

**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
(Autonomous)

**COURSE STRUCTURE (2010-2011)**  
**I Year B.Tech. ( yearly pattern )**

**BIOTECHNOLOGY**

Code	Subject	Periods per week			C	Scheme of Examination Max. Marks		
		L	T	P		Int.	Ext.	Total
10BT1HS01	Technical English	2	-	-	4	30	70	100
10BT1BS01	Engineering Physics	2	1	-	4	30	70	100
10BT1BS02	Engineering Chemistry	2	1	-	4	30	70	100
10BT1BS05	Mathematics for Biotechnologists	3	1	-	6	30	70	100
10BT10801	Basics of Biology	3	1	-	6	30	70	100
10BT1EC01	Problem Solving and Computer programming	3	1	-	6	30	70	100
10BT1EC02	Engineering Drawing	-	1	3	4	25	50	75
10BT1EC03	Computer programming Lab	-	-	3	4	25	50	75
10BT1BS06	Engineering Physics and Engineering Chemistry Lab	-	-	3	4	25	50	75
10BT1HS02	English Language and Communication skills Lab	-	-	3	4	25	50	75
10BT1EC04	Engineering and IT workshop	-	-	3	4	25	50	75
	<b>TOTAL</b>	<b>15</b>	<b>6</b>	<b>15</b>	<b>50</b>	<b>305</b>	<b>670</b>	<b>975</b>

**B.Tech. I Year**

**10BT1HS01: TECHNICAL ENGLISH**

(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)

L T P C  
2 - - 4

**UNIT –I**

1. Lesson entitled *Heaven's Gate* from *Enjoying Everyday English*, Published by Sangam Books, Hyderabad
2. Lesson entitled *Mokshagundam Visvesvaraya* from *Inspiring Lives*, Published by Maruthi Publications, Guntur

**UNIT –II**

1. Lesson entitled *Sir CV Raman: a Path breaker in the Saga of Indian Science* from *Enjoying Everyday English*, Published by Sangam Books, Hyderabad
2. Lesson entitled *Mother Teresa* from *Inspiring Lives*, Published by Maruthi Publications, Guntur

**UNIT –III**

1. Lesson entitled *The Connoisseur* from *Enjoying Everyday English*, Published by Sangam Books, Hyderabad
2. Lesson entitled *Dr. Amartya Kumar Sen* from *Inspiring Lives*, Published by Maruthi Publications, Guntur

**UNIT –IV**

1. Lesson entitled *The Cuddalore Experience* from *Enjoying Everyday English*, Published by Sangam Books, Hyderabad
2. Lesson entitled *Kalpana Chawla* from *Internet*

**UNIT –V**

1. Lesson entitled *Bubbling Well Road* from *Enjoying Everyday English*, Published by Sangam Books, Hyderabad
2. Lesson entitled *Nandan Nilekani* from *Internet*.

**UNIT –VI**

1. Lesson entitled *The Odds against Us* from *Enjoying Everyday English*, Published by Sangam Books, Hyderabad
2. Lesson entitled *Charles Chaplin* from *Inspiring Lives*, Published by Maruthi Publications, Guntur

- \* Exercises from the lessons not prescribed shall also be used for classroom tasks.

#### **UNIT – VII**

##### **Exercises on Reading and Writing Skills :**

Reading Comprehension  
Letter writing  
Essay writing

#### **UNIT – VIII**

##### **Practice Exercises on Remedial Grammar :**

Common errors in English  
Subject-Verb agreement  
Articles  
Prepositions  
Tenses  
Active/Passive Voice  
Reported Speech

#### **TEXTBOOKS :**

**Detailed study :** *Enjoying Everyday English*, Sangam Books, 2009.

**Non-detailed study :** *Inspiring Lives*, Maruthi Publications, 2009.

#### **REFERENCE BOOKS:**

1. *Innovate with English: A Course in English for Engineering Students*, edited by T Samson, Foundation Books
2. *English Grammar Practice*, Raj N Bakshi, Orient Longman, 2005
3. *Effective English*, edited by E Suresh Kumar, A RamaKrishna Rao, and P Sreehari, Published by Pearson
4. *Handbook of English Grammar & Usage*, Mark Lester and Larry Beason, Tata Mc Graw–Hill, 2008
5. *Spoken English*, R.K. Bansal & JB Harrison, Orient Longman, 1989
6. *Technical Communication*, Meenakshi Raman and Sangeetha Sharma, Oxford University Press, 2009.
7. *Objective English*, Edgar Thorpe & Showick Thorpe, Pearson Education, 2009
8. *Grammar Games*, Renuvolcuri Mario, Cambridge University Press, 2008
9. *Murphy's English Grammar with CD*, Murphy, Cambridge University Press, 2004
10. *Everyday Dialogues in English*, Robert J. Dixon, Prentice Hall India Pvt. Ltd., 2005

11. *ABC of Common Errors*, Nigel D Turton, Mac Millan Publishers
12. *Effective Technical Communication*, M Ashraf Rizvi, Tata McGraw–Hill, 2009
13. *An Interactive Grammar of Modern English*, Shivendra K. Verma and Hemlatha Nagarajan , Frank Bros & CO.
14. *A Communicative Grammar of English*, Geoffrey Leech, Jan Svartvik, Pearson Education, 2003
15. *Enrich your English*, Thakur K B P Sinha, Vijay Nicole Imprints Pvt. Ltd.
16. *A Grammar Book for You And I*, C. Edward Good, MacMillan Publishers, 2008
17. *Learning English A Communicative Approach*, Orient Longman, 2005

**B.Tech. I Year**

**10BT1BS01: ENGINEERING PHYSICS**

**(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)**

**L T P C**

**2 1 - 4**

**UNIT-I**

**Crystal Structures and X-Ray Diffraction :** Introduction, space lattice, basis, unit cell, lattice parameter, Bravais lattices, crystal systems, structure of simple cubic, body centered cubic, face centered cubic crystals, Miller indices of planes and directions in crystals, separation between successive (hkl) planes.

**Crystal Defects:** Point defects, line defects, Burger's vector, X-ray diffraction by crystal planes, Bragg's law, Laue and powder methods.

**UNIT-II**

**Principles of Quantum Mechanics:** Waves and particles, de-Broglie's hypothesis, G.P.Thomson experiment, Heisenberg's uncertainty principle, significance of wave function, Schrödinger's one dimensional wave equation (time independent), particle in a one dimensional potential box, Fermi-Dirac distribution and effect of temperature (qualitative treatment only), scattering-source of electrical resistance.

**Band Theory of Solids:** Electron in a periodic potential, Kronig-Penney model (qualitative treatment only), origin of energy band formation in solids, distinction between metals, semiconductors and insulators based on band theory.

**UNIT-III**

**Semiconductors:** Introduction, intrinsic and extrinsic semiconductors, carrier concentration, electrical conductivity in semiconductors, drift and diffusion, Einstein's relation, Hall effect, direct and indirect band gap semiconductors, p-n junction, energy diagram of p-n diode, diode equation, LED, LCD and photo diode.

**UNIT-IV**

**Magnetic Properties:** Introduction, origin of magnetic moment, classification of magnetic materials into dia, para, ferro, anti-ferro and ferri magnetism, hysteresis, soft and hard magnetic materials, magnetic bubbles memory.

**Dielectric Properties:** Introduction, dielectric constant, electronic, ionic and orientation polarizations (qualitative treatment only), local field, Clausius-Mossotti equation, frequency dependence of polarisability (qualitative treatment only), ferro and piezo electricity.

## UNIT-V

**Acoustics of Buildings and Acoustic Quieting:** Basic requirement of acoustically good hall, reverberation and time of reverberation, Sabine's formula for reverberation time (qualitative treatment), measurement of absorption coefficient of a material, factors affecting the architectural acoustics and their remedies.

**Acoustic Quieting:** Aspects of acoustic quieting, methods of quieting, quieting for specific observers, mufflers and sound proofing.

## UNIT-VI

**Superconductivity:** General properties, Meissner effect, penetration depth, Type-I and Type-II superconductors, flux quantization, Josephson effects, BCS theory, applications of superconductors.

**Lasers:** Introduction, characteristics of laser, spontaneous and stimulated emission of radiation, Einstein's coefficients, population inversion, ruby laser, Helium-Neon laser, semiconductor laser, applications of lasers in industry, scientific and medical fields.

## UNIT-VII

**Fiber Optics:** Introduction, principle of optical fiber, acceptance angle and acceptance cone, numerical aperture, types of optical fibers and refractive index profiles, optical fiber communication systems, application of optical fibers.

**Holography:** Introduction, construction of a hologram, reconstruction of image from hologram and applications.

## UNIT-VIII

**Nanomaterials:** Introduction, basic principles of nanomaterials, preparation of nanomaterials, ball milling, plasma arching, chemical vapour deposition method, sol-gel method, fabrication of nanomaterials, properties of nanomaterials, carbon nanotubes, properties and applications of carbon nanotubes, applications of nanomaterials.

### TEXTBOOKS :

1. *Applied Physics*, S. Mani Naidu, Pearson Education, 1<sup>st</sup> Edition
2. *Engineering Physics*, P.K. Palaniswamy, Scitech Publications India Private Limited, 2009
3. *Engineering Physics*, M.R. Srinivasan, New Age Publications International (P) Limited, 1<sup>st</sup> Edition

**REFERENCE BOOKS:**

1. *Applied Physics*, S.O. Pillai and Sivakami, New Age International (P) Ltd., 2<sup>nd</sup> Edition
2. *Introduction to Nanoscience and Nanotechnology*, K.K. Chatopadhyaya and A.N. Benarjee, Prentice Hall of India, 1<sup>st</sup> Edition
3. *Introduction to Solid State Physics*, C. Kittel, John Wiley & Sons, Inc., 7<sup>th</sup> Edition
4. *Solid State Physics*, A.J. Dekker, Macmillan India Limited, 1996
5. *Engineering Physics*, V. Rajendran and K. Thyagarajan, TataMcGraw Hill Education, 2010

## B.Tech. I Year

### 10BT1BS02: **ENGINEERING CHEMISTRY**

(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)

L T P C  
2 1 - 4

#### UNIT-I

##### **Chemistry of Engineering Materials:**

**Lubricants:** Definition, functions of lubricants, mechanism of lubrication, classification of lubricants, properties of lubricants- viscosity, flash and fire points, cloud and pour points, Aniline point, neutralization number and mechanical strength.

**Liquid Crystals:** Definition, structure, classification and engineering applications of liquid crystals.

**Insulators:** Definition, classification, characteristics of insulating material and their engineering applications.

#### UNIT-II

**Polymer Science and Technology:** Introduction, classification of polymers, functionality, polymerization and types of polymerization, plastics-thermoplastics, thermosettings, composition, preparation and engineering applications of PVC, Teflon and Bakelite.

**Rubber:** Vulcanization of rubber.

**Elastomers:** BUNA-N, BUNA-S and polyurethane.

**Conducting Polymers:** Definition, classification and engineering applications.

#### UNIT-III

**Electrochemistry:** Introduction, conductivity, equivalent conductivity and molar conductivity. Redox reactions, electrode potential and measurement of electrode potential (Nernst equation). Electrochemical series, electrochemical cell and measurement of EMF of electrochemical cell. Concentration cell, **Reference Electrodes:** hydrogen and calomel electrodes. **Batteries:** Introduction, Ni-Cd batteries, Lithium batteries. **Fuel cells:** Introduction, Hydrogen-Oxygen fuel cell, Methanol-Oxygen fuel cell.

#### **UNIT-IV**

**Corrosion and its Control:** Introduction, definition, types of corrosion; dry corrosion, wet corrosion, concentration cell corrosion, galvanic series, galvanic corrosion, pitting corrosion, factors influencing the corrosion. Control of corrosion; cathodic protection, sacrificial anodic protection, impressed current cathodic protection, uses of inhibitors, electroplating and electroless plating.

#### **UNIT-V**

**Surface Chemistry:** Adsorption, types of adsorption, adsorption of gases on solids, adsorption from solutions, applications of adsorption, Langmuir theory of adsorption. Colloids, types of colloidal systems, applications of colloids. Emulsions and micelles.

#### **UNIT-VI**

**Chemistry of Nanomaterials:** Introduction to nanochemistry, classification of nanomaterials, size and scale, units, scaling laws, properties of nanomaterials, methods of synthesis - top down and bottom up methods, sol-gel process, plasma enhanced vapor decomposition process, applications of nanomaterials.

#### **UNIT-VII**

**Analytical Techniques:** Introduction to spectroscopy.

**U.V. Visible Spectroscopy:** Basic principle, origin of absorption bands, chromophores and their absorption values.

**I.R. Spectroscopy:** Principle, modes of vibration, group frequencies.

**NMR Spectroscopy:** Principle, shielding and deshielding of protons, chemical shift and applications of NMR spectroscopy.

**Atomic Absorption Spectroscopy:** Principle and applications.

**Flame photometry:** Principle and applications.

#### **UNIT-VIII**

**Water Technology:** Introduction, sources of water, types of impurities in water, hardness of water- temporary and permanent hardness, units of hardness, disadvantages of hard water. Estimation of hardness by EDTA method, boiler troubles.

**Softening methods:** Internal treatment, external treatment; zeolite process, ion exchange process, desalination of brackish water - reverse osmosis.

**TEXTBOOKS :**

1. *A Text Book of Engineering Chemistry*, Jain and Jain, Dhanpat Rai Publishing Company, 15<sup>th</sup> Edition
2. *Engineering Chemistry*, K.N. Jayaveera, G.V.Subba Reddy and C.Ramachandraiah, Tata McGraw Hill Education, 1<sup>st</sup> Edition
3. *A Text Book of engineering Chemistry*, Shashi Chawla, Dhanpat Rai Publishing Company, 15<sup>th</sup> Edition

**REFERENCE BOOKS:**

1. *A Text Book of Engineering Chemistry*, S.S.Dara, S.Chand and Co., 10<sup>th</sup> Edition
2. *Engineering Chemistry (Vol 1&2)*, J.C.Kuriacose and Rajaram, Tata McGraw Hill, 2<sup>nd</sup> Edition
3. *Chemistry of Engineering Materials*, C.V. Agarval, Tara Publication, 15<sup>th</sup> Edition
4. *Nanomaterials*, A.K.Bandyopadhyay, New Age International publishers, 2<sup>nd</sup> Edition
5. *Hand book of Nanostructured Materials and Nanotechnology*, H.S. Nalwa, Volumes – (I to V), Academic press, 2001

## B.Tech. I Year

### 10BT1EC01: **PROBLEM SOLVING AND COMPUTER PROGRAMMING**

(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)

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#### UNIT-I

**Introduction to Computers:** Computer systems, computer hardware, computer software, computing environments, computer languages, writing, editing, compiling and linking programs, program execution, algorithm and flowchart.

**Introduction to Problem Solving:** The problem solving aspect, top-down design, implementation of algorithms, program verification and efficiency of algorithms.

#### UNIT-II

**Introduction to the C Language:** C programs, identifiers, types, variables, types of operators, constants, coding constants, type casting and conversion, formatted input and output. Structure of a C program - expressions, precedence and associativity, evaluation of expressions, mixed type expressions.

#### UNIT-III

**Selection - Making Decisions: Two way selection:** if, if-else and nested if-else.

**Multi-way selection:** else-if ladder and switch statements.

**Repetition:** concept of loop, pre-test and post-test loops, initialization and updating, event and counter controlled loops, loops in C, break, continue and goto statements.

#### UNIT-IV

**Fundamental Algorithms:** Exchanging the values of two variables, counting, summation of a set of numbers, factorial computation, generation of the Fibonacci sequence, reversing the digits of an integer, number base conversion, character to number conversion, the smallest divisor of an integer, greatest common divisor of two integers and generating prime numbers.

#### UNIT-V

**Arrays:** Arrays in C, one, two and multidimensional arrays, linear search, binary search, bubble sort, selection sort and insertion sort.

**Strings:** Concepts, strings in C, string input/output functions, array of strings and string manipulation functions.

## UNIT-VI

**Functions:** Designing structured programs, functions in C, user-defined functions, types of functions, call by value and call by reference, recursion, factorial using recursion, standard library functions, scope, storage classes and preprocessor directives.

**Derived Types:** Type definition (*typedef*), enumerated types, structure, accessing structures, **Complex Structures:** Nested structures, structures containing arrays, array of structures.

**Structures and Functions:** Sending individual members, sending the whole structure, unions and bit fields.

## UNIT-VII

**Pointers:** Concepts, pointer variables, accessing variables through pointers, pointer declaration and definition, initialization, pointer arithmetic, array of pointers, pointers to arrays, pointers and functions, pointers to pointers, pointers to structures and memory allocation functions.

## UNIT-VIII

**Files:** Introduction and classification of files, opening and closing of files, read and write operations, conversion of files and command line arguments.

**Basic Data Structures:** Overview of data structures, implementation of stack operations (push, pop), implementation of linear queue operations (insertion, deletion), circular queues, singly linked list, doubly linked list and circular linked list.

## TEXTBOOKS:

1. *A Structured Programming Approach using C*, Behrouz A. Forouzan and Richard F. Gilberg, Cengage Learning, 2<sup>nd</sup> Edition
2. *How to Solve it by Computer*, R.G. Dromey, Pearson Education, 1<sup>st</sup> Edition

## REFERENCE BOOKS:

1. *Classic Data Structures*, D. Samanta, Prentice Hall of India Private Limited, 2004
2. *C and Data Structures*, P. S. Deshpande and O. G. Kakde, WILEY-dreamtech India Pvt. Ltd. 2005
3. *Programming in C*, Pradip Dey and Manas Ghosh, Oxford University Press, 2007
4. *C Programming with Problem Solving*, Jacqueline A. Jones and Keith Harrow, Dreamtech Press, 2007

**B.Tech. I Year**

**10BT1EC02: ENGINEERING DRAWING**

**(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)**

**L T P C**  
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**UNIT-I**

**Scales and Curves :**

**Scales:** Full size, reduced and enlarged scales, representative fraction, plain, diagonal scales, scale of chords.

**Curves:** Curves used in engineering practice, conic sections-ellipse, parabola and hyperbola, construction-general method only.

**UNIT-II**

**Projections of Points and Lines :** Introduction, representation of three dimensional objects, general principles of orthographic projection, importance of multiple views and their placement, first angle and third angle projections, projections of points, two view and three view projections. Projection of lines inclined to one plane, inclined to both the planes, finding true lengths, true inclinations and traces of lines.

**UNIT-III**

**Projections of Planes and Solids :** Projections of regular plane surfaces, planes parallel to one plane, planes inclined to one plane and inclined to both the planes, projections on auxiliary planes. Projections of regular solids (prism, cylinder, pyramid and cone), solids inclined to one plane and both planes, auxiliary views.

**UNIT-IV**

**Sections of Solids and Development of Surfaces :**

**Sections of Solids:** Section planes and sectional views of right regular solids - prisms, cylinder, pyramids and cone. True shapes of the sections.

**Development of Surfaces:** Right regular solids – prisms, cylinder, pyramids, cone and their sectional parts.

#### **UNIT-V**

**Isometric Projections** : Principles of isometric projections, isometric scale, isometric views, conventions. Isometric views of planes, simple solids. isometric projections of spherical parts. Conversion of isometric views into orthographic views.

#### **UNIT-VI**

**Perspective Projections** : Perspective view of plane figures and simple solids, vanishing point method and visual ray methods.

#### **UNIT-VII**

**Introduction to Computer Aided Drafting** : Introduction to AutoCAD, beginning a new drawing, exploring and interacting with the drawing window, saving and opening a file, coordinate systems (cartesian, polar and relative co-ordinate system), introduction to draw commands and modify commands, dimension commands, display commands and miscellaneous commands.

#### **UNIT-VIII**

**Drafting Of 2D and 3D Figures** : Generation of curves, points, lines, polygons, simple solids with dimensioning. Drawing of simple building plans.

#### **TEXTBOOKS:**

1. *Engineering Drawing*, P. Khannah, K.L. Narayana and K. Venkata Reddy, Radiant Publishing House, 2009
2. *Engineering Drawing*, N.D. Bhatt, Charotar Publishing House Private Limited, 2008

#### **REFERENCE BOOKS:**

1. *Engineering Drawing*, Johle, Tata McGraw Hill, 2009
2. *Engineering Drawing*, Shah and Rana, Pearson Education, 2<sup>nd</sup> Edition
3. *Engineering Drawing and Graphics*, K. Venugopal, New age International Publishers, 5<sup>th</sup> Edition
4. *Computer Aided Engineering Drawing*, Trymbaka Murthy, I.K.International, 1<sup>st</sup> Edition
5. *AutoCAD*, Shyam Tikko, Autodesk Press, 1<sup>st</sup> Edition

## B.Tech. I Year

### 10BT1EC03: **COMPUTER PROGRAMMING LAB**

(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)

L T P C  
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#### WEEK-1

- a. Let a and b are two integer variables whose values are 10 and 13 respectively. Write a program to evaluate the following arithmetic expressions.
  - i)  $a + b$
  - ii)  $a - b$
  - iii)  $a * b$
  - iv)  $a / b$
  - v)  $a \% b$
- b. Write a program that evaluates the following algebraic expressions after reading necessary values from keyword.
  - i)  $(ax + b)/(ax - b)$
  - ii)  $2.5 \log x + \cos 32^\circ + |x^2 + y^2| + \sqrt{2xy}$
  - iii)  $x^5 + 10x^4 + 8x^3 + 4x + 2$
  - iv)  $ae^{kt}$

#### WEEK-2

- a. Mr. Gupta deposited Rs.1000 in a bank. The bank gives simple interest at the rate of 15% per annum. Write a program to determine the amount in Mr. Gupta's account at the end of 5 years. (Use the formula  $I = P T R / 100$ )
- b. A cashier has currency notes of denominations Rs.10, Rs. 50 and Rs. 100. If the amount to be withdrawn is input in hundreds, find the total number of notes of each denomination the cashier will have to give to the withdrawer.
- c. In a town, the percentage of men is 52. The percentage of total literacy is 48. If total percentage of literate men is 35 of the total population, write a program to find the total number of illiterate men and women if the population of the town is 8000.

#### WEEK-3

- a. Write a program that prints the given 3 integers in ascending order using if - else.

- b. Write a program to calculate commission for the input value of sales amount.

Commission is calculated as per the following rules:

- i) Commission is **NIL** for sales amount Rs. 5000.
  - ii) Commission is 2% for sales when sales amount is > Rs. 5000 and  $\leq$  Rs. 10000.
  - iii) Commission is 5% for sales amount > Rs. 10000.
- c. A character is entered through keyboard. Write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol. The following table shows the range of ASCII values for various characters.

<u>Characters</u>	<u>ASCII values</u>
A - Z	65 - 90
a - z	97 - 122
0 - 9	48 - 57
Special Symbols	0 - 47, 58 - 64, 91 - 96, 123 - 127

#### **WEEK-4**

- a. If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit or loss he incurred in percentage.
- b. An insurance company calculates premium as follows:
- i) If a person's health is excellent and the person is between 25 and 35 years of age and lives in a city and is a male then premium is Rs.4 per thousand and the policy amount cannot exceed Rs.2 lacks.
  - ii) If a person satisfies all the above conditions and is female then the premium is Rs.3 per thousand and the policy amount cannot exceed Rs.1 lack.
  - iii) If a person's health is poor and the person is between 25 and 35 years of age and lives in a village and is a male then premium is Rs.6 per thousand and the policy cannot exceed Rs. 10000.
  - iv) In all other cases the person is not insured.

Write a program to determine whether the person should be insured or not, his/her premium rate and maximum amount for which he/she can be insured.

### WEEK-5

- a. Write a program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, \*, /, %, use switch statement)
- b. Write a program to find the grace marks for a student using switch. The user should enter the class obtained by the student and the number of subjects he has failed in. Use the following rules:
  - i) If the student gets first class and the number of subjects failed in is  $>3$ , then no grace marks are awarded.. If the number of subjects failed in is  $<$  or  $= 3$  then the grace is 5 marks per subject.
  - ii) If the student gets second class and the number of subjects failed in is  $>2$ , then no grace marks are awarded. If the number of subjects failed in is  $<$  or  $= 2$  then the grace is 4 marks per subject.
  - iii) If the student gets third class and the number of subjects failed in is  $>1$ , then no grace marks are awarded. If the number of subjects failed in is  $= 1$  then the grace is 5 marks per subject.

### WEEK-6

- a. Write a program to find the sum of individual digits of a positive integer.
- b. A Fibonacci sequence is defined as follows: The first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence.  
  
Write a program to generate the first N terms of the sequence.
- c. Write a program to generate all the prime numbers between 1 and N, where N is a value supplied by the user.

### WEEK-7

- a. Write a program to calculate the following sum:  
$$\text{sum} = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$$
- b. i) A perfect number is a number that is the sum of all its divisors except itself. Six is the perfect number. The only numbers that divide 6 evenly are 1, 2, 3 and 6 (i.e.,  $1+2+3=6$ ).

- ii) An abundant number is one that is less than the sum of its divisors (Ex:  $12 < 1+2+3+4+6$ ).
- iii) A deficient number is one that is greater than the sum of its divisors (Ex:  $9 > 1+3$ ).

Write a program to classify N integers (Read N from keyboard) each as perfect, abundant or deficient.

#### **WEEK-8**

- a. Write a program to find the largest and smallest number in a list of integers.
- b. Write a program to perform the following:
  - i) Addition of two matrices.
  - ii) Multiplication of two matrices.

#### **WEEK-9**

Write a program to perform the following:

- i) Linear search
- ii) Binary search

#### **WEEK-10**

Write a program to perform the following:

- i) Bubble sort
- ii) Selection sort
- iii) Insertion sort

#### **WEEK-11**

- a. Write a program that uses functions to perform the following operations:
  - i) To insert a sub-string in main string at a specified position.
  - ii) To delete N characters from a given string from a specified position.
- b. Write a program to determine whether the given string is palindrome or not.

#### **WEEK-12**

- a. Write a program to display the position or index in the main string S where the sub string T begins. Display -1 if S does not contain T.
- b. Write a program to count the number of lines, words and characters in a given text.

### WEEK-13

- a. 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of 1. Ex: 2's complement of 11100 is 00100. Write a program to find the 2's complement of a given binary number using functions.
- b. Write a program to convert a roman number in to its decimal equivalent using functions.

### WEEK-14

Write programs to perform the following using recursion

- i) To find the factorial of a given integer.
- ii) To find the GCD (Greatest Common Divisor) of two given integers.
- iii) To solve Towers of Hanoi problem.

### WEEK-15

Write a program that uses functions to perform the following operations:

- i) Reading a complex number
  - ii) Writing a complex number
  - iii) Addition of two complex numbers
  - iv) Multiplication of two complex numbers
- (Note: Represent complex number using a structure.)

### WEEK-16

- a. Write a program to accept the elements of the structure as:  
Employee-name  
Basic pay  
Display the same structure along with the DA, CCA and Gross salary for 5 employees.  
Note: DA=51% of Basic pay, CCA=Rs.100 consolidated.
  - b. Define a structure to store employee's data with the following specifications:  
Employee-Number, Employee-Name, Basic pay, Date of Joining
- i) Write a function to store 10 employee details.

- ii) Write a function to implement the following rules while revising the basic pay.
- If Basic pay  $\leq$  Rs.5000 then increase it by 15%.
- If Basic pay  $>$ Rs.5000 and  $\leq$  Rs.25000 then it increase by 10%.
- If Basic pay  $>$  Rs.25000 then there is no change in basic pay.
- iii) Write a function to print the details of employees who have completed 20 years of service from the date of joining.

#### WEEK-17

- a. Write a program which copies one text file to another.
- b. Write a program to reverse the first N characters of a given text file.

**Note:** The file name and N are specified through command line.

#### WEEK-18:

Consider the following text file:

**Input File:**

S.No.	Customer_ID	Item No.	Qty.	Price Per Item (Rs.)
1.	C01	I1	2	10
2.	C02	I2	5	50
3.	C03	I2	5	50
4.	C04	I4	10	10

Write a program to print the output in following format by giving the Customer\_ID as an input.

**Output:**

S.V. PROVISION STORES TIRUPATI		
Customer_ID: C01		Date: 12-08-2010
Item	Qty	Price
I1	2	20
Total		20

#### WEEK-19

Write a program to implement stack operations using:

- i) Arrays                      ii) Pointers

**WEEK-20**

Write a program to implement linear queue operations using:

- i) Arrays
- ii) Pointers

**WEEK-21**

Write a program to implement circular queue operations using arrays

**WEEK-22**

Write a program to implement the following operations on Singly Linked List

- a. List Creation
- b. Insertion
- c. Deletion
- d. Display

**WEEK-23**

Write a program to implement the following operations on Doubly Linked List

- a. List Creation
- b. Insertion
- c. Deletion
- d. Display

**WEEK-24**

Write a program to implement the following operations on Circular Linked List

- a. List Creation
- b. Insertion
- c. Deletion
- d. Display

**TEXTBOOKS:**

1. *A Structured Programming Approach using C*, Behrouz A. Forouzan and Richard F. Gilberg, Cengage Learning, 2<sup>nd</sup> Edition
2. *How to Solve it by Computer*, R.G. Dromey, Pearson Education, 1<sup>st</sup> Edition

**REFERENCE BOOKS:**

1. *Classic Data Structures*, D. Samanta, Prentice Hall of India Private Limited, 2004
2. *C and Data Structures*, P. S. Deshpande and O. G. Kakde, WILEY-dreamtech India Private Limited, 2005
3. *Programming in C*, Pradip Dey and Manas Ghosh, Oxford University Press, 2007
4. *C Programming with Problem Solving*, Jacqueline A. Jones and Keith Harrow, Dreamtech Press, 2007

**B.Tech. I Year**

**10BT1BS06: ENGINEERING PHYSICS &  
ENGINEERING CHEMISTRY LABORATORY**

**(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)**

**L T P C**  
**- - 3 4**

**ENGINEERING PHYSICS LAB**

Conduct a minimum of any **Twelve** experiments.

1. I-V characteristics of a P-N Junction diode
2. Characteristics of LED source.
3. Determination of wavelength of a laser source-diffraction grating
4. Determination of particle size by using a laser source
5. Photo diode – characteristics
6. Thermistor characteristics.
7. Hall effect
8. Magnetic field along the axis of a current carrying coil-Stewart and Gee's method.
9. Energy gap of a material of a P-N junction
10. B – H curve
11. Determination of dielectric constant
12. Verification of laws of stretched string – sonometer
13. Melde's experiment- transverse and longitudinal modes
14. Characteristics of laser sources.
15. Determination of numerical aperture of an optical fiber
16. Determination of bending losses of an optical fibre

**ENGINEERING CHEMISTRY LAB**

Conduct a minimum of any **Ten** experiments.

1. Preparation of standard EDTA and estimation of hardness of water
2. Preparation of standard EDTA and estimation of copper
3. Estimation of alkalinity of water

4. Preparation of standard potassium dichromate and estimation of ferrous iron
5. Preparation of standard potassium dichromate and estimation of copper by iodometry
6. Estimation of iron in cement by colorimetry
7. Conductometric titration of strong acid and strong base.
8. Preparation of phenol-formaldehyde resin.
9. Determination of viscosity of the oils through redwood-viscometer
10. Determination of pH of a given solution by pH metry.
11. Estimation of dissolved oxygen
12. Determination of calorific value of fuel using bomb calorimeter

**TEXTBOOKS:**

1. *Vogel's Book of Quantitative Inorganic Analysis*, ELBS 5<sup>th</sup> edition
2. *Chemistry laboratory manual*, K.N. Jayaveera and K.B.Chandra sekhar, S.M. Enterprizes Ltd, 2009.

**B.Tech. I Year**

**10BT1HS02: ENGLISH LANGUAGE  
AND COMMUNICATION SKILLS LAB**

**(Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)**

**L T P C**  
**- - 3 4**

The following course content is prescribed for the English language laboratory sessions.

1. Introduction to Phonetics.
2. Introduction to Consonants, Vowels and Diphthongs.
3. Introduction to Accent and Rhythm.
4. Functional Grammar.
5. Conversation Starters.
6. Situational Dialogues.
7. Just a Minute (JAM), Elocution, Debate and Impromptu.
8. Story telling.
9. Describing people, places and objects.
10. Movie Review.
11. Public speaking.
12. Presentation Skills.

**Suggested Software:**

- Cambridge Advanced Learners' English Dictionary with CD
- The Rosetta stone English Library.
- Clarity Pronunciation Power – Part-I.
- Mastering English in Vocabulary, Grammar, Punctuation and Composition.
- Dorling Kindersley series of grammar, Punctuation, Composition etc.
- Language in use. Foundation Books Pvt Ltd with CD.
- Oxford Advanced Learner's Compass, 7<sup>th</sup> Edition.

- Learning To speak English - 4 CDs.
- Microsoft Encarta CD.
- Murphy's English Grammar, Cambridge with CD
- English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.
- English Pronunciation Dictionary
- Speech Solutions
- Sky Pronunciation
- Tense Buster

## B.Tech. I Year

### 10BT1EC04: **ENGINEERING AND IT WORKSHOP** (Common to BOT, CIVIL, CSE, CSSE, ECE, EConE, EEE, EIE and IT)

L T P C  
- - 3 4

#### ENGINEERING WORKSHOP

##### 1. Trades for Exercise :

- a. **Carpentry Shop:** Two joints: Cross lap joint, mortise and tenon T-joint.
- b. **Fitting Shop:** Two joints: Square joint and V-joint.
- c. **Sheet Metal Shop:** Two jobs: Trapezoidal tray and square tin.
- d. **House Wiring:** Two jobs: Wiring for two lamps (bulbs) with independent switch controls with or without looping, wiring for stair case lamp.  
  
Earthing: Concept and establishment, safety precautions while house wiring.
- e. **Foundry:** Preparation of two moulds: For a single pattern and a double pattern.

##### 2. Trades for Demonstration:

- i. Welding
- ii. Metal Cutting
- iii. Plumbing

In addition to the above, hand tools, hand machines, models of jobs, materials with names such as different woods, wood faults, plastics, steels, meters, gauges, equipment, first-aid and shop safety shall be demonstrated through charts, layouts, figures, circuits, CD or DVD.

##### REFERENCE BOOKS:

1. *Engineering Work shop practice*, V. Ramesh Babu, VRB Publishers Private Limited, 2009
2. *Work shop Manual*, P.Kannaiah and K.L.Narayana, SciTech Publishers, 2009
3. *Workshop Practice Manual*, K. Venkata Reddy, BS Publications, 2008

## IT WORKSHOP

### **PC Hardware :**

1. Identifying the peripherals of a Computer, components in a CPU and its functions, block diagram of CPU along with the configuration of each peripheral.
2. Disassembling and assembling the PC back to working condition, videos for assembling and disassembling a PC.
3. Introduction to Operating System (OS) as system software, features of OS, need of OS, components of OS, installation of Microsoft Windows XP Operating System on the personal computer, examples of operating systems.
4. Introduction to UNIX OS and basic commands in UNIX such as cat, ls, pwd,, rm, rmdir, ln, head, tail, cd, cp, mv, who, date, cal, clear, man, tty, wc, diff, cmp, grep etc. and vi editors and sample C programs.
5. Hardware and Software Troubleshooting: PC symptoms when computer malfunctions, types of faults, common errors and how to fix them, basic hardware and software troubleshooting steps, PC diagnostic tools.

### **MS Office 2007 : MS Word**

6. Introduction to MS Word, importance of Word as Word Processor, overview of toolbars, saving, accessing files, using help and resources.  
  
Create a word document using the features: Formatting fonts, drop cap, applying text effects, using character spacing, borders and shading, inserting headers and footers, using date and time option.
7. Create a project using MS Word using the features: Inserting tables, bullets and numbering, changing text direction, hyperlink, images from files and clipart, drawing toolbar and word art, mail merge.

### **MS Excel**

8. Introduction to MS Excel as a Spreadsheet tool, overview of toolbars, accessing, saving excel files, using help and resources.  
  
Create a spreadsheet using the features: Gridlines, format cells, summation, auto fill, formatting text, formulae in excel charts.
9. Create a spreadsheet using the features: Split cells, Sorting, Conditional formatting, freeze panes, pivot tables, data validation.

### **MS PowerPoint**

10. Introduction to MS PowerPoint, utilities, overview of toolbars, PPT orientation, slide layouts, types of views.  
Create a PowerPoint presentation using the features: Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows.
11. Create a PowerPoint presentation using the features: Auto content wizard, hyperlinks, Inserting images, clip art, audio, video, custom animation, slide hiding, tables and charts.

### **MS Publisher**

12. Introduction to MS Publisher, overview of toolbars, saving files, templates, layouts.  
Create a website using the features: Home page, about us, Department, Contact page etc.

### **LaTeX**

13. Introduction to LaTeX tool: Importance of LaTeX as document preparation system for high quality typesetting, accessing, overview of toolbars, saving files, overview of features like typesetting of article, journal, books, control over large documents, using help and resources.

### **Internet and World Wide Web**

14. Web Browsers, Search Engines: Introduction to types of networks, customizing web browsers with LAN proxy settings, bookmarks, search toolbars and popup blockers, types of search engines and how to use search engines.
15. Cyber Hygiene: Introduction to various threats on Internet, types of attacks and how to overcome, installation of antivirus software, configuration of personal firewall and Windows update on Computers.

### **REFERENCE BOOKS:**

1. *Introduction to Computers*, Peter Norton, Tata McGraw Hill, 4<sup>th</sup> Edition
2. *IBM PC and Clone–Hardware, Troubleshooting and Maintenance*, B. Govindarajulu, Tata McGraw Hill, 2<sup>nd</sup> Edition
3. *Comdex Information Technology Course Kit*, Vikas Gupta, WILEY Dreamtech, 2<sup>nd</sup> Edition
4. *PC Hardware and A + Handbook*, Kate J. Chase, Prentice Hall India, 2004
5. *A Document Preparation System LaTeX User's Guide and Reference Manual*, Leslie Lamport, Pearson Education, 2<sup>nd</sup> Edition

## B.Tech. I Year

### 10BT1BS05: MATHEMATICS FOR BIOTECHNOLOGISTS

(for Biotechnology Engineering)

L T P C  
3 1 - 6

#### UNIT-I

##### Mathematical Foundations:

**Functions:** Exponential, logarithmic, hyperbolic functions and their series. Elementary combinatorial concepts. Binomial expansions, partial fractions, vectors, addition, subtraction, scalar and vector products and simple examples.

#### UNIT-II

**Limits and Differential calculus :** Limit, properties of limits and standard limits, simple problems, continuity of a function at a point, simple examples. Derivative (first principle), different notations, derivatives of elementary functions. Derivatives of sum, product, quotient, chain rule, derivative of trigonometric functions. Derivative of function in parametric form, derivative of hyperbolic, implicit, logarithmic functions, successive differentiation, simple examples and partial differentiation.

#### UNIT-III

**Integral calculus :** Integration as the inverse process of differentiation, standard forms, properties of integrals. Integration by method of substitution, algebraic, trigonometric, inverse trigonometric functions, logarithmic functions and exponential functions. Integration by parts. Fundamental theorem of integral calculus (without proof), evaluation of definite integrals, properties of definite integrals and areas.

#### UNIT-IV

**First Order Differential Equations :** Ordinary differential equations of first order and first degree, Linear and Bernoulli type equations, exact equations and reducible to exact. Applications of first order equations to orthogonal trajectories (both cartesian and polar forms), law of natural growth and decay, Newton's law of cooling.

## UNIT-VI

**Higher Order Differential Equations** : Non-homogeneous linear differential equations of second and higher order with constant coefficients. Methods of finding the particular integrals for  $Q(x) = e^{ax}, \sin ax, \cos ax, x^n, e^{ax} V(x), x V(x)$  and  $X^n V(x)$ , method of variation of parameters.

## UNIT-VI

**Laplace Transforms** : Laplace transform of standard functions, inverse transform, first shifting theorem, transforms of derivatives and integrals, unit step function, second shifting theorem and convolution theorem.

## UNIT-VII

**Applications of Laplace Transforms** : Differentiation and integration of Laplace transforms, application of Laplace transforms to ordinary differential equations of first and second order.

## UNIT-VIII

**Vector Calculus** : Gradient, divergence, curl and their properties.

**Vector Integration**: Line integral, potential function, area, surface and volume integrals.

**Vector Integral Theorems**: Green's theorem, Stoke's and Gauss's divergence theorem (without proof), verification and applications of Green's, Stokes and Gauss divergence theorems.

## TEXT BOOKS:

1. *Intermediate Mathematics volumes I&II*, V.Venkateswara Rao, BVSS Sarma..etal, S. Chand and Company, 2009
2. *Engineering Mathematics volume-1*, T.K.V. Iyengar, B.Krishna Gandhi, S.Ranganatham and M.V.S.S.N. Prasad, S. Chand and Company, 9<sup>th</sup> Edition

## REFERENCE BOOKS:

1. *Higher engineering mathematics*, B.S.Grewal, Khanna publishers, 36<sup>th</sup> Edition
2. *Advanced Engineering Mathematics*, Erwin Kreyszig, John Wiley & Sons, Inc., 8<sup>th</sup> Edition
3. *Engineering Mathematics for JNTU*, B.V.Ramana, Tata McGraw Hill, 3<sup>rd</sup> Edition

**B.Tech. I Year**  
**10BT10801: BASICS OF BIOLOGY**  
**(for Biotechnology Engineering)**

**L T P C**  
**3 1 - 6**

**UNIT-I**

**Introduction to Microorganisms** : Diversity in biological systems, cell structure, difference between prokaryotes and eukaryotes. Brief account on ecology, morphology, nutrition, locomotion and reproduction of bacteria, fungi and virus.

**UNIT-II**

**Plant Biology** : Classification of plant kingdom. Concepts of growth, meristems. Development of different plant organs. Economic importance of plants.

**UNIT-III**

**Biological Pathways :**

**Respiration and photorespiration:** Glycolysis, citric acid cycle, electron transport and ATP synthesis, alternate oxidase, photorespiratory pathway. Nitrogen metabolism; nitrate and ammonium assimilation. Photosynthesis; light harvesting complexes, mechanisms of electron transport, photoprotective mechanisms, CO<sub>2</sub> fixation C<sub>3</sub>, C<sub>4</sub> and CAM pathways.

**UNIT-IV**

**Animal Biology** : Classification of animal kingdom, economic importance, phylogeny of invertebrate and vertebrate phyla, concepts of species.

**UNIT-V**

**Human Biology** : Introduction to the human body, electrolytes and body fluids, digestive system and respiratory system, nervous system, sensory systems, circulatory system, endocrine system.

**UNIT-VI**

**Pathology** : HARMFUL Effects of bacteria (*Salmonella typhi*, *Clostridium tetani*), viruses (small pox virus, influenza virus), fungi

(*Aspergillus flavus*, *Fusarium*), protozoan parasites (*Plasmodium*, *Entamoeba histolytica*), helminthes (*Fasciolopsis buski*, *Taenia solium*, *Ascaris*, *Wucheraria bancrafti*).

#### **UNIT-VII**

**Introduction to Biotechnology** : Biotechnology, definition, history, scope and importance, secondary metabolites from plants and animals. Definition and importance of biofuels, biofertilizers, biopesticides, bioindicators and biosensors.

#### **UNIT-VIII**

**Applications of Biotechnology** : Microbial enzymes; Single Cell Protein (SCP); recombinant proteins (growth hormone, insulin). Bio therapeutics (streptokinase, interferons, antibodies), introduction to transgenics

#### **TEXTBOOKS:**

1. *Microbiology*, M.J. Pelczar, E.C.S. Chan and N.R. Krieg, Tata McGraw Hill, 5<sup>th</sup> Edition
2. *Basic Biotechnology*, Colin Ratledge and Bjorn Kristiansen, Cambridge University Press, 2<sup>nd</sup> Edition

#### **REFERENCE BOOKS:**

1. *General Microbiology*, Hons. G. Schlege, Cambridge University Press, 7<sup>th</sup> Edition
2. *Plant Physiology*, F.B Salisbury and C.W. Ross, Thomson Wadsworth Publishing Co. Belmont CA, 4<sup>th</sup> Edition
3. *A Textbook of Biotechnology*, R.C. Dubey, S.Chand Publishers, 2007
4. *Human Physiology Vol I and II*, C.C. Chatterjee, Medical Allied Agency, 11<sup>th</sup> Edition
5. *Anatomy and Physiology in Health and Illness*, K. J.W. Wilison and A. Waugh, Elsevier Churchill and Livingston Publications, 9<sup>th</sup> Edition
6. *Invertebrates*, R.L. Kotpal, Rastogi Publications, 9<sup>th</sup> Edition