PPM, PCM, Delta modulation–Base band pulse shaping–Binary data formats–Multiplexing – TDM – FDM- Quadrature multiplexing – comparison.

UNIT IV DIGITAL MODULATION**12 hrs.**

Digital Modulation–ASK, FSK, PSK, QPSK - coherent binary modulation techniques - coherent quadrature modulation techniques- non-coherent binary modulation - M-array modulations - Performance of digital modulation systems based on probability of error, bandwidth & ISI.

UNIT V BASICS OF CDMA**12 hrs.**

Measure of Information – Entropy – channel capacity – entropy of continuous and discrete channel – coding – Shannon's fano coding –error Control Coding – Block Code – Cyclic Code – Convolutional Code – Fundamental Concepts Spread Spectrum (SS)–DSSS-FHSS

TEXT / REFERENCE BOOKS

1. Tomasi, Electronic Communication System, Pearson Education, 2004.
2. Communication Systems R.P.Singh & Saphre, Tata McGraw Hill Publication, 2009.
3. Electronic communication by Dennis Roddy and John Coolen, Prentice Hall, 1995.
4. Simon Haykins, "Communication Systems", John Wiely, 1990.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX4004 | DATA STRUCTURES LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of Experiments

1. Linked List Implementation .
2. Stack Implementation using Array
3. Queue Implementation using Linked List (Make the program for Ex.1 as a header file and use it)
4. Binary Search Tree Traversal
5. Implementation of Dijkstra's Algorithm
6. String Pattern Matching Algorithm
7. Sorting Techniques
 - a. Heap Sort
 - b. Quick sort
8. Searching Techniques
 - a. Linear Search
 - b. Binary Search
9. Greedy Method – Minimum Spanning Tree
10. Backtracking – N Queens Problem
11. Divide & Conquer – Merge Sort

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| SECX4007 | MICROPROCESSOR AND COMMUNICATION LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

Communication Lab

1. AM generation and Detection
2. FM generation and Detection
3. Pre emphasis and De emphasis
4. Sampling & TDM
5. Generation and Detection of ASK
6. Generation and Detection of FSK
7. Generation and Detection of PSK
8. Study and Characterization of mono mode and multi mode optical fibers
9. Study of Optical Fiber Analog linkand Digital Link
10. Measurement of losses in optical fiber,Bending loss, attenuation loss

Microprocessor Lab

1. Addition of two 8 bit number with carry.
2. Subtraction of two 8 bit number with carry.
3. Multiplication of two 8 bit number.
4. Division of two 8 bit number.
5. Sum of N array.
6. Largest and smallest number in an array.
7. Ascending and Descending for given number.
8. BCD to Hex and Hex to BCD conversion.
9. Ascii to HEX Conversion
10. Hex to AScii Conversion

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| SMTX1010 | ENGINEERING MATHEMATICS IV (Common to All Branches Except Bio Informatics) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I PARTIAL DIFFERENTIAL EQUATION**10 hrs.**

Formulation of equations by elimination of arbitrary constants and arbitrary functions-solutions by equations-general, particular and complete integrals-Lagrange's linear equation-standard type of first order equation-second and higher order equations with constant coefficients-homogenous equations.

UNIT II FOURIER SERIES**10 hrs.**

Euler's formula-Dirichlets conditions-convergence statement only-change of interval-odd and even functions-half range series-RMS value-Parseval's formula-complex form of Fourier series-harmonic analysis.

UNIT III WAVE AND HEAT EQUATION**10 hrs.**

One dimensional wave equation-Transverse vibration of finite elastic string with fixed ends-boundary and initial value problems-Fourier series solution-Derivation of one dimensional heat equation-steady and unsteady state-boundary and initial value problems-Fourier series solutions. Two dimensional heat equation-steady state heat flow in two dimensions-Laplace equation in Cartesian coordinates - Fourier series solution.

UNIT IV FOURIER TRANSFORM**10 hrs.**

The infinite Fourier transform-sine and cosine transform-Properties-Inversion theorem-Finite Fourier transform-sine and cosine transform-Convolution theorem-Parseval's identity.

UNIT V Z – TRANSFORM AND DIFFERENCE EQUATIONS**10 hrs.**

Z – Transforms – Elementary Properties – Inverse Z – transforms – Convolution theorem – Formation of difference equations – Solution of difference equations using Z – transforms.

TEXT / REFERENCE BOOKS:

1. Kandasamy, P., Thilagavathy, K., and Gunavathy, K., "Engineering Mathematics", Volumes II & III (4th Revised Edition), S. Chand & Co., New Delhi, 2001.
2. Venkataraman, M.K. "Engineering Mathematics" Volumes III - A & B, 13th Edition National Publishing Company, Chennai. Engineering Mathematics – Dr. T.Veerarajan, Tata McGrawhill Company, 1998.
3. Veerarajan, T., "Engineering Mathematics", Tata McGraw Hill Publishing Co., New Delhi, 1999.
4. Grewal, B.S., "Higher Engineering Mathematics" (35th Edition), Khanna Publishers, Delhi, 2000.
5. Kreyszig, E., "Advanced Engineering Mathematics" (8th Edition), John Wiley and Sons (Asia) Pvt Ltd., Singapore, 2001.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1008 | C# and .NET (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Overview of .NET – Advantages of .NET over the other languages – Overview of .NET binaries – Intermediate Language – Metadata – .NET Namespaces – Common language runtime – Common type system – Common language specification – C# fundamentals – C# class – object – string formatting – Types – scope – Constants – C# iteration – Control flow – Operators – Array – String – Enumerations – Structures – Custom namespaces – Object oriented programming concepts –Class – Encapsulation – Inheritance – Polymorphic – Casting.

UNIT II ASSEMBLIES**10 hrs.**

Assemblies – Versioning – Attributes – Reflection – Viewing metadata – Type discovery – Reflecting on a type –Marshaling – Remoting – Understanding server object types – Specifying a server with an interface – Building a server – Building the client – Exception handling – Garbage collector.

UNIT III INTERFACE AND COLLECTIONS**10 hrs.**

Interfaces and collections – Enumerator – Cloneable objects – Comparable objects – Collections – Indexes – Delegates – Events – Multithreaded programming.

Programming with windows form controls – Windows form control Hierarchy – Adding controls – TextBox – CheckBoxes – RadioButtons – GroupBoxes – ListBoxes – ComboBoxes – TrackBar – Calender – Spin Control – Panel – ToolTips –ErrorProvider – Dialog Boxes.

UNIT IV IO NAME SPACE AND ADO .NET**10 hrs.**

Input and output – Introduction to System. IO .namespace – File and folder operations – Stream class – Introduction to ADO .NET – Building data table – Data view – Data set – Data relations – ADO.NET managed providers – OleDb managed provider – SQL.

UNIT V ASP .NET AND WEB SERVICES**10 hrs.**

Web development and ASP.NET – Web applications and web servers – HTML form development – Client side scripting – GET and POST – ASP.NET application – ASP.NET namespaces – creating sample C# web Applications.

Understanding Web Security – Windows authentication – Forms authentication – Web services – Web services – Web service clients – The CityView application.

REFERENCE BOOKS:

1. Andrew Troelsen, "C# and the .NET Platform", AI Press, 2005.
2. Herbert Schildt, "The Complete Reference: C#", Tata McGraw-Hill, 2004.
3. <http://www.C.sharpcorner.com/tutorial.asp>.
4. <http://www.programmingtutorials.com /csharp.aspxal.as>

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1009 | COMPUTER ARCHITECTURE & PARALLEL PROCESSING (Common to CSE, IT, E&I, E&C) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Central Processing Unit – Introduction – General register organization – Stack organization – Instruction formats – Addressing modes – Data transfer and manipulation – Program control – RISC – Data representation – Basic computer organization – Instruction codes – Computer registers – Computer instructions – Timing and control – Instruction cycle – Register transfer and microoperations – Register transfer language – Register transfer – Bus and memory transfers – Arithmetic ,Logic, Shift Microoperations – Arithmetic logic shift unit.

UNIT II PROCESSOR DESIGN**10 hrs.**

Computer arithmetic – Addition – Subtraction – Multiplication and Division algorithms – Floating point arithmetic operations - Microprogrammed Control – Control memory – Address sequencing – Microprogram Example – Design of control unit.

UNIT III MEMORY AND I/O SYSTEM**10 hrs.**

Memory Organization – Memory hierarchy – Main memory – Auxiliary memory – Associative memory – Cache memory – Virtual memory – Memory management hardware.

Input-Output Organization – Peripheral devices – I/O interface – Asynchronous data transfer – Modes of transfer – Priority interrupt – DMA – IOP – Serial communication.

UNIT IV PIPELINING AND VECTOR PROCESSING**10 hrs.**

Parallel processing – Pipelining – Arithmetic pipeline – Instruction pipeline – RISC pipeline – Vector processing – Array processors.

UNIT V MULTIPROCESSORS**10 hrs.**

Characteristics of multiprocessors – Interconnection structures – Interprocessor arbitration – Interprocessor communication and synchronization – Cache coherence.

REFERENCE BOOKS:

1. M.Morris Mano, "Computer system Architecture", 3rd Edition, Prentice-Hall Publishers, 2007.
2. John P Hayes , "Computer architecture and Organization", 3rd Edition, McGraw Hill international edition, 1998.
3. Kai Hwang and Faye A Briggs, "Computer Architecture and Parallel Processing", McGraw Hill International edition,1995.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1010 | OBJECT ORIENTED ANALYSIS AND DESIGN (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Overview of object oriented language systems development – Object basics hierarchy – Object and identity – Static and dynamic binding – Object oriented SDLC.

UNIT II OBJECT ORIENTED METHODOLOGIES**10 hrs.**

Rumbaugh et al.'s technique – Booch, Jacobson Methodologies – Patterns – Framework – Unified approach – UML – UML diagrams – UML dynamic modeling – UML extensibility – UML meta-model.

UNIT III OBJECT-ORIENTED ANALYSIS**10 hrs.**

Use case model – Object analysis classification – Approaches for identifying classes – Classes responsibilities and collaborators – Identifying object relationships, attributes and methods.

UNIT IV OBJECT ORIENTED DESIGN**10 hrs.**

Design process and design axioms – Designing classes – Access Layer – Object storage and object Interoperability – View layer – Designing interface objects.

UNIT V SOFTWARE QUALITY**10 hrs.**

Software quality assurance – Testing strategies – Test cases – Test plan – Myers debugging principle – System usability and measuring user satisfaction.

REFERENCE BOOKS:

1. Ali Bahrami, "Object oriented systems development using the unified modeling language", 1st Edition, McGraw- Hill, 1998.
2. Grady Booch, James Rumbaugh, and Ivar Jacobson, "The Unified Modeling Language User Guide", 3rd Edition Addison Wesley, 2007.
3. John Deacon, "Object Oriented Analysis and Design", 1st Edition, Addison Wesley, 2005.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1011 | OPERATING SYSTEMS (Common to CSE&IT) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Introduction – Operating system structures – System components – OS services – System calls – System structure – Resources – Processes – Threads – Objects – Device management – Different approaches – Buffering device drivers.

UNIT II PROCESS MANAGEMENT**10 hrs.**

Processes – Process concepts – Process scheduling – Operations on processes – Cooperating processes – CPU scheduling – Basic concepts – Scheduling criteria – Scheduling algorithms – Preemptive strategies – Non-preemptive strategies.

UNIT III SYNCHRONIZATION AND DEADLOCKS**10 hrs.**

The critical section problem – Semaphores – Classic problems of synchronization – Critical regions – Monitors – Deadlocks – Deadlock characterization – Prevention – Avoidance – Detection – Recovery.

UNIT IV MEMORY MANAGEMENT**10 hrs.**

Storage Management Strategies – Contiguous vs. non-contiguous storage allocation – Fixed & variable partition multiprogramming – Paging – Segmentation – Paging/Segmentation systems – Page replacement strategies – Demand & anticipatory paging – File concept – Access methods – Directory structure – File sharing – Protection – File – system structure – Implementation.

UNIT V LINUX & SHELL PROGRAMMING**10 hrs.**

Shell operation commands – Linux file structure – File management operation – Internet service – Telnet-FTP – Filters & regular expressions – Shell programming – Variable, arithmetic operations, control structures, handling date, time & system information.

REFERENCE BOOKS:

1. Abraham Silberschatz, Peter Galvin and Gagne, "Operating System Concepts", 6th Edition, Addison Wesley, 2002.
2. Harvey M. Deitel, "Operating System", 2nd Edition, Addison Wesley, 2000.
3. Gary Nutt, "Operating System, A modern perspective", 2nd Edition, Addison Wesley, 2000.
4. Richard Peterson, "Linux : The Complete Reference", 6th Edition, Tata McGraw Hills, 2007.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SECX1063 | PRINCIPLES OF DIGITAL SIGNAL PROCESSING (Common to CSE, IT & ETCE) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO CONTINUOUS TIME SIGNALS & SYSTEMS**10 hrs.**

Representation, Characterization and classifications of CT signals - Representation of CT signals - Sampling theorem - Aliasing effect - Reconstruction of signals from sampled sequence - Concept of signal processing - Advantage of DSP over ASP - Classification of CT systems - Linear time Invariant - Causal - BIBO stable - Impulse response - Transfer function - frequency response of CT LTI systems.

UNIT II INTRODUCTION TO DISCRETE TIME SIGNALS & SYSTEMS**10 hrs.**

Representation, Characterization and Classifications of DT signals - Classification of DT systems - Linear time invariant - Causal - BIBO stable - Impulse response - Transfer function - System response - Frequency response - Transfer function - Frequency response of DT LTI systems - Realization of discrete recursive and non recursive systems - Direct Form I and Form II - Cascade and parallel realization.

UNIT III DFT AND FFT**10 hrs.**

Introduction to DFT - Properties - Discrete Fourier transforms - Linear and circular convolution - Need for FFT - Radix 2 FFT - Properties - Decimation in time FFT and Decimation in frequency FFT algorithms - Inverse DFT.

UNIT IV ANALYSIS & DESIGN OF DIGITAL FILTERS**10 hrs.**

Review of Butterworth and Chebyshev approximations - Properties of IIR and FIR filters - Design of IIR filter using Impulse invariant and Bilinear transformation method - Design of FIR filter using window method - Rectangular, Hanning and Hamming Windows.

UNIT V EFFECT OF FINITE REGISTER LENGTH**10 hrs.**

Effect of number representation in registers - ADC quantization noise - Coefficient Quantization Error - Product Quantization Error - Truncation - Limit cycles due to product round off error - Addition of over flow errors - Scaling - Dynamic range.

TEXT BOOKS:

1. John G Proakis and Dimtris G Manolakis, "Digital Signal Processing", 3rd Edition, PHI Pearson Education 2000.

REFERENCE BOOKS:

1. Sanjit K.Mitra, "Digital Signal Processing, A Computer Based Approach", 3rd Edition, McGraw Hill , 2006.
2. J.G.Proakias, "Digital Signal Processing", 2nd Edition, Prentice Hall of India, 1996.
3. Rabiner and Gold, "Theory and application of Digital Signal Processing", 1st Edition, Prentice Hall of India, 2007.
4. Oppenheim and Schafer, "Digital Time Signal Processing", 2nd Edition, Prentice Hall of India, 1999 .
5. Venkataramani, "Digital Signal Processors", Tata McGraw Hill, 14th reprint of 2008.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max.Marks : 80

Exam Duration :3 hrs

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

(Distribution may be 40% Theory & 60% Numericals)

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| SCSX4013 | OPERATING SYSTEMS LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of Experiments

1. Study of basic LINUX & Vi Editor command
2. Searching a SubString in given text
3. Menu Based Math Calculator
4. Printing pattern using loop statement
5. Converting File names from Uppercase to Lowercase
6. Manipulate Date/Time/Calendar
7. Showing various system information
8. Implementation of process scheduling mechanism – FCFS, SJF, Priority Queue.
9. Reader – Writer Problem.
10. Dinner's Philosopher Problem.
11. First Fit, Worst Fit, Best Fit allocation strategy.
12. Bankers Algorithm
13. Implement the producer consumer problem using Semaphore
14. Implement some memory management Scheme

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| SCSX4006 | C# & .NET LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of Experiments

1. Create an application to handle mouse and key events .
2. Creation of Menu , Tool bar and Status Bar.
3. Program for creating custom namespace.
4. Implementation of Stack, Queue using collection Namespace.
5. Unary operator overloading
6. Binary operator overloading
7. Implementing IEnumerable interface
8. Implementing IComparable interface
9. Implementing deep clone using ICloneable interface
10. Implementing shallow clone using ICloneable interface
11. Program to access and mutate named properties
12. Implementing one dimensional indexer
13. Implementing two dimensional indexer
14. Implementing single & multilevel inheritance
15. Implementing file input
16. Implementing file output
17. Event handling in .net
18. Design an application using Windows Form Controls.
19. Create a student application using ADO .NET .
20. Design a simple web application using ASP .NET

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| SMTX1013 | DISCRETE MATHEMATICS AND NUMERICAL METHODS (Common to CSE, Bio Groups & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I LOGIC**10 hrs.**

Statements - Truth tables – Connectives – Equivalent Propositions - Tautological Implications - Normal forms - Predicate Calculus, Inference theory for Propositional Calculus and Predicate Calculus.

UNIT II SET THEORY**10 hrs.**

Basic concepts of Set theory - Laws of Set theory - Partition of set, Relations - Types of Relations: Equivalence relation, Partial ordering relation - Graphs of relation - Hasse diagram, Functions: Injective, Surjective, Bijective functions, Compositions of functions, Identity and Inverse functions.

UNIT III GROUP THEORY**10 hrs.**

Semi group and Monoid (definition and examples only) – Groups – Properties of groups – Subgroups - Cyclic groups – Cosets - Lagrange's theorem.

UNIT IV INTERPOLATION, NUMERICAL DIFFERENTIATION & INTEGRATION**10 hrs.**

Interpolation – Gregory Newton's Forward and Backward Interpolation for equal intervals - Lagrange's Interpolation for unequal intervals - Numerical differentiation: Newton's forward and backward formula to compute the derivatives - Numerical Integration: Trapezoidal rule, Simpson's $1/3^{\text{rd}}$ rule and Simpson's $3/8^{\text{th}}$ rule.

UNIT V NUMERICAL METHODS FOR SOLVING EQUATIONS**10 hrs.**

Numerical Solution of algebraic and transcendental equations: Regula Falsi method, Newton Raphson method & Secant method. Numerical Solution of simultaneous linear algebraic equations: Gauss Jordan method, Crout's method, Gauss Jacobi method & Gauss Seidel method.

TEXT / REFERENCE BOOKS:

1. Tremblay. S. Manohar. R. "Discrete mathematics structure with application to computer science", McGraw-Hill, 1975.
2. Kenneth H. Rosen, "Discrete mathematics and its applications", 6th Edition, McGraw-Hill, 2007.
3. Venkataraman M K, "Discrete Structures", National Pub. Co, Madras. 1992.
4. Kandaswamy P & Co., "Numerical Methods", S.Chand Publications, Chennai 2009.
5. Venkataraman M K, "Numerical Methods in Science and Engineering", National Pub. Co, Madras. 1992.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1017 | DATA COMMUNICATION & COMPUTER NETWORKS (Common to CSE, IT & EEE) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I PROTOCOLS & MEDIA**10 hrs.**

Introduction to data communication – Network protocols & standards – Line configuration – Topology – Transmission mode – Categories of networks – OSI model – Layers of OSI model – Transmission media – Guided media – Unguided media.

UNIT II SIGNALS & ERRORS**10 hrs.**

Analog and digital signals – Encoding and modulation – Parallel and serial transmission – DTE/DCE – Types of errors – Error detection and correction – Data link control – Line discipline – Flow control – Error control.

UNIT III MULTIPLEXING & SWITCHING**10 hrs.**

Multiplexing – Types of multiplexing – LAN – Project 802 – Ethernet – Token bus – Token ring – FDDI – MAN – IEEE 802.6 – Circuit switching – Packet switching.

UNIT IV ISDN & ATM**10 hrs.**

History of analog and digital network – Access to ISDN – ISDN layers – Broadband ISDN – Packet layer protocol – ATM – ATM architecture – ATM layers – Congestion control – Leaky bucket algorithm.

UNIT V NETWORK & APPLICATION LAYER**10 hrs.**

Repeaters – Bridges – Routers – Gateway – Routing algorithms – TCP/IP – Overview – Network layer – Transport and application layers of TCP/IP – DNS – SMTP – HTTP – WWW.

REFERENCE BOOKS:

1. Behrouz and Forouzan, "Data Communications and Networking", 2nd Edition, Tata McGraw Hill, 2007.
2. Andrew.S.Tenenbaum, "Computer Networks" , 4th Edition, Prentice Hall of India, 2008.
3. WilliamStallings, "Data and Computer Communication ", 6th Edition, Pearson Education, 2000.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SECX1065 | INFORMATION THEORY AND CODING (Common to IT & ETCE) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Information and Sources Uniquely Decodable Codes, Instantaneous codes, Construction of an Instantaneous code, Kraft's Inequality, Coding Information Sources: The Average length of a code, Encoding for special Sources, Shannon's Theorems, Finding Binary Compact Codes, Huffman's code, r-ary compact Codes, Code Efficiency and Redundancy.

UNIT II INFORMATION CHANNEL**10 hrs.**

Information Channels, Probability relations in a channel, Apriori and Aposteriori Entropies, Generalization of Shannon's first theorem, Mutual Information, Properties of Mutual Information, Noiseless and Deterministic channels, Cascaded channels, Channel Capacity, Conditional Mutual Information

UNIT III INFORMATION CODING**10 hrs.**

Source Coding, Lossless coding for discrete-valued sources, Discrete memoryless source (DMS), Discrete stationary source, Lossy coding for discrete-time sources, Channel Capacity & Introduction to Channel Coding, Channel models, Channel capacity, The noisy channel coding theorem

UNIT IV BLOCK AND CONVOLUTIONAL CODES**10 hrs.**

Block Codes: Introduction to block codes, A Galois field primer, Linear block codes, Nonbinary block codes - Reed-Solomon (RS) codes, Encoding RS codes, Decoding RS codes, Space-time block codes: multipath fading channels, diversity techniques, spatial/ temporal diversity

Convolutional Codes: Linear convolutional codes & their descriptions, Transfer function representation & distance properties, Decoding convolutional codes, Soft-decision MLSE, Hard-decision MLSE, The Viterbi algorithm for MLSE.

UNIT V LDPC AND TCM**10 hrs.**

Turbo & Low Density Parity Check (LDPC) Codes: Turbo codes, PCCC with interleaving & iterative decoding, Turbo product codes, Turbo equalization, Low Density Parity Check (LDPC) coding & decoding.

Trellis Coded Modulation (TCM): Introduction- Trellis coding with higher order modulation, Set partitioning, Trellis coded modulation (TCM), TCM decoding and performance.

TEXT BOOKS

1. Digital Communications, 5th edition, by John Proakis & Masoud Salehi, McGraw- Hill, 2008.

REFERENCE BOOKS

1. Abrahamson. N, "Information Theory and coding", McGraw Hill Book Co., 1963.
2. Gallagar. R.G., "Information theory and reliable communication", Wiley New York, 1968.
3. Richard.E.Balhut, "Principles of Practices of Information Theory", Addison Wesley Pub.Co., 1987.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SECX1034 | TELECOMMUNICATION SWITCHING SYSTEMS (Common to ECE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I EVALUATION OF PUBLIC SWITCHED TELECOMMUNICATION NETWORKS **10 hrs.**

Switching system functions – stronger switching system – cross bar exchange – SPC exchange – Message switching – circuits switching – Telephone handset – four wire concept – Hybrid circuit – Echo suppressor and cancellors – PCM coders – Modems and relays – Telecommunication standard.

UNIT II DIGITAL SWITCHING SYSTEMS **10 hrs.**

Time switching – space switching – STS and TST switching –digital switching system hardware – principles of switching system software organizational processing software – switching in networked environment – ISDN.

UNIT III SIGNALING AND TRAFFIC **10 hrs.**

Channel associated signaling – Common channel signaling - SS7 protocol - traffic – grade of service – Modeling switching system –Blocking models and relay system.

UNIT IV TRANSMISSION NETWORKS **10 hrs.**

Subscriber loop – DSL – ADSL – FDM and TDM – PCM multiplex group – PDSH, SDH / SONET – cross talk – line equalizations – adaptive equalizers – single stage network – two, three, four stage networks – network synchronization.

UNIT V DATA NETWORKS **10 hrs.**

Data transmission in PSTN – packet switching – connection oriented and connectionless protocols – ISO – OSI architecture – TCP/IP and Internet – multiple access techniques – satellite based data networks – principles of ATM networks-IP Switching-Applications.

TEXT BOOKS:

1. Flood. J.E., Telecommunication switching, Traffic and Networks, Pearson Education Ltd, New Delhi, 2006.
2. Syed R Ali, Digital switching systems, McGraw Hill, New York 2002.

REFERENCE BOOK:

1. Viswanathan T, Telecommunication switching systems and networks, PHI 2006.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1018 | DATABASE SYSTEM (Common to CSE, IT & ECE) | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I BASIC CONCEPTS**10 hrs.**

Databases and databases users – Database system concepts and architecture – Data modeling using entity Relationship model – Enhanced entity relationship and object modeling – Record storage and file organizations – Index structures for files.

UNIT II DATABASE MODELS**10 hrs.**

Introduction to Network – Hierarchical, Relational and Object Oriented Model – Relational Model – Relation algebra and calculus – Commercial query languages – Security and integrity – Functional dependency – Normalization – Relational database design.

UNIT III ADVANCED CONCEPTS**10 hrs.**

Query processing – Crash recovery – Concurrency control – Distributed databases - Database security and authorization – Object oriented databases.

UNIT IV ORACLE DATABASE ADMINISTRATION**10 hrs.**

Oracle architecture – Managing Oracle instance – Creation of database - Data dictionary and dynamic performance views.

UNIT V ORACLE DATABASE STRUCTURE AND STORAGE**10 hrs.**

Data files and tablespaces – Control files – Redo log files and archived log files – Managing users and privileges – Managing password security and resources.

REFERENCE BOOKS:

1. Elmasri & Navathe, "Fundamentals of Database Systems", 3rd Edition, Addison Wesley, 2000.
2. Abraham Silberschatz, Henry.F.Korth and S.Sudharshan, "Database System Concepts", 4th Edition, 2002.
3. Jan L.Harrington, "Object Oriented Database Design", Harcourt India Pvt Ltd. 2000.(Unit III)
4. Kevin Loney & Marlene Theriault, "Oracle9i DBA Handbook ", Tata McGraw-Hill, 2002. (Unit IV and V)
5. Michael Abbey, Michael Corey, Ian Abramson, "Oracle9i A Beginner's Guide", Tata McGraw-Hill, 2002. (Unit IV and V)
6. www.oracle.com (Unit IV and V)

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1019 | SYSTEM PROGRAMMING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION **10 hrs.**

Assembler – Elements of ALP – Pass structure of assembler – Design of two pass assembler.

UNIT II MACROS & LINKERS **10 hrs.**

Macro definition and call – Macro expansion – Nested macro call – Advanced macro facilities – Design of macro – Preprocessor – Relocation and linking concepts – Design of linker – Self relocating program – Loader – Absolute loader – RLL – DLL.

UNIT III COMPILERS **10 hrs.**

Structure of compiler – Role of lexical analyzer – Regular expression – Finite automata – Regular expression to finite automata – Minimizing DFA – Context free grammar – Derivations – Parse trees – Capabilities of context free grammar.

UNIT IV PARSING **10 hrs.**

Parser – Shift-Reduce parsing – Operator precedence parsing – Top down – Predictive parsing – Intermediate code – Postfix notation – Parse trees – Syntax trees – Three address code – Quadruples – Triple.

UNIT V OPTIMIZATION TECHNIQUES **10 hrs.**

Principles of source of optimization – Loop optimization – DAG representation of basic block – Value number and algebraic laws – Global data flow analysis – Dominators – Reducible flow graph – Depth first search – Loop invariant computations – Induction variable elimination – Other loop optimization. .

REFERENCE BOOKS:

1. D M. Dhamdhare , "System Programming", 2nd Edition, Tata McGraw Hill Publishing, 1999.
2. Alfred V.Aho, Jeffery D.Ullman & Ravi Sethi, " Compiler Principles, Techniques & Tools", Addison- Wesley Publishing Company, 1986.
3. Alfred V. Aho,Jeffery D. Ullman, "Principles of Compiler Design", Narosa Publihing House, 15th reprint, 1996.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1023 | COMPUTER GRAPHICS & MULTIMEDIA SYSTEMS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I BASICS OF COMPUTER GRAPHICS**10 hrs.**

Output Primitives: Survey of computer graphics – Overview of graphics systems – Line drawing algorithm – Circle drawing algorithm – Curve drawing algorithm - Attributes of output primitives – Anti-aliasing

UNIT II 2D AND 3D CONCEPTS AND TRANSFORMATIONS**10 hrs.**

Basic two dimensional transformations – Other transformations – 2D and 3D viewing – Line clipping – Polygon clipping – Logical classification – Input functions – Interactive picture construction techniques – Three dimensional concepts – Three dimensional transformations

UNIT III METHODS AND MODELS**10 hrs.**

Visible surface detection methods – Illumination models – Halftone patterns – Dithering techniques – Polygon rendering methods – Ray tracing methods – Color models and color applications

UNIT IV BASICS OF MULTIMEDIA**10 hrs.**

Introduction to multimedia – Multimedia skills – Multimedia building blocks – Text, sound, images, audio, animations – Making instant multimedia – Basic software tools – File Formats – JPEG, MPEG

UNIT V MULTIMEDIA TOOLS**10 hrs.**

Introduction to Photoshop – Workplace – Tools – Navigating window – Importing and exporting images – Operations on Images – resize, crop, rotate. Introduction to Flash – Elements of flash document – flash environment – Drawing tools – Flash animations – Importing and exporting - Adding sounds – Publishing flash movies – Basic action scripts – GoTo, Play, Stop, Tell Target.

REFERENCE BOOKS:

1. Donald Hearn, Pauline Baker M., "Computer Graphics", 2nd Edition, Prentice Hall, 1994.
2. Tay Vaughan, "Multimedia", 5th Edition, Tata McGraw Hill, 2001.
3. Ze-Nian Li, Mark S. Drew, "Fundamentals of Multimedia", Prentice Hall of India, 2004.
4. D. McClelland, L.U.Fuller, "Photoshop CS2 Bible", Wiley Publishing, 2005.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX4001 | MULTIMEDIA LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

LIST OF EXPERIMENTS

1. To perform animation using any animation software.
 - (a) Tweening
 - (b) Masking
 - (c) Zooming
 - (d) Fading effect
 - (e) Shadow and glow effect
2. Designing Calculator in Flash
3. Bouncing ball in Flash
4. Spark light effect & crippling effect
5. Design analog and digital clock
6. Create a flash program to customize the cursor
7. Design a flash program for slideshow
8. Design a webpage using flash
9. Creation of animations
10. Car
 - (a) Aeroplane
 - (b) Cricket
 - (c) Rising sun
11. To implement text compression algorithm
12. To implement image compression algorithm
13. To implement DDA line drawing algorithms.
14. To implement Bresenham's algorithms for line, circle and ellipse drawing
15. To perform 2D Transformations such translation rotation scaling reflection
16. To implement Cohen-Sutherland 2D clipping.
17. To perform basic operations on image using any image editing software Prepared by CSE department.

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| SCSX4011 | RDBMS LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of Experiments

1. Data Definition Language (DDL) commands in RDBMS.
2. Data Manipulation Language (DML) and Data Control Language (DCL) commands in RDBMS.
3. Constraints and Oracle built-in Functions
4. Joins and Group-by Commands
5. Design and implementation of Payroll Processing System.
6. Design and implementation of Banking System.
7. Design and implementation of Student Information System.
8. Design and implementation of Quiz Application

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| SMTX1014 | PROBABILITY AND STATISTICS | L | T | P | Credits | Total Marks |
| | | 3 | 1 | 0 | 4 | 100 |

UNIT I PROBABILITY CONCEPTS AND RANDOM VARIABLE **10 hrs.**

Sample Space- Events – Axiomatic approach to Probability – Conditional Probability – Independent Events – Baye’s Theorem – Random Variables – Functions of Random Variables and their Probability Distribution.

UNIT II STANDARD DISTRIBUTION **10 hrs.**

Discrete Distributions: Binomial, Poisson and Geometric – Continuous Distributions: Uniform and Normal – Applications only no Derivation.

UNIT III TWO DIMENSIONAL RANDOM VARIABLES **10 hrs.**

Joint Probability distributions - Marginal and Conditional Distributions –Transformation of Random Variables

UNIT IV CORRELATION AND REGRESSION **10 hrs.**

Correlation – Linear regression – Multiple and Partial Correlation – Curve Fitting – Method of Least Squares – Fitting of the Curve of the form $y = a + bx$, $y = a + bx + cx^2$.

UNIT V ANALYSIS OF VARIANCE AND STATISTICAL QUALITY CONTROL **10 hrs.**

Review of F-test - Design of experiments: Completely Randomized Design, Randomized Block Design and Latin Square Design with their Analysis of Variance – Statistical Quality Control:, R, p, np, c – charts.

REFERENCE BOOKS:

1. R.V. Hong and E.A. Tanis, Probability and Statistical Inference, Macmillan.
2. I. Miller and J.E. Frund, Probability and Statistics for Engineers.
3. Kossack.C.F. and Henschkee, C.I. Introduction to Statistics and Computer Programming.
4. HOGG and CRAIG, Introduction to Mathematical Statistics.
5. Veerarajan. T., “Probability, Statistics and Random Processes”, Tata McGraw-Hill, New Delhi.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX1001 | INTERNET PROGRAMMING | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I MARKUP LANGUAGE**10 hrs.**

HTML - Structure of HTML documents - HTML elements - Mark up Tags for inserting URL, images, Tables, Multimedia components - Frames- Form and its objects - image maps - CSS. Dynamic HTML – introduction – cascading style sheets – object model and collections – event model – filters and transition – data binding – data control – ActiveX control – handling of multimedia data

UNIT II JAVA SCRIPT**10 hrs.**

Advantages, Data Types, Variables, Operators, Control Statements, Functions, Objects and Arrays, Windows and Frames, Forms.

UNIT III EXTENSIBLE MARKUP LANGUAGE**10 hrs.**

XML structure – elements, well formed XML, XML Namespaces - working with DTD- Adding DTDs to documents, defining DTD entities, defining Parameter entities - Working with attributes – Defining attributes, defining multiple attributes, using predefined attributes.

UNIT IV XML TRANSFORMATION LANGUAGES**10 hrs.**

CSS basics - adding CSS to document, CSS selections, Controlling fonts - Need of XSL, XSL basics, XSL transformations, Introduction to Schemas- Defining simple elements and types. XML query, collecting and working data with CGI.

UNIT V ACTIVE SERVER PAGE**10 hrs.**

Introduction to ASP – Working of ASP – Objects – File System Objects – Session tracking and cookies – Server side Active-X Components like Adrotator, Content linking and Rotator – Accessing database.

REFERENCE BOOKS:

1. Thomas A. Powell, "The Complete Reference HTML", Tata McGraw Hill, 3rd Edition
2. Thomas A. Powell and Fritz Schneider,"Java Script Complete Reference", 2nd Edition, Tata McGraw Hill ",
3. Heather Williamson, " XML Complete Reference", Tata Mcgraw Hill,2001
4. Stephen Walthers, Kevin Hoffman, Nate Dudek, "ASP . Net 4 unleashed", Pearson Education, 2010
5. Deitel & Deitel, Goldberg, "Internet and world wide web – How to Program", Pearson Education Asia, 2001.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

Out of 80 marks, maximum of 30% may be asked in programming

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| SCSX1024 | NETWORK PROGRAMMING & MANAGEMENT (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I ELEMENTARY TCP SOCKETS**10 hrs.**

Introduction to Socket programming- Overview of TCP/IP protocols- Introduction to Sockets- Socket address structures – Byte ordering functions – address conversion functions – Elementary TCP Sockets – socket, connect, bind, listen, accept, read, write, close functions- Iterative server-concurrent server

UNIT II APPLICATION DEVELOPMENT**10 hrs.**

TCP Echo Server – TCP Echo Client – Posix Signal handling – Server with multiple clients – boundary conditions: Server process Crashes, Server host Crashes, Server Crashes and reboots, Server Shutdown – I/O multiplexing – I/O Models – select function – shutdown function – TCP echo Server (with multiplexing) – poll function – TCP echo Client (with Multiplexing)

UNIT III SOCKET OPTIONS, ELEMENTARY UDP SOCKETS**10 hrs.**

Socket options – getsockopt and setsockopt functions – generic socket options – IP socket options – ICMP socket options – TCP socket options – Elementary UDP sockets – UDP echo Server – UDP echo Client – Multiplexing -TCP and UDP sockets – Domain name system – gethostbyname function – IPv6 support in DNS – gethostbyaddr function – getservbyname and getservbyport functions

UNIT IV ADVANCED SOCKETS**10 hrs.**

IPv4 and IPv6 interoperability – Threaded servers – Thread creation and termination – TCP echo server using threads – Mutexes – condition variables – raw sockets – raw socket creation – raw socket output – raw socket input – ping program – trace route program

UNIT V SIMPLE NETWORK MANAGEMENT**10 hrs.**

The History of SNMP Management- Internet Organizations and Standards- The SNMP Model- The Organization Model- System Overview- The Information Model. SNMPv1 Network Management: Communication Model and Functional Models. Introduction to RMON, SNMP Management: Major Changes in SNMPv2- SNMPv2 System Architecture- SNMPv2 Structure of Management Information- The SNMPv2 Management Information Base- SNMPv2 Protocol- Compatibility with SNMPv1- SNMPv3 Architecture- SNMPv3 Applications- SNMPv3 Management Information Base.

REFERENCE BOOKS:

1. W. Richard Stevens, "UNIX NETWORK PROGRAMMING Vol-I" 2nd Edition, PHI / Pearson Education, 1998. (Units – I, II, III & IV.) (Chapter – 1-10, 23, 25)
2. William Stallings, "SNMP, SNMPv2, SNMPv3 and RMON 1 and 2", 3rd Edition, Addison Wesley, 1999. (Unit - V)

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1020 | COMPONENT BASED TECHNOLOGY (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I COMPONENT CONCEPTS **10 hrs.**

Basic components – Software components – COM/DCOM – Java beans – Enterprise java beans – CORBA – Distributed object – Request and response – Remote reference – IDL interface – Proxy – Marshalling.

UNIT II BASIC CONCEPTS **10 hrs.**

Basic patterns and inherent issues – Factory – Broker – Garbage collection on client and server – Persistence of remote references – Transactions – Concurrency in server objects – Applying client/server relation recursively – Event driven programming.

UNIT III CORBA OVERVIEW **10 hrs.**

Benefits of java programming with CORBA – CORBA overview – OMG – OMA – Object model – ORB structure – OMG, IDL, ORB and object interface – POA – Language mapping – Mapping – ORB run time system – Discovering services (Naming, Trading) – Advanced features (DSI – DII Interoperability, DII and DSI, IR. Overview of java ORBs – First Java ORB application – OMG IDL to Java, Interface repository) – CORBA events – Practical applications.

UNIT IV COM OVERVIEW **10 hrs.**

COM – Distributed COM – COM facilities and services – Applying COM objects – COM interface - Query interface – Reference counting –Dynamic linking – Class factory – Component issue.

UNIT V INTRODUCTION AND PROBLEM SOLVING **10 hrs.**

Overview – Architecture – Key technologies – UDDI – WSDL – SOAP.

REFERENCE BOOKS:

1. Andreas Vogel and Keith Duddy, "Java Programming with CORBA", John Wiley & Sons, 1998.
2. Dale Rogerson, "Inside COM", Microsoft Press, P. Education, 2000.
3. L.Hemachandran, "Component based technology", Charulatha publications, 2005.
4. Ethan Cerami, "Web Service Essentials", O'Reilly, 2002.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX4002 | INTERNET PROGRAMMING LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of Experiments

- Develop static pages (using Only HTML) of an online Book store. The website should consist the following pages.
 - Home page
 - Registration and user Login
 - User Profile Page
 - Books catalog
 - Shopping Cart
 - Payment By credit card
 - Order Conformation
- Mapping image on client & server side
- Add a Cascading Style sheet for designing the web page.
- Validate the Registration, user login, user profile and payment by credit card pages using JavaScript.
- Create and save an XML document at the server, which contains 10 users information. Write a program, which takes User Id as an input and returns the user details by taking the user information from the XML document.
- Extracting contents of the XML document using DOM parser
- Using ActiveX Components in server side scripting.
- Create dynamic pages with database and server side scripting for quiz application.

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| SCSX4012 | NETWORK PROGRAMMING LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of experiments

- A simple Program to print the IP address of the system
- Creation of Date and Time Server.
- Printing Client address at Server side.
- Creation of a simple Chat program.
- Session Tracking in Servlet.
- Accessing Database in a Servlet.
- Servlet to Applet communication.
- Application combining HTML, Javascript , and Servlet.
- Program to implement HTTP Protocol
- Create a servlet program in web application
- Program to display all the cookie information using this session lifetime.
- Create a simple program to send mail using java mail.
- A Simple Program to implement FTP using TCP
- A Simple Program using JSP.

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| SMEX1017 | RESOURCE MANAGEMENT TECHNIQUES (Common to all Branches) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION AND LINEAR PROGRAMMING 10 hrs.

Operations Research(OR)-Nature-Characteristics-Phases.-Role of OR in Decision making- Outline of OR Models
Linear Programming – Formulation of L.P.problems –Solution by graphical method, simplex method, and big M methods
– Applications of O.R. in production management

UNIT II TRANSPORTATION AND ASSIGNMENT MODEL 10 hrs.

Transportation problem – Initial Basic feasible solution- Northwest corner method, Least Cost method, Vogel's approximation method – Test for optimality-MODI method

Assignment problems- Hungarian assignment models- Travelling salesman problems

UNIT III RESOURCE SCHEDULING AND NETWORK ANALYSIS 10 hrs.

Problem of Sequencing – Problem with N jobs and 2 machines N Jobs 3 m/cs and 2 Jobs m m/cs (Graphical method). Project Management – Basic concepts – Network construction and scheduling CPM & PERT Program evaluation and resource leveling by network techniques, time – Cost trade off.

UNIT IV INVENTORY CONTROL AND SIMULATION 10 hrs.

Inventory Control – Various Types of inventory models – deterministic inventory models – Production model, Purchase model– with and without shortage- EOQ – Buffer stock – Shortage quantity, Probabilistic inventory models – Quantity Discount and Price Breaks Simulation – Use, advantages & limitations, Monte –Carlo simulation, application to queuing, inventory & other problems

UNIT V QUEUEING THEORY, GAME THEORY AND REPLACEMENT MODELS 10 hrs.

Queueing theory – Poisson arrivals and exponential service times, Single channel models only. Game theory-Pay off matrix, competitive games with pure strategy, minimax criterion, principles of dominance & mixed strategies
Replacement policy for items whose maintenance cost increases with time- Consideration of time value of money value- Replacement policy- Individual, Group replacement of items that fail completely

TEXT BOOK:

1. Kanti Swarup, P.K.Gupta, & Manmohan., "Operations Research", S. Chand & Sons.

REFERENCE BOOKS:

1. K.V.Mital and C.Mohan, "Optimization Methods in O.R and System Analysis", 3rd Edition, New Age International Publishers.
2. S.D.Sharma,"Operations Research", Kedarnath Ramnath& Co, 2002.
3. Hamdy A. Taha, "Operations Research", 5th Edition., PHI, 1995
4. Hiller & Liberman, "Introduction to operation research", 5th Edition., McGraw Hill, 2001.
5. Ravindran,Phillips&Solberg, "Operations Research: principles and practice", 2nd Edition., Wiley India Lts, 2007

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX1002 | WEB SERVICES | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I XML TECHNOLOGY FAMILY**10 hrs.**

XML – benefits – advantages of XML over HTML, EDI, Databases – XML based Standards – Structuring with schemas – DTD – XML Schemas – XML processing – DOM – SAX – presentation technologies – XSL – XFORMS – XHTML – Transformation – XSLT – XLINK – XPATH – XQuery.

UNIT II ARCHITECTING WEB SERVICES**10 hrs.**

Business motivations for web services – Technical motivations – Limitations of CORBA and DCOM – Service-oriented Architecture (SOA) – Architecting web services – Implementation view – web services technology stack – logical view – composition of web services – deployment view – from application server to peer to peer – process view – life in the runtime

UNIT III WEB SERVICES BUILDING BLOCKS**10 hrs.**

Transport protocols for web services – messaging with web services – protocols – SOAP – describing web services – WSDL – Anatomy of WSDL – manipulating WSDL – web service policy – web service inspection.

UNIT IV DISCOVERING & IMPLEMENTING WEB SERVICES**10 hrs.**

Discovering web services – UDDI – Anatomy of UDDI – Ad-Hoc Discovery – B2B – B2C Concepts – Components of e-business XML systems – ebXML – Applied XML in vertical industry – web services for mobile devices – Creating simple web services

UNIT V XML SECURITY**10 hrs.**

Security Overview – Canonicalization – XML Security Framework – XML Encryption – XML Digital Signature – XKMS Structure – Guidelines for Signing XML Documents.

REFERENCE BOOKS:

1. Ron Schmeltzer, "XML and Web Services", Pearson Education, 2002.
2. Micki Krause, Harold F. Tipton, "Handbook of Information Security Management", Vol 1-3 CRC Press LLC, 2004.
3. Stuart Mc Clure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata McGraw Hill, 2003
4. Matt Bishop, "Computer Security Art and Science", Pearson / PHI, 2002.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1025 | WIRELESS AND MOBILE NETWORKS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Medium access control – SDMA – FDMA – TDMA – CDMA – Telecommunication systems – GSM – DECT – TETRA & UMTS – Satellite systems – LEO – MEO – GEO – Handover.

UNIT II BROADCAST SYSTEM & WIRELESS LAN**10 hrs.**

Broadcast systems – Cyclic repetition of data – Digital audio broadcasting – Digital video broadcasting – Wireless LAN – Infrared Vs radio transmission – IEEE 802.11 – HYPER LAN – Bluetooth.

UNIT III MOBILE NETWORK LAYER**10 hrs.**

Mobile network layer – Mobile IP – Dynamic host configuration protocol – Adhoc networks – Routing – Destination sequence distance vector – Dynamic source routing – Hierarchical algorithms – Alternative metrics.

UNIT IV MOBILE TRANSPORT LAYER**10 hrs.**

Mobile transport layer – Traditional TCP – Indirect TCP – Snooping TCP – Mobile TCP – fast retransmit/fast recovery – Transmission/timeout freezing – Selective retransmission – Transaction oriented TCP.

UNIT V WAP & WLL**10 hrs.**

World Wide Web – Wireless Application Protocol (WAP) – WAP Architecture – WAP Protocols – VoIP service for mobile networks – Wireless Local loop (WLL).

REFERENCE BOOKS:

1. Jochen Schiller, "Mobile Communications", 2nd Edition, Pearson Education, 2008.
2. Yi-Bing Lin, Imrich Ehlantec, John Wiley & Sons, "Wireless and Mobile Network Architectures", Inc., 2008.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1026 | CRYPTOGRAPHY & NETWORK SECURITY (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Services – Mechanisms and attacks – The OSI security architecture – A model for network security – Classical encryption technique – Symmetric cipher model – Substitution technique – Rotar machines – Steganography.

UNIT II BLOCK CIPHERS AND THE DATA ENCRYPTION STANDARD (DES)**10 hrs.**

Simplified DES – Block Cipher principles – The Data Encryption Standard – The strength of DES – Confidentiality using symmetric encryption – Placement of encryption – Traffic confidentiality – Key distribution – Random number generation.

UNIT III PUBLIC KEY ENCRYPTION AND KEY MANAGEMENT**10 hrs.**

Introduction to number theory – Public key cryptography and RSA – Key management – Diffie-hellman key exchange.

UNIT IV AUTHENTICATION AND HASH FUNCTIONS**10 hrs.**

Authentication requirements – Authentication functions – Message authentication codes – Hash functions – Security of hash functions and MAC'S – MD5 (Message Digest Algorithm) – HMAC.

UNIT V NETWORK SECURITY**10 hrs.**

Network security and system Security – Electronic mail security – IP security – Web security – Intruders – Malicious S/Ws – Firewalls.

REFERENCE BOOKS:

1. William Stallings, "Cryptography and Network Security", 2nd Edition, Prentice Hall of India, New Delhi, 1999.
2. Bruce Schneier, "Applied Cryptography", 2nd Edition, John Wiley and Sons, 1996.
3. Douglas R. Stinson, "Cryptography- Theory and Practice", CRC Press, 1995.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--|---|---|---|---------|-------------|
| SBAX1001 | PRINCIPLES OF MANAGEMENT AND PROFESSIONAL ETHICS | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I MANAGEMENT FUNCTIONS & STRUCTURE **10 hrs.**

Management – Definition – Basic Function – Contribution of Taylor & Fayol. Types of structure – Line, staff, Functional, Committee, Project & Matrix – Structures.

Departmentalization – Centralization – Decentralization – span of control. Management By Objectives – Management By Exception.

UNIT II MANAGEMENT OF ORGANISATION **10 hrs.**

Forms of Business / Industrial Ownership – Sole Trader, Partnership, Company, Performance Appraisal – Basic Principles – Pitfalls – Methods to Overcome. Industrial Safety – Causes of Accidents – Cost of Accident – How to minimize Accidents. Plant Layout & Maintenance – Need, Types & Managerial Aspects.

UNIT III ORGANISATIONAL BEHAVIOUR **10 hrs.**

OB – Definition – Nature & Scope – Contributing Disciplines – Importance of OB to Managers. Personality – Definition – Theories – Factors Influencing Personality. Motivation – Definition – Theories. Theory X & Y – Transactional Analysis. Morale & Job Satisfaction – Factors Influencing Job Satisfaction.

UNIT IV GROUP DYNAMICS **10 hrs.**

Group – Definition – Types – Determinants of Group Cohesiveness – Communication – Process – Barriers – Effective Communication. Leadership Theories – Factors Contributing to Effective Leadership – Role of Trade Union in Organizations – Functions of Trade Union – Why Trade Union is required? – Types of Trade Union.

UNIT V PROFESSIONAL ETHICS **10 hrs.**

Ethics in Workplace – Formulation of Ethics – Managerial Ethics – Managing Ethical Behaviour – Codes of Ethics – Encouraging Ethical Behaviour – Social Responsibility – Spirituality.

TEXT / REFERENCE BOOKS

1. Gupta C.B., Management Theory and Practice, 14th Edition, Sultan Chand & Sons, 2009.
2. Dr. Prasad L.M., Principle & Practice of Management, 7th Edition, Sultan Chand & Sons, 2008.
3. Aswathappa, Organisational Behaviour, 8th Edition, Himalaya Publishing House, 2010.
4. Dr. Prasad L.M., Organisational Behaviour, 4th Edition, Sultan Chand & Sons, 2008.
5. Harold Koontz, Principles of Management, 1st Edition, Tata McGraw Hill, 2004.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1028 | DISTRIBUTED COMPUTING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I FUNDAMENTALS**10 hrs.**

What is distributed computing systems – Evolution of distributed computing systems – Distributed computing system models – What is distributed operating system – Issues in designing distributed operating systems.

Message passing – Features of a good message-passing system – Issues in IPC by message passing – Synchronization – Buffering – Multidatagram messages – Encoding and decoding of message data – Failure handling – Group communication.

UNIT II REMOTE PROCEDURE CALLS**10 hrs.**

RPC Models – Transparency of RPC – Implementing RPC mechanism – Stub generation – RPC messages – Marshaling arguments & results – Server Management – Parameter-passing semantics – Call semantics – Communication protocols for RPCs – Complicated RPCs – Client server binding – Security – Special types of RPCs – Light weight RPC.

UNIT III DISTRIBUTED SHARED MEMORY**10 hrs.**

General architecture of DSM systems – Design & implementation issues of DSM – Granularity – Structure of shared memory space – Consistency models – Replacement strategy – Thrashing – Heterogeneous DSM – Advantages of DSM.

UNIT IV SYNCHRONIZATION AND MANAGEMENT**10 hrs.**

Synchronization – Clock synchronization – Mutual exclusion – Election algorithms – Deadlocks. – Resource Management – Task assignment approach – Load balancing approach – Load sharing approach – Process Management – Process migration – Threads.

UNIT V DISTRIBUTED FILE SYSTEMS**10 hrs.**

Desirable features of a good distributed file systems – File models – File accessing models – File sharing semantics – File caching schemes – File replications – Fault tolerance – Atomic transaction.

REFERENCE BOOKS:

1. Pradeep K Sinha, "Distributed Operating Systems, Concepts & Design", Prentice Hall of India, 2009.
2. Andrew S.Tanenbaum, "Distributed Operating Systems", 1st Edition, Prentice Hall of India, 1995.
3. Andrew S.Tanenbaum, and Steen, Maarten van, "Distributed Systems", 2nd Edition, Prentice Hall of India, 2007.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--|---|---|---|---------|-------------|
| SCSX1029 | SOFT COMPUTING (Common to CSE, IT & BIOINFO) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I NEURAL NETWORKS**10 hrs.**

Introduction to ANS – Adaline – Back propagation network – Hopfield network – Boltzman machine – Self organizing maps.

UNIT II FUZZY LOGIC**10 hrs.**

Fuzzy sets – Fuzzy rules and fuzzy reasoning – Fuzzy inference system – Mamdani fuzzy model – Sugeno fuzzy model – Tsukamoto fuzzy model.

UNIT III NEURO FUZZY**10 hrs.**

Adaptive Neuro Fuzzy Inference System – Coactive neuro-fuzzy modelling – Classification and regression trees – Data Clustering Algorithm – Rule based structure – Neuro - Fuzzy control I – Neuro -Fuzzy control II – Fuzzy decision making. .

UNIT IV GENETIC ALGORITHM**10 hrs.**

Introduction – Implementation of GA – Reproduction – Crossover – Mutation – Coding – Fitness scaling – Application of GA.

UNIT V ARTIFICIAL INTELLIGENCE**10 hrs.**

Introduction – Searching techniques – First order Logic – Forward reasoning – Backward reasoning – Semantic – Frames.

REFERENCE BOOKS:

1. James A.Freeman, David M. Skapura, "Neural Networks, Algorithms, Applications and Programming Techniques ", Pearson Education, 1991.
2. George.J.Klir, Bo Yuan , "Fuzzy Sets and Fuzzy Logic – Theory and Application", 1995.
3. J.S.R.Jang, C.T.Sun, E-Mizutani, "Neuro – Fuzzy and Soft Computing ", Prentice Hall of India, 1997.
4. David E. Goldberg, "Genetic Algorithms – In Search, Optimization and Machine Learning ", Pearson Education, 2005.
5. Stuart J.Russel, Peter Norvig , "Artificial Intelligence A Modern Approach ", 2nd Edition, Pearson Education, 2003.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX4003 | SOFTWARE COMPONENTS LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

List of Experiments

1. Using ACTIVE X Controls
2. COM Component : Development of simple COM Component in VB and use them in applications.
3. Deploying components for handling Multimedia files.
4. Creation of DLL Using VB and Deploy it in Java
5. Applications Using COM/DCOM
6. Components objects deployment – EJB and CORBA Sample applications.
7. Dynamic web page design using Servlets and JDBC
8. Dynamic web page design using JSP and JDBC
9. Dynamic web page design using Advanced JSP Tags
10. Application Using Web Services

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| SITX4004 | CASE TOOLS & SOFTWARE DEVELOPMENT LAB | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 4 | 2 | 100 |

Prepare documents for each Experiment and develop the software using Software Engineering Methodology Problem Analysis Planning, Software requirement Analysis, Data Modeling (Use work products-Data Dictionary, Use case diagram and activity diagrams, build and test class diagrams, Sequence diagrams and Collaboration diagram, Component diagram) Development and Debugging & Software Testing

List of Experiments

1. Quiz System
2. Mark Analysis
3. Railway Reservation System
4. Stock Information
5. Marketing
6. Course Registration

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| S12XPROJ | PROJECT AND VIVA VOCE | L | T | P | Credits | Total Marks |
| | | 0 | 0 | 30 | 15 | 100 |

The objective of the project work is to make use of the knowledge gained by the student at various stages of the degree course. Students, will also be permitted to undertake industrial/consultancy project Work, outside the department, in industries/Research labs.

There shall be three assessments during the semester by a review committee. The student shall make three presentations on the progress made before the committee at various stages of the Project work. The Head of the Department shall constitute the review committee for each branch of study. The total marks obtained in the three reviews, shall be taken in to account. There will be a viva-voce examination at the end of the Project work, conducted by one internal examiner and one external examiner. The total marks secured will be the sum of marks secured in the Project reviews and Viva Voce Examination.

Each student is required to submit a Project report on the project assigned to him by the department. The report should be based on the information available in the literature or data obtained by the student by way of experiments conducted in the laboratory/industry.

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| SCSX1030 | DATAMINING AND WAREHOUSING (Common to CSE, IT & BIOINFO) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I DATA MINING**10 hrs.**

Introduction – Data – Types of data – Data mining functionalities – Interestingness of patterns – Classification of data Mining systems – Data mining task primitives – Integration of a data mining system with a data warehouse – Issues –Data preprocessing.

UNIT II ASSOCIATION RULE MINING AND CLASSIFICATION**10 hrs.**

Mining frequent patterns – Associations and correlations – Mining methods – Mining various kinds of association rules – Correlation analysis – Constraint based association mining – Classification and prediction – Basic concepts – Decision tree – Induction – Bayesian classification – Rule based classification – Classification by backpropagation – Support vector machines – Associative classification – Lazy learners – Other classification methods – Prediction.

UNIT III CLUSTERING, APPLICATIONS AND TRENDS IN DATA MINING**10 hrs.**

Cluster analysis – Types of data – Categorization of major clustering methods – Kmeans – Partitioning methods – Hierarchical methods –Density-based methods –Grid-based methods – Model-based clustering methods – Clustering high dimensional data – Constraint Based cluster analysis – Outlier analysis – Data mining applications.

UNIT IV DATA WAREHOUSING**10 hrs.**

Data warehousing components – Building a data warehouse – Mapping the data warehouse to a multiprocessor architecture – DBMS schemas for decision support – Data extraction – Cleanup and transformation tools – Metadata.

UNIT V BUSINESS ANALYSIS**10 hrs.**

Reporting and query tools and applications – Tool categories – The need for applications – Cognos Impromptu – Online Analytical Processing (OLAP) – Need – Multidimensional data model – OLAP guidelines – Multidimensional versus multirelational OLAP – Categories of tools – OLAP tools and the internet.

REFERENCE BOOKS

1. Alex Berson and Stephen J. Smith, " Data Warehousing, Data Mining & OLAP", Tata McGraw Hill, 2007.
2. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", 2nd Edition, Elsevier, 2007.
3. Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction To Data Mining", Person Education, 2007.
4. K.P. Soman, Shyam Diwakar and V. Ajay, "Insight into Data mining Theory and Practice", Easter Economy Edition, Prentice Hall of India, 2006.
5. G. K. Gupta, "Introduction to Data Mining with Case Studies", Easter Economy Edition, Prentice Hall of India, 2006.
6. Daniel T.Larose, "Data Mining Methods and Models", Wile-Interscience, 2006.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--|---|---|---|---------|-------------|
| SCSX1032 | MANAGEMENT INFORMATION SYSTEM (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO MIS**10 hrs.**

Concept – Definition – Role – Impact – Importance – MIS and users – Approaches to management – Functions of manager – Manager and the environment – Management as a control system – Process of management – Management effectiveness – Planning – Organizing – Staffing – Co-coordinating – directing – controlling.

UNIT II BASIS OF MIS**10 hrs.**

Decision making – Concept – Methods – Tools procedures – Behavioral concepts – MIS and decision making information – Concepts – Quality – Classification – Collection – Value – Organizations and information – MIS and information concepts.

UNIT III DEVELOPMENT AND APPLICATION**10 hrs.**

Development of long range plans of the MIS – Ascertaining the class of information – Determining the information requirements – Development and implementation of the MIS Systems – Basic concepts of system – System control – Types of systems – Post implementation problems in systems.

UNIT IV TECHNOLOGY IN MIS**10 hrs.**

Technology of information system – Data processing – Transaction processing – Application processing – Information system processing – TQM of information system processing – Client - Server architecture – Implementation strategies – MIS and client server architecture.

UNIT V FUTURE DEVELOPMENTS AND ORGANIZATIONAL, SOCIAL IMPLICATIONS**10 hrs.**

The fifth generation computer – Definition – Knowledge based representations – Human machine interaction – Technological support – Merging of computer and communications technologies – Developments in telecommunications – Role of government regulation – Integrated services digital networks – Impact of information technology – Impact on individual jobs – Organizational structure – Lifestyles – Shift in employment – Threat to privacy.

REFERENCE BOOKS:

1. W.S. Jawadekar, "Management information system", 2nd Edition, Tata McGraw hill, 2006.
2. Davis Olson, "Management information system", McGraw Hill, 2004
3. Robert G. Murdock, Joel, "Information system for modern management", Prentice Hall of India, 1975

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1033 | NATURAL LANGUAGE PROCESSING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION **10 hrs.**

An outline of English syntax – Grammars and parsing – Features and Augmented Grammar.

UNIT II SYNTACTIC PROCESSING **10 hrs.**

Grammars for natural language – Toward efficient parsing – Ambiguity resolution – Statistical Methods.

UNIT III SEMANTIC INTERPRETATION **10 hrs.**

Semantic and logical form – Linking syntax and semantics – Ambiguity resolution – Other strategies for semantic interpretation – Scoping for interpretation of noun phrases.

UNIT IV CONTEXT AND WORLD KNOWLEDGE **10 hrs.**

Knowledge representation and reasoning – Local discourse context and reference.

UNIT V WORLD KNOWLEDGE AND SPOKEN LANGUAGE **10 hrs.**

Using world knowledge – Discourse structure – Defining conversational agent – An introduction to logic and model – Theoretic semantics – Symbolic computation – Speech recognition and spoken Language.

REFERENCE BOOKS:

1. James Allen, "Natural Language Understanding", 2nd Edition, Benjamin/Cummings Publishing Company Inc, 1995.
2. Vibhu O. Mittal, "Generating Natural language Descriptions with integrated Text and Examples", Lawrence Associates, 1999.
3. Wendy G. Lehnert, Martin. H. Ringle, "Strategies for NLP", Lawrence Associates, 1982.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1034 | IMAGE PROCESSING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I DIGITAL IMAGE PROCESSING**10 hrs.**

Digital image representation – Fundamental steps in image processing – Elements of digital image processing system – Elements of visual perception – Image model – Sampling & quantization – Basic relationship between pixels.

UNIT II IMAGE TRANSFORMS**10 hrs.**

Basic transformation – Perspective transformation – Photographic film structure – Exposure & film characteristics – Image transforms – Introduction to Fourier transform – Discrete Fourier transform – Fast Fourier transform – Discrete Cosine transform.

UNIT III IMAGE ENHANCEMENT & IMAGE RESTORATION**10 hrs.**

Image enhancement – Point operations – Histogram modeling – Spatial operations – Transform operations – Multispectral image enhancement – Color image enhancement.

Image restoration – Image degradation model – Noise models – Inverse filtering – Geometric transformation.

UNIT IV IMAGE ANALYSIS**10 hrs.**

Image analysis – Feature extraction – Edge detection – Boundary extraction – Image segmentation – Representation & description – Edge linking & boundary detection – Thresholding – Region segmentation representation – Oriented & description schemes of images – Classification techniques – Applications.

UNIT V IMAGE COMPRESSION**10 hrs.**

Image compression – Introduction – Pixel coding – Predictive techniques – Transform coding theory – Transform coding of images – Error free compression – Variable length coding – Lossless – Image Compression Standards.

REFERENCE BOOKS:

1. Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing", Prentice Hall of India, 2008.
2. Anil K. Jain, "Fundamentals of Digital Image Processing", Prentice Hall of India, 1989.
3. William K. Pratt, "Digital Image Processing", Wiley Publications, 1991.
4. Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing using MATLAB", Prentice Hall of India, 2009.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1035 | ON-LINE TRANSACTION PROCESSING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Introduction to OLTP – Designing critical OLTP features – OLTP in banking industry – In stock exchanges – In POS – In telecommunications – OLTP program design – Design alternatives and design reviews.

UNIT II OLTP ENVIRONMENT**10 hrs.**

Role of fourth generation languages in OLTP environments – OLTP light – Client/server OLTP – Large-scale OLTP – OLTP in multivendor environment – Interoperability products – Services – Strategies.

UNIT III OLTP AND SYSTEMS**10 hrs.**

System reliability – Increase reliability implementations – Value of moving to UNIX – UNIX for large-scale application – Security in UNIX – Transaction processing power – Distributed computing – OSF/DCE based distributed transaction processing – OLTP requirements – Strategy for success.

UNIT IV OLTP AND CICS**10 hrs.**

CICS for OLTP – Application design – VSAM – High-availability CICS – Logical unit type 6.2 application in CICS – Data integrity – Introduction – Propriety and consistency – Commit and back out – Concurrency and conflict – Pseudo-conversational transactions – Multiple update PSB – Common work area – Journaling and recovery – Point of consistency – Data conducts – Application design for CICS/ESA transaction performance.

UNIT V OLTP AND FUTURE**10 hrs.**

Database gateways – Technology – Standards and products – On-line complex processing – Smartising – Downsizing – Rightsizing.

REFERENCE BOOKS:

1. Gary McClain, "OLTP Handbook", Tata McGraw Hill, 1994.
2. BillyGene Claybrook, "OLTP, Online Transaction Processing Systems", J.Wiley, 1992
3. Anthony D. Hooten, "Auugn", IBM Corporation, 1993.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1036 | FREE/OPEN SOURCE SOFTWARE (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I OVERVIEW OF FREE/OPEN SOURCE SOFTWARE**10 hrs.**

Overview of Free/Open Source Software – Definition of FOSS & GNU – History of GNU/Linux and the free software movement – Advantages of free software and GNU/Linux – FOSS usage – Trends and potential - global and Indian – GNU/Linux OS installation – Detect hardware – Configure disk partitions & file systems and install a GNU/Linux distribution – Basic shell commands – logging in, Listing files, editing files, copying/moving files, viewing file contents, changing file modes and permissions, process management – User and group management – File ownerships and permissions – PAM authentication – Introduction to common system configuration files & log files – Configuring networking – Basics of TCP/IP networking and routing – Connecting to the Internet (through dialup, DSL, Ethernet, leased line).

UNIT II ADDITIONAL HARDWARE AND E-MAIL SERVERS**10 hrs.**

Configuring additional hardware – Sound cards – Displays & display cards – Network cards – Modems – USB drives – CD writers – Understanding the OS boot up process – Performing every day tasks using gnu/Linux – Accessing the Internet – Playing music – Editing documents and spreadsheets – Sending and receiving email – Copy files from disks and over the network – Playing games – Writing CDs – X Window system configuration and utilities – Configure X windows – Detect display devices – Installing software – From source code as well as using binary packages – Setting up email servers – Using postfix – (SMTP services) – Courier (IMAP & POP3 services) – Squirrel mail (web mail services) – Setting up web servers – Using apache (HTTP services) – PHP (server-side scripting) – Perl (CGI support) – Setting up file services – Using samba (file and authentication services for windows networks) – Using NFS (file services for gnu/Linux / Unix networks) – Setting up proxy services – Using squid (http / ftp / https proxy services) – Setting up printer services – Using CUPS (print spooler) – Foomatic (printer database).

UNIT III SETTING UP A FIREWALL**10 hrs.**

Using netfilter and ip tables – Using the GNU compiler collection – GNU compiler tools – The C preprocessor (cpp) – The C compiler (gcc) and the C++ compiler (g++) – Assembler (gas) – Understanding build systems – Constructing make files and using make – Using autoconf and autogen to automatically generate make files tailored for different development environments – Using source code versioning and management tools – Using CVS to manage source code revisions, patch & diff.

UNIT IV UNDERSTANDING THE GNU LIBC LIBRARIES AND LINKER**10 hrs.**

Linking against object archives (.a libraries) and dynamic shared object libraries (.so libraries) – Generating statically linked binaries and libraries – Generating dynamically linked libraries – Using the GNU debugging tools – Gdb to debug programs – Graphical debuggers like ddd – Memory debugging/profiling libraries mpatrol and valgrind – Review of common programming practices and guidelines for GNU/Linux and FOSS – Introduction to Bash, sed & awk scripting – Basics of the X Windows server architecture.

UNIT V**10 hrs.**

Qt programming – Gtk+ programming – Python programming – Programming GUI applications with localisation support.

REFERENCE BOOKS:

1. N. B. Venkateshwarlu (Ed) , "Introduction to Linux: Installation and Programming", B S Publishers; 2005. (NRCFOSS Publication)
2. Matt Welsh, Matthias Kalle Dalheimer, Terry Dawson, and Lar Kaufman, "Running Linux", 4th Edition, O'Reilly Publishers, December 2002, ISBN: 0-596-00272-6.
3. Carla Schroder , "Linux Cookbook", 1st Edition, O'Reilly Cookbooks Series, November 2004, ISBN: 0-596-00640-3.
4. Open Sources: Voices from the Open Source Revolution, 1st Edition, January 1999, ISBN: 1-56592-582-3. URL: <http://www.oreilly.com/catalog/opensources/book/toc.html>
5. The Linux Cookbook: Tips and Techniques for Everyday Use, 1st Edition, Michael Stutz, 2001. URL: http://dsl.org/cookbook/cookbook_toc.html
6. The Linux System Administrators' Guide, Lars Wirzenius, Joanna Oja, Stephen Stafford, and Alex Weeks, December 2003. URL: <http://www.tldp.org/guides.html>
7. Using GCC, Richard Stallman et al. URL: <http://www.gnu.org/doc/using.html>
8. An Introduction to GCC, Brian Gough. URL: <http://www.network-theory.co.uk/docs/gccintro/>
9. GNU Autoconf, Automake and Libtool, Gary V. Vaughan, Ben Elliston, Tom Tromey and Ian Lance Taylor. URL: <http://sources.redhat.com/autobook/>
10. Open Source Development with CVS, 3rd Edition, Karl Fogel and Moshe Bar. URL: <http://cvsbook.red-bean.com/>
11. Advanced Bash Scripting Guide, Mendel Cooper, June 2005. URL: <http://www.tldp.org/guides.html>
12. GTK+/GNOME Application Development, Havoc Pennington. URL: <http://developer.gnome.org/doc/GGAD/>
13. Python Tutorial, Guido van Rossum, Fred L. Drake, Jr., Editor. URL: <http://www.python.org/doc/current/tut/tut.html>

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--------------------------------|---|---|---|---------|-------------|
| SITX1006 | WINDOWS PROGRAMMING USING VC++ | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Windows Fundamentals - Programming concepts and vocabulary for Windows - Windows Development Tools - Resources Information

UNIT II PROGRAMMING**10 hrs.**

Application framework - Project Utility - Writing Windows Programming (Procedure Oriented) - Pie Chart Application.

UNIT III LIBRARY FUNCTIONS**10 hrs.**

MFC Library - MFC Design Considerations - Key features of MFC Library - C Object - Simple Application and Template - Drawing in client Area Fourier Series Application with Resources - Bar Chart with Resources

UNIT IV APPLICATIONS**10 hrs.**

Graph Application - Word Processor Applications - OLE Features and Specifications - Container Application.

UNIT V ACTIVEX CONTROLS**10 hrs.**

Create Simple Active X Controls with MFC - Customizing Controls - COM - DHTML - ATL vs Active X.

REFERENCE BOOKS

1. C.H. Pappas and W.H. Murry, "Visual C++ 6.0 (The Complete Reference)", Tata McGraw Hill, 1999.
2. Lars Klander, "Core Visual C++ 6", Addison Wesley, First Indian Reprint 2000
3. Herbert Schildt, "Windows 98 Programming from the Groundup", Tata McGraw Hill Edition, 1999.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX1004 | E- COMPUTING | L | T | P | L | T |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I ELECTRONIC COMMERCE**10 hrs.**

Electronic Commerce, Electronic Data Interchange (EDI), Value Added Networks, Electronic Commerce over Internet, PC and Networks, Electronic Communication Media, Computer Communication System, ISO Model, X.400 Message Handling System, Internet E-mail, E-mail Security, Light Weight Directory Access Protocol, Internet – Introduction, Communication Protocols, Internet Search, Internet 2, Intranet – Introduction, Services.

UNIT II EDI**10 hrs.**

Introduction, Cost and Benefits, Components of EDI System, Implementation Issues, UN/EDIFACT Standard – Introduction, An EDIFACT Message, Interchange structure, Message Directories, EDI over Internet, Commerce over extranets, Identification and tracking tools for electronic commerce.

UNIT III TECHNOLOGY AND SECURITY ISSUES**10 hrs.**

Technology issues – Bandwidth issues, Technology issues for the internet NII standard, NII services, NI agenda, GI, Security issues – Security concerns, Security solution, Electronic cash over the internet, internet security, Guidelines for cryptography policy.

UNIT IV RE-ENGINEERING**10 hrs.**

Business process re-engineering, Approach for BPR, Strategic alignment model, BPR methodology, Change Management, Change Management in Public Administration, Implementation Plan, Legal issues, Risks- paper document Versus Electronic Document, Technology for Authentication and Electronic Document, Laws for E-Commerce, EDI Interchange Agreement.

UNIT V CASE STUDIES**10 hrs.**

EDI Indian Customs, US electronic Procurement, Banks, Automotive Industry, SNS, E-Commerce in India, UNCITRAL Model Law on Electronic Commerce, Model Interchange Agreement for International Commercial use of EDI.

REFERENCE BOOKS:

1. Kamlesh K.Bajaj, "E-commerce ", Tata McGraw Hill, 2000.
2. Agoston E. Eiben, J.E. Smith, " Introduction to Evolutionary Computing (Natural Computing Series), 2004
3. Suhreed Sarkar, "Zencart : E-commerce Application Development", 2010.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--|---|---|---|---------|-------------|
| SCSX1022 | J2EE (Common to CSE, IT & BIOINFO) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION & DATABASE PROGRAMMING**10 hrs.**

J2EE Platform – Enterprise architecture styles – J2EE run times – J2EE API – J2EE architecture – Containers –Introduction to J2EE technologies – Naming and directory services.

Database programming with JDBC – JDBC/ODBC bridge – Establishing a connection – Creating and executing SQL statements – Querying – Report statements – Scrollable and updatable result sets – Java.sql packages – JDBC data sources – Connection pooling.

UNIT II SERVLET PROGRAMMING**10 hrs.**

Introduction to Servlet Programming - Servlet Implementations - Servlet configuration - Servlet exceptions - Servlet Life Cycle - Servlet Programming - Servlet Security- Servlet communication -

Advanced Servlets : Approach to Session Tracking - Demonstrating Session - Lifecycle with Cookies - A simple shopping cart using Sessions - Servlet Context Interface - Servlet Collaboration

UNIT III JSP & JAVA MAIL**10 hrs.**

Java Server Pages : Intro to JSP - JSP Directives - Scripting elements - Standard Auctions - Implicit objects - Scope - JSP pages as XML documents - JSP Sample Program - Design Strategies - JSP tag Extensions-A simple TAG - Writing TAG Extensions.

Java Mail API: Introduction to Java Mail - Mail Protocols- Java Mail Overview- Quick, Send me a Email (An example program

UNIT IV ENTERPRISE JAVA BEANS**10 hrs.**

Overview of EJB-EJB Middleware Architecture - EJB Architecture- EJB Containers and its services - Design of EJB Tier - Session java Beans- Stateless and Stateful Beans, Entity Beans and Persistence - Container Vs Bean Managed Persistence, Message Driven Bean - Relationships, EJB Container Services.

UNIT V STRUTS & WEB SERVICE TECHNOLOGIES**10 hrs.**

Struts: Development Models-Basic Components of Struts –Building simple struts Application.

Introduction to Web Service Technologies: Java Message Service - J2EE and Web Services – SOAP – WSDL - UDDI - JAXP - JAXB

REFERENCE BOOKS:

1. Subrahmanyam Allamaraju and Cedric Buest , "Professional Java Server Programming", A press,J2EE 1.3 Edition, 2007
2. Jim Keogh , "Completer Reference, J2EE",Tata McGraw Hill, 2004.
3. James Holmes-Struts,"The complete Reference", 2nd Edition, Tata McGraw Hill, 2007.
4. <http://www.java.sun.com/tutorial>

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|------------------------------|---|---|---|---------|-------------|
| SITX1005 | ONLINE AND REAL TIME SYSTEMS | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Terms and concepts – characteristics of some typical systems – Process Control -, Business Systems, Transaction Systems, Data Acquisition System

Types of systems – simplex, Master slave, Duplexed, Shared file, Multiprocessor systems

UNIT II HARDWARE DETAILS**10 hrs.**

Hardware requirements – processor subsystem, Interrupts, Communication Network, Terminal sub-system, disk storage Factors in selection – System costs and specifications – Hardware configurations

UNIT III DESIGN METHODOLOGIES**10 hrs.**

Design Guidelines – Operational models – Interrupt Processing. Major cycle models – Applications to message switching systems. Average throughput rate capability calculation using memory disk – Effect of buffer variations, variable record length and multi programming. Design calculations – Mathematical modeling, simulation, statistics generation using sampling and event stream approaches

UNIT IV PERFORMANCE ANALYSIS**10 hrs.**

Design of Data communication and terminals – Error characteristics, Error Control, Achievable throughput, Terminal calculations. Cost performance criteria and trade offs

Applications – stock brokerage system, Message switching system, medical online data base system

UNIT V APPLICATION SYSTEMS**10 hrs.**

Application programs – concepts, objectives, modular programming, overlap of CPU and I/O, minimize disk access

File organization concepts – directories buffering, simultaneous access, file security, file recover

Operating systems – functions, priority control program

REFERENCE BOOKS:

1. S.Stimler," Real Time Data Processing System",Tata McGraw Hill,1969
2. E. Yourdon," Design of online computer systems", Prentice Hall, 1972
3. Alan Burns and Andy Wellings, "Real Time Systems and Programming Languages", 3rd Edition, Addison Wesley, 2001.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1038 | SOFTWARE QUALITY ASSURANCE AND TESTING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION**10 hrs.**

Software quality- Role of testing – Software testing fundamentals - Verification and validation- Testing principles- Objectives and issues of testing – Testing lifecycle.

Test process – Testing activities –11 steps of test process(only steps) – How does test information flows? – Test cases – What it is?(Concept & introduction) – Test case selection – Test planning and design – Monitoring and measuring test execution – Test tools and automation.

UNIT II LEVELS AND TYPES OF TESTING**10 hrs.**

Levels – Unit testing – Intergration testing – System testing – Acceptance testing – Alpha testing & beta testing – Manual vs automated testing – Testers workbench.

Types – Installation testing – Usability testing – Regression testing – Performance testing – Load testing – Stress testing – Security testing.

Testing specialized systems and applications – Testing object oriented software – Testing web based applications – Computer aided software testing tools (CAST) (only concepts and types need to be discussed).

UNIT III SOFTWARE TESTING METHODS AND STRATEGIES**10 hrs.**

Static vs dynamic testing – Static testing techniques – Review types – Informal reviews – Walkthrough-Inspection – Static analysis – Dynamic testing – Need & advantages – White box(structural) testing – Flow graph notation – Cyclomatic complexity analysis – Deriving test cases – Data flow analysis – Control structure testing – Black box(functional) testing – Equivalence partitioning – BVA – Cause effect graphing – Syntax testing – Deriving test cases.

Defects – Defect tracking – recording, reporting – defect cause analysis – defect classes.

UNIT IV SOFTWARE QUALITY CONSIDERATIONS**10 hrs.**

Quality assurance vs quality control – Quality factors – McCall's – FURPS-ISO 9126 – Quality metrics – Process improvement – The SEI process capability maturity model – TMM – ISO – Six sigma.

UNIT V SOFTWARE QUALITY ASSURANCE**10 hrs.**

Need for SQA – SQA activities – Building blocks of SQA – SQA planning & standards – Reliability measures.

REFERENCE BOOKS:

1. William E.Perry , "Effective methods of software testing", 3rd Edition, John Wiley & Sons, 2006.
2. Illene Burnstein, " Practical software testing – a process oriented approach", Springer International, 1st Edition, 2003
3. Louise Tamres, " Introduction to software testing", Pearson Education, 2002
4. Boris Beizer , "Software testing techniques", International Thomson Computer Press, 2nd Edition, 1990
5. Roger S.Pressman, "Software Engineering, A practitioner's approach", Tata McGraw Hill, 5th Edition, 2001.
6. Marc Roper , "Software testing", McGraw Hill, 1994

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX1003 | ENTERPRISE RESOURCE PLANNING | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO ERP AND RELATED TECHNOLOGIES **10 hrs.**

Introduction to ERP, Its Evolution, Its Growth, Its Advantages, Its need, Integrated Management Information, Business Modeling, Integrated Data Model.

BPR, MIS, DSS,EIS, Data Warehousing, Data Mining, OLTP, Supply Chain Management.

UNIT II MANUFACTURING PERSPECTIVE AND VARIOUS MODULES **10 hrs.**

MRP, BOM, Closed loop MRP, MRP-11, DRP, JIT and Kanban, CAD/CAM, PDM, Data Management, Benefits of PDM, MTO and MTS, ATO, ERP Modules – Finance, Plant Maintenance, Quality Management, Materials Management.

UNIT III BENEFITS AND MARKET **10 hrs.**

Reduction of load-time-On-time shipment, Reduction in Cycle Time, Improved Resource Utilization, Better Customer Satisfaction, Improved Supplier Performance, Increased Flexibility, Reduced Quality Costs.

UNIT IV IMPLEMENTATION **10 hrs.**

Market, SAP AG, Baan, Oracle, PeopleSoft, JD Edwards, SSA, QAD. ERP Implementation Lifecycle – Pre-evaluation Screening, Package Evaluation, Project Planning Phase, Gap- Analysis, Re-engineering, Configuration, Implementation Team Training, Testing, Going, Live, End-User Training.

UNIT V FUTURE DIRECTIONS AND CASE STUDIES **10 hrs.**

Post-implementation, In-house Implementation – Pros and Cons. Faster Implementation Methodologies, Business Models and BAPIs.

REFERENCE BOOKS:

1. Alexin Leon, "Enterprise Resource Planning ",Tata McGraw Hill, 1999.
2. Avraham Shtub, Reuven Karni," ERP: The Dynamics of Supply Chain and Process Management", Springer Science and Business media, Second Edition
3. Daniel E.O' Leary, "Enterprise Resource Planning Systems", Cambridge University Press, 2001

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1042 | ROBOTICS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I SCOPE OF ROBOTS AND INTELLIGENCE**10 hrs.**

The scope of industrial robots – Definition of an industrial robot – Need for industrial robots – applications – Robot intelligence – State space search – Problem reduction – Use of predicate logic – Means ends analysis – Problem solving – Robot learning – Robot task planning – Basic problems in task planning.

UNIT II ROBOT COMPONENTS**10 hrs.**

Fundamentals of robot technology – Automation and robotics – Robot anatomy – Work volume – Precision of movement – End effectors – Sensors.

UNIT III ROBOT PROGRAMMING**10 hrs.**

Robot programming – Methods – Interlocks textual languages – Characteristics of Robot level languages – Characteristic of task level languages.

UNIT IV ROBOT WORK CELL**10 hrs.**

Robot cell design and control – Remote center compliance – Safety in robotics.

UNIT V FUTURE TRENDS**10 hrs.**

Advanced robotics – Advanced robotics in space – Specific features of space robotics systems – Long term technical developments – Advanced robotics in underwater operations – Robotics technology of the future – Future applications.

REFERENCE BOOKS:

1. Barry Leatham - Jones, "Elements of industrial Robotics", PITMAN Publishing, 1987.
2. Mikell P.Groover, Mitchell Weiss, Roger N.Nagel Nicholas G.Odrey, "Industrial Robotics Technology, Programming and Applications", McGraw Hill Book Company,1986.
3. Fu K.S. Gonzalez R.C. and Lee C.S.G., "Robotics Control Sensing, Vision and Intelligence (chapter 10) ", McGraw Hill International Editions, 1987.
4. Bernard Hodges and Paul Hallam, " Industrial Robotics", British Library Cataloging in Publication,1990.
5. Deb, S.R., "Robotics Technology and flexible automation", Tata McGraw Hill, 1994.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1043 | UNIX INTERNALS (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I SYSTEM ARCHITECTURE AND ADMINISTRATION**10 hrs.**

General review of the system – History – System structure – User perspective – Operating system services – Assumptions about hardware – Introduction to the kernel – Architecture system concepts – Data structures – System administration.

UNIT II BUFFER CACHE AND DISK BLOCKS**10 hrs.**

The buffer cache – Headers – Buffer pool – Buffer retrieval – Reading and writing disk blocks – Advantages and disadvantages – Internal representation of files – Inodes – Structure – Directories – Path name to Inode – Super block – Inode assignment – Allocation of disk blocks – Other file types.

UNIT II FILE SYSTEMS**10 hrs.**

System calls for the file system – Open – Read – Write – Lseek –Close – Create – Special files creation – Change directory and change root – Change owner and change mode – Stat – Fstat – Pipes – Dup-Mount – Unmount – Link – Unlink – File system abstraction – Maintenance.

UNIT IV PROCESS CONTROL**10 hrs.**

The system representation of processes – States – Transitions – System memory – Context of a process – Saving the context – Manipulation of a process address space – Sleep process control – signals – Process termination – Awaiting – Invoking other programs – The Shell-system Boot and the INIT process.

UNIT V MEMORY MANAGEMENT**10 hrs.**

Memory management policies – Swapping – Demand paging - A Hybrid System – I/O subsystem – Driver interfaces – Disk drivers – Terminal drivers.

REFERENCE BOOKS:

1. Maurice J. Bach, "The Design of the Unix Operating System", Pearson Education, 2002.
2. Uresh Vahalia, "UNIX Internals: The New Frontiers", Prentice Hall of India, 2000.
3. John Lion, "Lion's Commentary on UNIX", 6th edition, Peer-to-Peer Communications, 2004.
4. Daniel P. Bovet & Marco Cesati, "Understanding the Linux Kernel", O'REILLY, Shroff Publishers & Distributors Pvt. Ltd, 2000.
5. M. Beck et al, "Linux Kernel Programming", Pearson Education Asia, 2002

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SITX1007 | EMBEDDED ARCHITECTURE | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I REVIEW OF EMBEDDED HARDWARE**10 hrs.**

Gates – Timing Diagram – Memory – Microprocessors, Buses-Direct Memory Access – Interrupts – Built-ins On the Microprocessor – Conventions used on schematic – schematic. Interrupts Microprocessor architecture – Interrupt Basics – Shared Data Problem – Interrupt latency

UNIT II MICROCHIP PIC MICRO CONTROLLER**10 hrs.**

Introduction, CPU architecture, registers, instruction sets, address modes, Loop timing, timers, Interrupts, Interrupt timing, I/O Expansion, IC Bus Operation, Serial EEPROM, Analog to digital converter, UART-Baud Rate – Data Handling – Initialization, special Features – serial programming – parallel slave port.

UNIT III PIC MICRO CONTROLLER INTERFACING**10 hrs.**

I²C Bus Operation, Serial EEPROM, Analog to digital converter, UART- Baud Rate – Data Handling – Initialization, special Features – serial programming – parallel slave port.

UNIT IV SOFTWARE DEVELOPMENT**10 hrs.**

Round Robin, Round robin with Interrupts, Function – Queue – Scheduling Architecture, Algorithms. Introduction to – Assembler – Compiler – Cross compilers and Integrated Development Environment (IDE). Object Oriented Interfacing, Recursing, Debugging strategies, Simulators.

UNIT V REAL TIME OPERATING SYSTEMS**10 hrs.**

Task and Task States, tasks and data, Semaphores and shared Data Operating System Services – Message Queues – Timer Function – Events – Memory Management, Interrupt, Interrupt Routines in an RTOS environment, basic design using RTOS

REFERENCE BOOKS:

1. David .E. Simon,"Embedded Software Primer", Addison-Wesley Professional,1999
2. John B Peatman, "Design of PIC Microcontrollers", Prentice Hall,1997
3. Mike O'Boyle, Per Stenström,"Transactions on High-Performance Embedded Architectures and Compilers", Springer, 2007

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1047 | HIGH PERFORMANCE NETWORK (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I HIGH SPEED LAN**10 hrs.**

Fast Ethernet technology – FDDI – SONET – SDH standards – Performance of high speed LAN – Throughput, delay and reliability – Wavelength division multiplexed LAN – Routing and switching in WDM networks – Gigabit LAN.

UNIT II ISDN**10 hrs.**

Overview of ISDN – User interface , architecture and standards – Packet switched call over ISDN – B and D channels – Link access procedure (LAPD) – ISDN layered architecture – Signaling – Limitations of Narrow band ISDN(N-ISDN) and evolution of Broadband ISDN(B- ISDN).

UNIT III ASYNCHRONOUS TRANSFER MODE NETWORKS**10 hrs.**

ATM protocol architecture – ATM adaption layer – Fast packet switching techniques and VP/VC encapsulation –Source characteristics.

UNIT IV ATM TRAFFIC MANAGEMENT**10 hrs.**

Traffic management issues in ATM – Resource management – Connection management – Policing and reactive control principles – Discrete time queue analysis and application to CAC – Leaky bucket and ECN/ICN.

UNIT V ATM SIGNALING AND DATA COMMUNICATION OVER ATM**10 hrs.**

ATM signaling fundamentals and Meta signaling – TCP/IP over ATM – Challenges and proposals – LAN emulation over ATM – Performance of data communication over ATM.

REFERENCE BOOKS:

1. Onvural.R.O, "Asynchronous Transfer mode Networks – Performance issues", Artech House, 1995.
2. Stallings.W, "High speed networks, TCP/IP and ATM design principle", Prentice Hall of India, 1998.
3. Craig Partridge, "Gigabit Networking", Addison Wesley, 1997.
4. Stallings.W, "ISDN –B ISDN with Frame relay and ATM", Prentice Hall of India, 1995.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1048 | GRID COMPUTING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I CONCEPTS AND ARCHITECTURE**10 hrs.**

Introduction – Parallel and distributed computing – Cluster computing – Grid computing – Anatomy and physiology of grid – Review of web services – OGSA – WSRF.

UNIT II GRID MONITORING**10 hrs.**

Grid Monitoring Architecture (GMA) – An overview of grid monitoring systems – Grid ICE – JAMM – MDS – Network Weather Service – RGMA – Other Monitoring Systems – Ganglia and GridMon.

UNIT III GRID SECURITY AND RESOURCE MANAGEMENT**10 hrs.**

Grid security – A brief security primer – PKI-X509 Certificates – Grid security – Grid scheduling and resource management – Scheduling paradigms – Working principles of scheduling – A review of condor – SGE – PBS and LSF – Grid scheduling with QoS.

UNIT IV DATA MANAGEMENT AND GRID PORTALS**10 hrs.**

Data management – Categories and origins of structured data – Data management challenges – Architectural approaches – Collective data management services – Federation Services – Grid portals – First generation grid portals – Second generation grid portals.

UNIT V GRID MIDDLEWARE**10 hrs.**

List of globally available middlewares – Case studies – Recent version of Globus toolkit and GLite – Architecture – Components and features.

REFERENCE BOOKS:

1. Maozhen Li, Mark Baker, "The Grid Core Technologies", John Wiley & Sons ,2005.
2. Ian Foster & Carl Kesselman, "The Grid 2 – Blueprint for a New Computing Infrascture", Morgan Kaufman, 2004.
3. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson Education, 2004.
4. Fran Berman,Geoffrey Fox, Anthony J.G.Hey, "Grid Computing: Making the Global Infrastructure a reality", John Wiley and sons, 2003.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SCSX1049 | CLIENT SERVER ARCHITECTURE (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTRODUCTION TO CLIENT-SERVER ARCHITECTURE**10 hrs.**

Distributed processing – Cooperative processing – Client/server processing – Peer to peer processing – Client/server architecture – Time sharing – Resource sharing – File Server versus Client/Server Database – Two tier versus Three tier C/S model – Web application architecture.

UNIT II CLIENT SERVER MODEL AND SOFTWARE DESIGN**10 hrs.**

Transaction Processing (TP) monitors – Groupware for collaborative human activities (components, work flows, scheduling) – Object brokers (components) – Webservers components – Firewalls – Client – Server model – Motivation – Terminology and concepts – Applications – Concurrency in network – Concurrency in clients – Concurrency in servers – Context switching and protocol software design – Advantages of concurrency – Architecture and design of client server model – Multitasking with processes and threads – Scheduling – Synchronization – Memory – Communications.

UNIT III CLIENT SERVER ARCHITECTURE AND DISTRIBUTION**10 hrs.**

Application architecture – Database architecture – Data architecture – Open system interconnect(ISO) models – Information system architectures – Function (application) architecture – Network (technology) architecture application partitioning models – Distributed presentation – Remote presentation – Distributed logic – Remote data management – Distributed data management developers view of client server application.

UNIT IV CLIENT SERVER APPLICATION SYSTEM DEVELOPMENT LIFE CYCLE**10 hrs.**

Mission critical application functional specification business rules – Database design – Data distribution – Prototyping – User interface design – Front-end module design reusable modules – Goals of the design stage – Usability iceberg process for doing UI design – Requirement gathering – Multiple prototypes.

UNIT V CLIENT SERVER APPLICATIONS DEVELOPMENT**10 hrs.**

Application segmentation – User interface – Data connectivity as issue data access strategies – Distributed database centralized database – Heterogeneous data access – Transactional data versus analytic data – Middleware common interface – Common gateway – Common protocol – Technical architecture – Selection of platform and development tools – Selection of client/server application.

REFERENCE BOOKS:

1. Douglas E. Comer, David L; Stevens, " Internetworking with TCP/IP: Client-Server Programming and Applications : Vol III ", Prentice Hall of India, New Delhi, 2001.
2. Jaffrey D. Schqnk, " Client Server Applications and architecture ", BPB Novell Press, New Delhi, 1994.
3. Douglas J. Reilly, "Client/Server Developers Guide", Addison Wesley Developer's Press, Massachusetts, 1996.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|---|---|---|---|---------|-------------|
| SCSX1050 | TCP/IP AND SOCKET PROGRAMMING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I INTERNET PROTOCOL**10 hrs.**

IP-Header – Routing methods – Subnetting and super netting – Class full addressing – Classless addressing - IP Dynamic routing protocols – IPV6-Header – Advantages.

UNIT II PROTOCOLS**10 hrs.**

ARP – Messages – Operation – Package – RARP-Message – Operation – ICMP-Message – Package – IGMP –Message – Operation – Package.

UNIT III TRANSMISSION CONTROL PROTOCOLS**10 hrs.**

TCP-Services – Header – Flow control – Silly window syndrome solutions – Error control – Congestion control – TCP State transition diagram.

UNIT IV APPLICATION LAYER & CLIENT SERVER MODEL**10 hrs.**

Client server model – Concurrency – BOOTP operation – Packet format – DHCP operation – Packet Format – DNS-Message – Resolution – DNS in internet.

UNIT V SOCKET PROGRAMMING APPLICATIONS**10 hrs.**

Socket creation – Connection oriented services – Establishment – Sending and receiving messages – Connectionless services – Sending and receiving messages – TCP echo client server – Ping implementation – FTP implementation – Chat – UDP echo client server – Ping implementation – Chat.

REFERENCE BOOKS:

1. Behrouz A. Forouzan, "TCP/IP Protocol suite", Tata McGraw Hill, 2000.
2. Douglas E. Comer, "Internetworking with TCP/IP", 4th Edition, Pearson Education Asia, Volume 1,2 2000.
3. Richard Stevens, "TCP/IP Illustrated", Vol. 1,2,3, Pearson Education India, 1996.
4. John Ray, "Using TCP/IP", Prentice Hall of India, 1999.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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|----------|--|---|---|---|---------|-------------|
| SCSX1057 | CLOUD COMPUTING (Common to CSE & IT) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I UNDERSTANDING CLOUD COMPUTING**10 hrs.**

Cloud Computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why Cloud Computing Matters – Advantages of Cloud Computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

UNIT II DEVELOPING CLOUD SERVICES**10 hrs.**

Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds

UNIT III CLOUD COMPUTING FOR EVERYONE**10 hrs.**

Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation

UNIT IV USING CLOUD SERVICES**10 hrs.**

Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files

UNIT V OTHER WAYS TO COLLABORATE ONLINE**10 hrs.**

Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis

REFERENCE BOOKS:

1. Michael Miller, "Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online", Que Publishing, August 2008.
2. Haley Beard, "Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs", Emereo Pty Limited, July 2008.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max Marks : 80

Exam Duration : 3 hrs.

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks

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| SECX1020 | NANO ELECTRONICS (Common to EEE, BIO-MED, EIE & E&C) | L | T | P | Credits | Total Marks |
| | | 3 | 0 | 0 | 3 | 100 |

UNIT I CONCEPTS OF NANOSTRUCTURES**10 hrs.**

Electronic states in crystal energy bands, Concepts of 2D nanostructures (quantum wells), 1 D nanostructures (quantum wires) OD nanostructures (quantum dots), artificial atomic clusters.

UNIT II PROPERTIES AND ANALYSIS OF NANOSTRUCTURES**10 hrs.**

Size dependent properties, Size dependent absorption spectra, Blue shift with smaller sizes, Phonons in nanostructures, Contacts at Nano level, AFM.ISTM tip on a surface.

UNIT III ANALYSIS OF QUANTUM TECHNIQUES**10 hrs.**

Charging of quantum dots, Coulomb blockade, Quantum mechanical treatment of quantum wells, wires and dots, Widening of bandgap in quantum dots, Strong and weak confinement, Properties of coupled quantum dots, Optical scattering from Nan defects.

UNIT IV CHARACTERISTIC OF NANOCOMPOSITES AND ZEOLITES**10 hrs.**

Nanocomposites Electronic and atomic structure of aggregates and nanoparticles Theory and modeling of nanoparticles fictionalization processes.

UNIT V CHARACTERIZATION OF NANOPOLYMERS**10 hrs.**

Nanosystems: Synthesis and characterization Methods of Synthesis: Molecular beam epitaxy, MOCVD, chemical routes, nanoparticles on polymers, pulsed laser deposition, ion beam assisted techniques including embedded nanoparticles, RF sputtering.

Total Hours: 50**TEXT BOOKS:**

1. K.Bamam and D.Vvedensky ,Low Dimensional Semiconductor Structures, (Cambridge University Book) 2001.

REFERENCE BOOKS:

1. L.Banyai and S.W.Koch ,Semiconductor Quantum Dots, (World Scientific) 1993,
<http://www.nanotec.org.uk/workshop/october03health.htm>(for health and safety aspects of nanostructures)
2. J.H. Davies, An introduction to the physics-of low dimensional semiconductors, Cambridge Press, 1998.
3. Karl Goser, Peter Glosekotter, Jan Dienstuhl Nanoelectronics and Nanosystems , Springer, 2004
4. Krause P. C. and Wasynczuk O., Electromechanical Motion Devices, McGraw-Hill, New York, 1989.Lyshevski S. E., Electromechanical Systems, Electric Machines, andApplied Mechatronics, CRC Press, FL, 1999.
5. Lyshevski S. E., "Integrated control of microactuators and integrated circuits: a new turning approach in MEMS technology," Proceedings Conference Decision and Control, Phoenix, AZ, pp. 2611-2616, 1999.

UNIVERSITY EXAM QUESTION PAPER PATTERN

Max. Marks: 80

Exam Duration: 3 hrs

Part A: 2 Questions from each unit, each carrying 2 marks

20 marks

Part B: 2 Questions from each unit with internal choice, each carrying 12 marks

60 marks