

**SCHEME OF EXAMINATION
&
DETAILED SYLLABUS**

FOR

**BACHELOR OF TECHNOLOGY
(Computer Science & Engineering)**

COMPUTER SCIENCE & ENGINEERING

**ETERNAL UNIVERSITY
Baru Sahib, Distt. SIRMOUR
Himachal Pardesh**

BACHELOR OF TECHNOLOGY
(B.TECH.) DEGREE COURSE (CSE)

FIRST SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
THEORY PAPERS				
BTMAT101	Applied Mathematics – I	3	1	4
BTPHT101	Applied Physics - I	3	1	4
BTMET101	Engineering Mechanics	3	0	3
BTCHT101	Engineering Chemistry	3	0	3
BTCST101	Introduction to Computers and IT Tools	3	0	3
BTECT101	Basic Electronics	3	1	4
BTHUT101	Professional Communication Skills in English -I	2	1	3
Practical /VIVA VOCE				
BTPHL101	Applied Physics Lab-I	0	2	1
BTMEL101	Engineering Mechanics Lab	0	2	1
BTCHL101	Engineering Chemistry Lab	0	2	1
BTCSL101	Automation Tools & Web designing Lab	0	2	1
BTECL101	Basic Electronics Lab	0	2	1
BTHUL101	#Community Service and Welfare	0	1	1
	TOTAL	20	15	30

#NON UNIVERSITY EXAMINATION SYSTEM

BACHELOR OF TECHNOLOGY
(B.TECH.) DEGREE COURSE (CSE)

SECOND SEMESTER EXAMINATION (CSE)

Code No.	Paper	L	T/P	Credits
THEORY PAPERS				
BTMAT102	Applied Mathematics – II	3	1	4
BTPHT102	Applied Physics - II	3	1	4
BTCHT102	Environment chemistry	2	1	3
BTCST102	Problem Solving and Programming in C	2	0	2
BTMET102	Engineering Graphics	2	0	2
BTEET101	Basic Electrical Engineering	3	1	4
BTHUT102	Professional Communication Skills in English -II	2	1	3
LAB/VIVA VOCE				
BTPHL102	Applied Physics – II Lab	0	2	1
BTCHL102	Environment Chemistry Lab.	0	2	1
BTCSL102	C Programming Lab	0	4	2
BTEEL101	Basic Electrical Engineering Lab	0	2	1
BTMEL102	Engineering Graphics Lab	0	4	2
BTMEL103	Manufacturing practices	0	3	1
BTHUL102	#Comparative Study of Religions	1	0	1
	TOTAL	18	22	31

NON UNIVERSITY EXAMINATION SYSTEM

BACHELOR OF TECHNOLOGY
(B.TECH.) DEGREE COURSE (CSE)

THIRD SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
THEORY PAPERS				
BTMAT203	Applied Mathematics III	3	1	4
BTECT202	Analog Electronics	3	1	4
BTECT204	Circuits and Systems	3	1	4
BTCST203	Foundations of Computer Science	3	1	4
BTCST204	Object Oriented Programming using C++	3	1	4
BTCST205	Data Structures	3	1	4
PRACTICAL/VIVA VOCE				
BTECL202	*Analog Electronics Lab.	0	2	1
BTECL203	*Circuits & Systems Lab.	0	2	1
BTC SL203	Object Oriented Programming using C++ Lab.	0	2	1
BTC SL204	Data Structure Lab.	0	2	1
	TOTAL	18	14	28

* Some lab experiments are to be performed using any circuit simulation software
e.g. PSPICE/MATLAB

BACHELOR OF TECHNOLOGY
(B.TECH.) DEGREE COURSE (CSE)

FOURTH SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
THEORY PAPERS				
BTCST206	Software Engineering	3	1	4
BTCST207	Algorithm Analysis & Design	3	1	4
BTECT206	Digital Circuits & System – I	3	1	4
BTECT207	Communication Systems	3	1	4
BTCST208	Computer Graphics	3	1	4
BTCST209	Operating Systems	3	1	4
PRACTICAL/VIVA VOCE				
BTCSL205	Software Engineering Lab.	0	2	1
BTCSL206	Algorithm Analysis and Design Lab.	0	2	1
BTECL205	*Digital Circuits & System – I Lab.	0	2	1
BTCSL207	Computer Graphics Lab.	0	2	1
BTCSL208	Operating system Lab	0	2	1
	TOTAL	18	15	29

*** Some lab experiments are to be performed using any circuit simulation software e.g. PSPICE/MATLAB.**

IV Semester Practical Training:

6 weeks training will be held after fourth semester. Students will submit a project report of the work done. However, Viva-Voce will be conducted in the fifth semester.

Note: This practical training will be done in university campus or in recognized Organizations/Industries. If training held in university campus that training will be provided in the form of various courses/streams covered in previous four semesters like operating systems(Linux/Unix/Windows etc),Networking(Microsoft certifications, CISCO certifications) ,Data base management system(Oracle certification),Application programming(.NET,JAVA,C#), Web designing (ASP,PHP)

BACHELOR OF TECHNOLOGY
(B.TECH.) DEGREE COURSE (CSE)

FIFTH SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
THEORY PAPERS				
BTECT310	Digital Circuits & Systems – II	3	1	4
BTCST310	Java Programming and Website Design	3	1	4
BTCST311	Computer Architecture	3	1	4
BTCST312	Linux and X-Windows Programming	3	1	4
BTCST313	Database Management Systems	3	1	4
BTHUT303	Principle of Management and Organizational Behaviour	3	1	4
PRACTICAL/VIVA VOCE				
BTECL307	Digital Circuits & Systems – II Lab.	0	2	1
BTC SL309	Java Programming & Website Design Lab.	0	2	1
BTC SL310	Linux & X-Windows Programming Lab.	0	2	1
BTC SL311	Database Management Systems Lab.	0	2	1
BTCSP301	# Practical Training Viva	0	0	1
	TOTAL	18	14	29

NON UNIVERSITY EXAMINATION

BACHELOR OF TECHNOLOGY
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SIXTH SEMESTER EXAMINATION

Code No.	Paper	L	T/P	Credits
THEORY PAPERS				
BTECT311	Microprocessor Systems	3	1	4
BTCST314	Object Oriented Software Engineering	3	1	4
BTCST315	Computer Networks	3	1	4
BTECT317	Digital Signal Processing & its applications	3	1	4
BTCST316	Data Warehousing & Data Mining	3	1	4
BTCST317	Multimedia Technologies	3	1	4
PRACTICAL/VIVA VOCE				
BTECL308	Microprocessor Lab.	0	2	1
BTCSL312	OO Software Engineering Lab	0	2	1
BTECL314	Digital Signal Processing Lab.	0	2	1
BTCSL313	Data Warehousing & Data Mining Lab.	0	2	1
BTCSL314	Multimedia Technologies Lab.	0	2	1
TOTAL		18	16	29

VI Semester Practical Training:

6 weeks training will be held after sixth semester. Students will submit a project report of the work done. However, Viva-Voce will be conducted in the seventh semester.

Note: This practical training will be done in university campus or in recognized Organizations/Industries. If training held in university campus that training will be provided in the form of various courses/streams covered in previous four semesters like operating systems(Linux/Unix/Windows etc),Networking(Microsoft certifications, CISCO certifications) ,Data base management system(Oracle certification),Application programming(.NET,JAVA,C#), Web designing (ASP,PHP),VHDL,Embedded Systems etc

FIRST SEMESTER EXAMINATION

Paper Code: BTMAT101
Paper: APPLIED MATHEMATICS – I

L	T	C
3	1	4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit 1: Brief review of Matrices, Complex Matrices (Hermitian and Skew-Hermitian matrices, Unitary matrix), solution of Linear System of equations, Rank of Matrix, Gauss Jordan Method, Normal form of a Matrix, Consistency of a Linear system of equations, system of Linear Homogenous Equation, Eigen Values, Eigen Vectors ,Reduction to Diagonal Form Quadratic form and their reduction to Canonical form.

[Hrs:10]

Unit II: Linear Differential equations of second order with constant coefficients: Complementary functions , particular integrals, Variation of Parameters, Solution of homogenous differential equation- Cauchy and Legendre form. Area under the curve, Length of an arc of a curve, Reduction formulae for evaluating

$\int_0^{\pi/2} \sin^n \theta d\theta$, $\int_0^{\pi/2} \cos^n \theta d\theta$, $\int_0^{\pi/2} \sin^n \theta \cos^n \theta d\theta$ [Hrs :10]

Unit III: Function of Several Variables, Limit and Continuity, Partial Derivatives, Higher order partial derivatives, Euler's Theorem, Jacobians, Maxima Of functions of two variables, Lagrange's Method of Multipliers, Double and Triple Integrals, Change of Variables, Application of double and triple integrals.

[Hrs:10]

Unit IV: De Moivre's Theorem and roots of Complex Number, Logarithmic Functions, Circular, Hyperbolic Functions and their Inverses. Summation of Series - 'C+iS' Method. Convergence of Infinite Series, Comparison Test, D'Alembert's ratio test, Cauchy's root test, Alternating Series , Leibnitz Test.

[Hrs:10]

TEXT BOOKS:

1. Bali, N.P., A Text Book of Engineering Mathematics, Luxmi Publications, New Delhi
2. Jain, R.K. and Iyengar, S.R.K., "Advanced Engineering Mathematics", Narosa, Pub House

REFERENCE BOOKS:

1. E.Kresyig, "Advanced Engineering Mathematics" , 5th Edition , John Wiley & Sons, 1999.
2. "Advanced Engineering Mathematics " , Dr.A.B.Mathur, V.P.Jaggi (Khanna Publications), 2nd ed.

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UNIT I

Interference of Light: Interference due to division of wavefront and division of amplitude, Young's double slit expt., Interference, Principle of Superposition, Theory of Biprism, Interference from parallel thin films, wedge shaped films, Newton rings, Michelson interferometer.

Diffraction: Fresnel Diffraction, Diffraction at a straight edge, Fraunhofer diffraction due to N slits, Diffraction grating, absent spectra, dispersive power of Grating, resolving power of prism and grating.

(No. of Hrs. 8)

UNIT II

Polarization: Introduction, production of plane polarized light by different methods, Brewster and Malus Laws. Double refraction, Quarter & half wave plate, Nicol prism, specific rotation, Laurent's half shade polarimeter.

Optical Instruments : Ramsden & Huygen Eye pieces, Electron microscope.

(No. of Hrs. 7)

UNIT III

Laser: Introduction, temporal and spatial coherence, principle of Laser, stimulated and spontaneous emission, Einstein's Coefficients, He-Ne Laser, Ruby Laser, Application of Lasers.

Fibre Optics: Introduction, numerical aperture, step index and graded index fibres, attenuation & dispersion mechanism in optical fibers (Qualitative only), application of optical fibres, optical communication (block diagram only)

(No. of Hrs. 8)

UNIT IV

Mechanics: Central and non-central forces, Inverse square force, SHM, Damped, undamped and forced Oscillations.

Special theory of Relativity: Frame of reference, Michelson-Morley experiment, basic postulates of special relativity, Lorentz transformations (space – time coordinates & velocity only), mass energy relation.

(No. of Hrs. 8)

Text Books:

1. A. Ghatak, "Optics"
2. N. Subrahmanyam and Brij Lal, "Optics"
3. Jenkins and White, "Fundamentals of Optics"
4. C. Kittel, "Mechanics", Berkeley Physics Course, Vol.- I.
5. A. Beiser, "Concepts of Modern Physics"

Paper Code: BTMET101

L T C

Paper: Engineering Mechanics

3 0 3

Instructions to the paper setters:

Max Marks = 100

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UNIT I

Force system: Free body diagram, Equilibrium equations and applications.

Friction: Static and Kinetic friction, laws of dry friction, co-efficient of friction, angle of friction, angle of repose, cone of friction, friction lock, friction of flat pivot and collared thrust bearings, Belt drive-derivation of equation.

$$T_1/T_2 = e^{\mu\theta} \text{ and its application}$$

[Hrs. 8]

UNIT II

Distributed Force: Determination of center of gravity, center of mass and centroid by direct integration and by the method of composite bodies, mass moment of inertia and area moment of inertia by direct integration and composite bodies method, radius of gyration, parallel axis theorem, Pappus theorems, polar moment of inertia.

[Hrs. 8]

Unit-III

Fluid and its properties, determination of coefficient of discharge of Venturimeter and Orifice meter, Bernoulli's theorem, Calibration of pressure gauge with the help of dead weight pressure gauge tester.

Kinetics of Particles: Equation of motion, rectilinear motion and curvilinear motion, work energy equation, conservation of energy, impulse and momentum conservation of momentum, impact of bodies, co-efficient of restitution, loss of energy during impact. [Hrs:8]

Unit-IV

Kinematics of Rigid Bodies: Concept of rigid body, type of rigid body motion, absolute motion, introduction to relative velocity, relative acceleration (Corioli's component excluded) and instantaneous center of velocity, Velocity and acceleration polygons for four bar mechanism and single slider mechanism. [Hrs:8]

Text Books:

1. Engg Mechanics by A.K.Tayal (Umesh Publications).
2. Engg Mechanics by Sadhu Singh (Khanna Publishers).

Reference Books:

1. Engg Mechanics by Irving H. Shames (PHI publications).
2. Engg Mechanics by U.C.Jindal (Galgotia Publications).
3. Engg Mechanics by Beer & Johnston, TMH
4. Engg Mechanics by Subramanyam

Paper Code: BTCHT101
Paper: Engineering Chemistry

L T C
3 0 3

UNIT I: WATER TECHNOLOGY

Introduction and specifications of water, Hardness and its determination (EDTA method only), Alkalinity, Boiler feed water, boiler problems – scale, sludge, priming & foaming: causes & prevention, Boiler problems – caustic embrittlement & corrosion : causes & prevention, Removal of silica & dissolved gases; carbonate & phosphate conditioning, Water softening processes : Lime – soda process, Ion exchange method, colloidal conditioning & calgon treatment , Water for domestic use.

[Hrs:8]

UNIT II: FUELS

Classification, calorific value of fuel, (gross and net), Determination of calorific value of fuels, bomb calorimeter, Boy's Gas calorimeter, Solid fuels - Proximate and ultimate analysis, High & Low temperature carbonization, manufacture of coke (Otto-Hoffmann oven), Liquid Fuels – Petroleum- Chemical composition, fractional distillation, Cracking - Thermal & catalytic cracking, Octane & Cetane No. and its significance.

[Hrs:8]

UNIT III: PHOTOCHEMISTRY & CORROSION AND ITS CONTROL

Introduction, Laws of photochemistry, photochemical reaction, quantum yield, fluorescence, phosphorescence, photosensitized reaction, photosynthesis, laser. Introduction to corrosion, Oxidation corrosion, rusting of iron, types of corrosion, factors affecting corrosion, control of corrosion.

[Hrs:9]

UNIT IV: CATALYSIS & INSTRUMENTAL METHODS OF ANALYSIS

Characteristics, types and theories of catalysis, concept of promoters, inhibitors and poisons, Homogenous catalysis (mechanisms of acid-base and Enzyme), catalysis by metal salts, Heterogenous catalysis (mechanism of surface reactions). Introduction and principle: UV Visible spectroscopy, IR spectroscopy, NMR spectroscopy, Gas chromatography.

[Hrs:9]

REFERENCE BOOKS:

1. Chemistry in Engineering & Technology (Vol I & II) (Latest ed.), By J.C. Kuriacose & J. Rajaram
2. Principles of Physical Chemistry, (Latest ed.), Puri B.R., Sharma L.R. and Pathania, M.S.
3. Text book of Engg. Chemistry, S. Chand & Co., (Latest ed.), S.S. Dara.
4. Text book of Engg. Chemistry , By Dr. Deepak Pathania , Satyaprakashan, New Delhi

Instructions to the paper setters:

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UNIT I

Introduction to Computer:

Overview of Computer organization and historical perspective computer applications in various fields of science and management.

Data representation: Number systems, character representation codes, Binary, hex, octal codes and their inter conversions.

Binary arithmetic, Floating-point arithmetic, signed and unsigned numbers.

[No. of Hrs. 8]

UNIT II

Introduction to OS and Office Automation

Concept of computing, Introduction to Operating Systems such as DOS, windows 2000/Xp, UNIX, LINUX, Client Server Technology, (only brief user level description).

Introduction to Word Processing, Spread Sheet & Presentation software e.g. MS-Word, MS-Excel, MS-Power Point.

[No. of Hrs. 8]

UNIT III

Introduction to Auto CAD

Coordinate System, 2D drafting: lines, circles, arc, polygon, etc., Editing, 3D, Solid modeling, Rendering, Use of Auto CAD for engineering drawing practices.

[No. of Hrs. 8]

UNIT IV

Web Technologies

Introduction to World Wide Web, Search engines, e-mail, news, gopher, Audio & Video Conferencing, Internet Protocols: FTP, telnet, TCP/IP, SMTP, HTTP, Languages used for WEB Technology: HTML, practical examples using DHTML and Static HTML

[No. of Hrs. 8]

Text Books:

1. Rajaraman, "Fundamentals of Computers", Prentice Hall of India, 3rd Edition.
2. Mark Middlebrook, "Autocad 2004 for Dummies", Pustak Mahel Prakashan, 2000.
3. Alexis Leon & Mathews Leon, "Fundamentals of Computer Science & Communication Engineering", Leon Techworld, 1998.

Reference Books:

1. Omura, "Mastering Autocad 2000 for Mechanical Engineers" BPB Publications, 2nd Edition, 1998.
2. A.S. Tanenbaum, "Computer Networks", Pearson Education India Ltd., 3rd Edition, 2002.

Paper Code: BTECT101

L T C

Paper: Basic Electronics

3 1 4

Instructions to the paper setters:

Max Marks = 100

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit I:

[Hours: 10]

Introduction to semiconductor diode, ideal diode, Characteristics of PN junction diode, drift & diffusion currents, Fermi level in intrinsic and extrinsic semiconductor, continuity equation, Mass Action Law. Zener diode characteristics, Rectifications of Half wave and full wave rectifier, Filters, Unregulated and regulated power supplies, Tunnel diode, LED, LCD and Photo Diode

Unit II:

[Hours: 10]

Bipolar junction transistor: Introduction, Transistor, construction, transistor operations, BJT characteristics, load line, operating point,

Bias stabilization: Need for stabilization, fixed Bias, emitter bias, self bias, bias stability with respect to variations in I_{co} , V_{BE} & β (compensation techniques), Stabilization factors, thermal stability.

Unit – III

Small signal amplifiers, CB, CE, CC configurations, Hybrid models for transistors at low frequencies, mid band model, gain and impedance, comparison of different configurations

FET (Detail construction, working and characteristics), MOSFET ((Detail construction, working and characteristics), Introduction, Classification, enhancement & Depletion type MOSFETS & enhancement only MOSFET [Hours: 10]

Unit – IV

Feedback Amplifiers: Feedback concept, Classification of Feedback amplifiers, Properties of negative Feedback amplifiers, Impedance considerations in different Configurations, Examples of analysis of feedback Amplifiers

UJT (Detail construction, working and characteristics),

SCR (Detail construction, working and characteristics

[Hours: 10]

Text Books

1. J. Millman and Halkias, "Electronic devices and circuits" TMH, 1999.
2. Salivahanan, Suresh Kumar, Vallavaraj, "Electronic devices and circuits" TMH, 1999

Reference Book

1. J. Millman and Halkias, "Integrated Electronics, Analog & Digital Circuits & Systems" TMH – 2000.
2. Boylestad & Nashelsky, "Electronic Devices & Circuit Theory" PHI – VIth Edition.
3. Sedra & Smith, "Micro Electronic Circuits" Oxford University Press, 2000
4. J.B.Gupta, "Electronic Devices & Circuits" S. K. Kataria, IInd Edition.

Instructions to the paper setters:**Max Marks = 100**

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit I

Remedial Grammar: Errors of Accidence and syntax with reference to Parts of Speech; Agreement of Subject and Verb; Tense and Concord; Conditional Clauses; Use of connectives in Complex and Compound sentences; Question tags and short responses.

[No. of Hrs: 06]

Unit II

Vocabulary and Usage: Word Formations (by adding suffixes and prefixes); Technical Word Formation; Synonyms, Antonyms, Homophones, and Homonyms; One Word Substitution; Misappropriations; Indianisms; Redundant Words; Phrasal Verb Idioms.

[No. of Hrs: 06]

Unit III**Technical Writing:**

(A) Scientific Attitude and Impersonal Style; Plain Statements, Definitions; Description and Explanations (of objects, instruments, Processes, Scientific Principles, etc.)
Summarizing and abstracting; Expressing ideas within a restricted word limit; Paragraph Writing (Paragraph division, introduction and the conclusion, Variety in sentences and paragraphs)

Interpretation and use of charts, graphs and tables in technical writing. Punctuation

(B) Reading at various speeds (slow, fast, very fast); reading different kinds of texts for different purpose (e.g. for relaxation, for information, for discussion at a later stage, etc.); reading between the lines.

Comprehension of Unseen Passages

[No. of Hrs: 10]

Unit IV

Text: The following prose pieces from Best Science Writing : Reading and Insights edited by Robert Gannon prescribed text (Hyderabad: University Press (India) Limited, 1991).

1. Chapter 2: "After 63 years, Why Are They Still Testing Einstein?" by C.P. Gilmore
2. Chapter 5: "Star Wars : The Leaky Shield" By Carl Sagan
3. Chapter 10: "Chaos : The Ultimate Asymmetry" by Arthur Fisher
4. Chapter 11: "Bill Moss, Tentmaker" by Robert Gannon
5. Chapter 12: "Totality - A Report" by Michael Rogers

[No. of Hrs: 10]

Text Books:

1. Maison, Margaret M. Examine Your English, Hyderabad: Orient Longman, 1980
2. Sharma, R.S. Technical Writing. Delhi: Radha Publication, 1999
3. Sudarsanam, R. Understanding Technical English. Delhi: Sterling Publishers Pvt. Ltd., 1992

List of Experiments

1. To plot a graph between the distance of the knife-edge from the center of the gravity and the time period of bar pendulum. From the graph, find
 - a) The acceleration due to gravity
 - b) The radius of gyration and the moment of inertia of the bar about an axis.
2. To determine the moment of inertia of a flywheel about its own axis of rotation.
3. To determine the value of acceleration due to gravity using koter's pendulum.
4. To determine the frequency of A.C. mains using sonometer and an electromagnet.
5. To determine the frequency of electrically maintained tuning fork by Melde's method.
6. To determine the dispersive power of prism using spectrometer and mercury source.
7. To determine the wavelength of sodium light by Newton's Ring.
8. To determine the wavelength of sodium light using diffraction grating.
9. To determine the refractive index of a prism using spectrometer.
10. To determine the specific rotation of cane sugar solution with the help of polarimeter.
11. To find the wavelength of He-Ne Laser using transmission diffraction grating.
12. To determine the numeral aperture (NA) of a Optical Fibre.
13. Compute simulation (simple application of Monte Carlo) e.g. Brownian motion, charging & discharging of capacitor.
14. Note: Any 8-10 experiments out of the list may be chosen. Proper error – analysis must be carried out with all the experiments.

Paper Code: BTMEL101

P C

Paper: Engineering Mechanics Lab

2 1

List of Experiments

1. To study Low pressure boilers.
2. To study high pressure boilers.
3. Calibration of pressure gauges.
4. To study various discharge measuring devices.
5. To determine the coefficient of discharge of Venturimeter.
6. To determine the coefficient of discharge of Orificemeter
7. To study Bernaulli's apparatus
8. To determine the modulus of rigidity of Torsion apparatus.
9. Calibration of Thermometers.

A minimum of 8 experiments to be performed

List of Experiments

1. Determine the percentage composition of sodium hydroxide in the given mixture of sodium hydroxide and sodium chloride.
2. Determine the amount of Oxalic acid and Sulphuric acid in one litre of solution, given standard sodium hydroxide and Potassium Permanganate.
3. Determine the amount of copper in the copper ore solution, provided hypo solution.
4. Argentometric titration one each by Vohlard's method and by Mohr's method.
5. Complexometric titrations.
6. Determine the surface tension of a liquid using drop weight method.
7. Determine viscosity of a given liquid (density to be determined).
8. Determine the cell constant of a conductivity cell and titration of strong acid/strong base conductometrically.
9. To Determine the %age of chlorine in given sample of water.
10. To separate the given mixture by paper chromatography.
11. To determine the saponification value of given oil.
12. To determine the flash and fire point of given sample of oil using Pensky Marten flash point apparatus.
13. To verify the Beer's law and find out the concentration of the unknown solution by spectrophotometer.

REFERENCE BOOKS:

1. Vogel's Textbook of Quantitative Chemical Analysis, Revised by G.H. Jeffery, J. Bassett, J. Mendham and R.C. Denney.
2. Applied Chemistry: Theory and Practice by O.P. Vermani and A.K. Narula.
3. Laboratory Manual on Engg. Chemistry by S.K. Bhasin and Sudha Rani.

List of Experiments

1. Use Microsoft-Word to perform the following:
 - a) Send out invitation letter to several people using mail merge facility.
 - b) Create tabular data in word and insert graph to represent data.
 - c) Create a Macro and use it in an application.

2. Use Microsoft-Excel to perform the following:
 - a) Create a Macro and use it in an application
 - b) Enter the name and marks of 10 students and perform various mathematical functions on it.
 - c) Enter first quarter performance of five companies and create a pie chart showing there shareholders in the market.

3. Use Microsoft Power-Point to perform the following
 - a) Create a slide show on any subject of your choice using minimum five slides.
 - b) Create slideshow in operating sound.
 - c) Create an animation using group, ungroup, order, textbox image insert etc.

4. Use HTML to design a Home page for IGIT using all the features of HTML like buttons, frames, marquee check boxes etc..

5. Use AutoCAD to do the following:
 - a) Use of Drawing & Editing Properties: Modify Object Properties and a know how of layers, colors and prototype drawing.
 - b) Draw line (Poly line, multi line, linear line), polygon, ellipse, circle, arc, rectangle and use cross hatching, regions, boundary, spline, donut, fillet and extent commands.
 - c) Dimensioning commands, styles, control scale factors, drawing set-up, grip editing objects snaps, utility commands.
 - d) Projection of points, lines and solids,
 - e) Section of Solids
 - f) Development and Intersection of Surface
 - g) Isomeric Projections

Create a WEB page containing hyperlinks to the pages having information about Science and Technology.

Code No.BTECL101

L P C

Paper: Basic Electronics Lab.

0 2 1

Practical will be based on Basic Electronics - I. Some lab experiments must be performed using any circuit simulation software e.g. PSPICE. Following list of Experiments is being recommended:

- 1.To study the waveforms of CRO
2. To study and find characteristics of forward biased PN junction Diode.
2. To study and find characteristics of reversed biased PN junction Diode.
3. To study half wave rectifier and find its efficiency.
4. To study full wave rectifier and find its efficiency.
5. To draw input & output characteristics of common emitter transistor.
6. To draw input & output characteristics of common base transistor.
7. To study the characteristics of UJT.
8. To study the characteristics of MOSFET.
9. To study the characteristics of SCR.

SECOND SEMESTER EXAMINATION (CSE)

Paper Code: BTMAT102

L T C

Paper: Applied Mathematics – II

3 1 4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Laplace Transformation: Laplace Transformation, Inverse Laplace transformation Convolution Theorem, application to linear differential equations with constant coefficients, Unit step function, impulse functions / periodic functions.

[Hrs.: 10]

UNIT – II

Fourier Series: Fourier Series, Euler's formulae, even and odd functions, having arbitrary periods, half range expansion,.

Fourier Transforms: Fourier transform, Sine and Cosine transforms

Vector Calculus: Scalar and Vector point function and gradient , Divergence .Curl with geometrical physical interpretations, Directional: derivatives, properties .line integrals and applications to work done,green's lemma,Stokes Theorem and Gauss Divergence Theorem (without proof) [Hrs.: 10]

UNIT – III

Special Functions: Beta and Gamma functions, Bessels functions of first kind, Recurrence relations, modified Bessel functions of first kind, Ber and Be functions, Legendre Polynomial, Rodrigue's formula, orthogonal expansion of function.

[Hrs.: 10]

UNIT – IV

Partial Differential Equation: Formation of first and second order linear equations, Laplace, Wave and heat conduction equation, initial and boundary value problems.

[Hrs.: 10]

TEXT BOOKS:

1. E. Kresyig, "Advanced Engineering Mathematics", 5th Edition, John Wiley & Sons, 1999.
2. B.S. Grewal, "Higher Engineering Mathematics", 40th Ed. 2007,

REFERENCE BOOKS:

1. B.S. Grewal, "Elementary Engineering Mathematics", 13th Ed., 2008.
2. H.K. Dass, "Advanced Engineering Mathematics", S. Chand & Company, 9th Revised Edition, 2001.
3. Shanti Narayan, "Integral Calculus", S. Chand & Company, 1999.
4. Shanti Narayan, "Differential Caluculs", S.Chand & Company, 1998

Instructions to the paper setters:

Max Marks = 100

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UNIT I

Electromagnetic Theory (EMT)

Motion of Charged Particles in crossed electric & magnetic fields, Velocity Selector & Magnetic focussing, Gauss law, continuity equation, inconsistency in Ampere's Law, Maxwell's equations (differential and integral forms), Poynting vector, Poynting Theorem (Statement only), propagation of plane electromagnetic waves in conducting and non-conducting medium.

[No. of Hrs. 8]

UNIT II

Quantum Mechanics & Statistical Physics:

De-Broglie Hypothesis, Davisson Germer experiment, wave function and its properties, expectation value, Wave Packet, Uncertainty principle. Schrodinger Equation for free Particle, Time Dependent Schrodinger Equation, Particle in a box (1-D), Single step Barrier, Tunneling effect.

Qualitative Features of Maxwell Boltzman, Bose-Einstein and Fermi-Dirac statistics distribution, functions & their comparison (no derivation) [No. of Hrs. 8]

UNIT III

Solid State Physics

Formation of energy bands in metals, semiconductors and insulators; intrinsic and extrinsic semiconductors, Fermi energy levels for doped, undoped semiconductors and pn junction; Tunnel diode, Zener diode.

Superconductivity: Meissner Effect, Type I and Type II Superconductors, BCS theory (Qualitative only), London's equation, properties of superconductors & applications.

[No. of Hrs. 8]

Unit IV

X-Rays: production and properties, Crystalline and Anorphous solids (Brief) Bragg's Law, Applications.

Ultrasonics: Introduction, Production of Ultrasonics (Magnetostriction and piezoelectric methods), engineering applications. [No. of Hrs. 8]

Text Books:

1. Concept of Modern Physics : A. BEISER
2. Atomic Physics : Rajam
3. Greiner : Quantum Physics
4. Griffith : Introduction to Electrodynamics

Reference Books

1. Electromagnetic waves and Radiating Systems :Jordan & Balmain
2. Solid State Physics : Kittel
3. Solid State Physics : R.L. Singhal
4. Quantum Mechanics : Schiff

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UNIT-I: MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Definition, scope and importance, need for public awareness, introduction to concept of green technology. (2 lectures)

ENVIRONMENTAL CONSERVATION AND MANAGEMENT

(7 lectures)

Forest resources: Use and over-exploitation, deforestation, Timber extraction, mining, dams and their effects on forest and tribal people.

Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Food resources: World food problems, changes caused by agriculture and over-grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.

Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources-green fuel.

Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

UNIT-II: ENVIRONMENTAL POLLUTION & CONTROL

(7 lectures)

Air Pollution - Types of pollutants, source, effects, sink & control of primary pollutants– CO, NO_x, HC, SO_x and particulates, effect of pollutants on man & environment: photochemical smog, acid rain and global warming, CO₂ Sequestration.

Water Pollution - Classification of Pollutants, their sources, waste water treatment (domestic and industrial).

Soil Pollution – Composition of soil, classification and effects of solid pollutants and their control.

Solid Waste Pollution – Classification, waste treatment and disposal methods; composting, sanitary land filling, thermal processes.

Hazardous wastes - Classification, radioactive, biomedical & chemical, treatment and disposal-Physical, chemical and biological processes.

UNIT-III: CHEMICAL TOXICOLOGY

(4 lectures)

Toxic chemicals in the environment, Impact of toxic chemicals on enzymes, biochemical effects of arsenic, cadmium, lead, chromium, mercury, biochemical effects of pesticides.

ECO-FRIENDLY POLYMERS

(5 lectures)

Polymer synthesis, Environmental degradation of polymers, photodegradable polymers, hydrolysis and hydro-biodegradable polymers, biopolymers and bioplastics, thermal degradation of plastics during recycling.

UNIT-IV: GREEN TECHNOLOGY

(3 lectures)

Introduction, Basic principles of green technology, concept of Atom economy, Tools of Green technology, zero waste technology.

ENVIRONMENTAL MANAGEMENT SYSTEMS

(4 lectures)

Objectives, Components, Environmental Impact Assessment, Some important Environmental laws, Green bench, Carbon Credits, Environmental Management System standards-ISO 14000 series.

REFERENCE BOOKS:

1. Roger Perman et. al., Natural Resources & Environmental Economics, 2nd Ed., Longman, USA, 2000
2. Stern, A.C. (1980), Air Pollution, Vol. 1-VIII, Academic Press.
3. James M., Lynch & Alan Wiseman, Environmental Bio-monitoring : The Biotechnology Ecotoxicology Interface, Cambridge University Press, 1998.
4. John Glasson, Riki Therivel and Andrew Chadwick, Introduction to Environmental Impact Assessment, 2nd Ed., UCL Press, Philadelphia, USA, 1994.
5. Richard K. Morgan, Environmental Impact Assessment: A methodological perspective, Kluwar Academic Publications, Boston, 1998.
6. Gabriel Bitton, Wastewater Microbiology, 2nd Ed., Wiley-Liss, New York, 1999.
7. Environmental Chemistry & Pollution Control, S. Chand & Co. (Latest ed.), By S.S. Dara
8. Environmental Chemistry, I.K. Publishers, 2007, Balaram Pani
9. Environmental Chemistry, New Age Int. Publ. (Latest ed.), A.K. De.
10. Environmental Studies, S.K. Kataria Publ. . (Latest ed.), S.K. Dhamija.
11. A text book in Environmental Science, Narosa Publ. 2007, V. Subramanian.

Instructions to the paper setters:**Max Marks = 100**

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What is programming, evolution of C language, Concept of variables, program statements and function calls from the library.

C data types, int, char, float etc., C expressions, arithmetic operation, relational and logic operations, C assignment statements, extension of assignment of the operations. C primitive input output using getchar and putchar, exposure to the scanf and printf functions, C Statements, conditional executing using if, else, switch, break, continue statements.

[No. of Hrs. 8]

UNIT II**LOOPS:** Concept of loops, example of loops in C using for, while and do-while. **Arrays:** One dimensional array, two dimensional array, multi dimensional array and example of iterative programs using arrays, Use of 2-D array in matrix computations.**Functions:** Define functions, recursive functions, Argument passing in functions (simple variables as well as arrays).

[No. of Hrs. 8]

UNIT III**Pointers and Strings:** Pointers, relationship between arrays and pointers, Argument passing using pointers (call by value & call by reference), Array of pointers.

Strings and C string library.

[No. of Hrs. 8]

UNIT IV**Structure:** Defining C structures, multiple structure, array of structures, Unions, passing structure as argument to functions.**File Handling:** reading, writing text & binary files.

[No. of Hrs. 8]

Text Books:

1. Yashwant Kanetkar, "Let us C", BPB Publications, 2nd Edition, 2001.
2. Herbert Schildt, "C: The complete reference", Osbourne Mcgraw Hill, 4th Edition, 2002.

Reference Book:

1. Raja Raman, "Computer Programming in C", Prentice Hall of India, 1995.
2. Kernighan & Ritchie, "C Programming Language", The (Ansi C Version), PHI, 2nd Edition.

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UNIT I

General: Importance, Significance and scope of engineering drawing, Lettering, Dimensioning, Scales, Sense of proportioning, Different types of projections, Orthographic Projection, B.I.S. Specifications,

Projections of Point and Lines: Introduction of planes of projection, Reference and auxiliary planes, projections of points and Lines in different quadrants, inclinations, and true lengths of the lines, , shortest distance.

Unit II

Projections of Plane Figures: Different cases of plane figures (of different shapes) making different angles with one or both reference planes and lines lying in the plane figures making different given angles (with one of both reference planes). Obtaining true shape of the plane figure by projection.

Unit III

Projection of Solids: Simple cases when solid is placed in different positions, Axis faces and lines lying in the faces of the solid making given angles. Sections of Solids.

Unit-IV

Isometric Projection Nomography: Basic Concepts and use.

Text Books:

1. Engineering drawing by N.D.Bhatt (Charotar Publications).

Reference Books:

1. Engineering Drawing by S.C.Sharma & Navin Kumar (Galgotia Publications)
2. Engineering Drawing by Venugopalan.
3. Engineering Drawing by P.S.Gill

Instructions to the paper setters:

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT I

Circuit Analysis

Ohm's Law, KCL, KVL Mesh and Nodal Analysis, Circuit parameters, energy storage aspects, Superposition, Thevenin's, Norton's, Reciprocity, Maximum Power Transfer Theorem, Millman's Theorem, Star-Delta Transformation. Application of theorem to the Analysis of dc circuits.

[No. of Hrs. 10]

UNIT II

A.C.Circuits

R-L, R-C, R-L-C circuits (series and parallel), Time Constant, Phasor representation, Response of R-L, R-C and R-L-C circuit to sinusoidal input Resonance-series and parallel R-L-C Circuits, Q-factor, Bandwidth.

[No. of Hrs. 10]

UNIT III

Measuring Instruments

Principles, Construction and application of moving coil, moving iron, dynamometer type, induction type instruments, extension of range of ammeter, voltmeter (shunt and multiplier), Two-wattmeter method, for the measurement of power, Cathode-ray Oscilloscope and Applications.

[No. of Hrs. 10]

UNIT IV

Transformers

Construction and Working principles and phasor diagrams of Single-phase Transformer, Emf equation, Equivalent circuit, Regulation and efficiency, and Auto transformer.

Three Phase Circuits: Phase and line voltages and currents, balanced star and delta circuits, power equations, Importance of power factor and earthing, types and construction of storage battery, capacity and efficiency

[No. of Hrs. 10]

Text Books:

1. P.C. Sen "Principles of Electric Machines and Power Electronics", Wiley Eastern 2003.
2. Vincent DEL TORO "Electrical Engineering Fundamental's Prentice Hall India", Ed 2002-

Instructions to the paper setters:

Max Marks = 100

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit I

Basic Concepts in Communication: Communication as sharing; context of communication; the speaker/writer and the listener/reader; medium of communication; barriers to communication; accuracy, brevity, clarity and appropriateness in communication.

[No. of Hrs: 05]

Unit II

Writing Skills: Types of writings (Expository, Descriptive, Analytic, Argumentative, Narrative etc) and their main features. Resumes and CV's and Cover letters. Memos and Notices. Basics of Formal Reports.

[No. of Hrs: 08]

Unit III

Verbal, Non-Verbal and Listening Skills: Elementary Phonetics (Speech Mechanism, The Description of Speech Sounds, The Phoneme, the syllable; Prosodic Features, Word Accent, Features of Connected Speech); Paralanguage and Body language; and Classroom Presentations, Hearing and Listening; Essentials of Good Listening: Achieving ability to comprehend material delivered at relatively fast speed.

[No. of Hrs: 08]

Unit IV

Group Discussion: Use of persuasive strategies including some rhetorical devices for emphasizing (for instance; being polite and firm; handling questions and taking in criticism of self; turn-taking strategies and effective intervention; use of body language).

[No. of Hrs: 09]

Text Books:

1. Bansal, R.K. and J. B. Harrison. Spoken English For India: A Manual of Speech and Phonetics, Hyderabad: Orient Longman, 1983.
2. Lewis, Hedwig. Body Language: A Guide For Professionals. New Delhi: Response Books (A division of Sage Publication), 2000
3. Sides, Charles H. How to Write & Present Technical Information. Cambridge: CUP, 1999.
4. Forsyth, Sandy & Lesley Hutchison. Practical Composition. Edinburgh : Oliver & Boyd, 1981

LABS

Paper Code: BTPHL102	P	C
Paper: Applied Physics Lab – II	2	1

List of Experiments

1. To determine the value of e/m of electron by J.J. Thomson method.
2. To determine unknown resistance of a wire by Carey Foster's Bridge.
3. To determine the internal resistance of Leclanche cell using potentiometer.
4. To study the charging and discharging of a capacitor and to find out the time constant.
5. To find the thermal conductivity of a poor conductor by Lee's disk method.
6. To study the thermo emf using thermocouple and resistance using Pt. Resistance thermometer.

7. To determine the velocity of ultrasound waves using an ultrasonic spectrometer in a given liquid (Kerosene Oil)

8. To measure the frequency of a sine-wave voltage obtain from signal generator and to obtain lissajous pattern on the CRO screen by feeding two sine wave voltage from two signal generator.

9. To determine the temp. coefficient of resistance of platinum by Callender & Griffith's Bridge.

10. To study Hall effect.

11. To determine plank's constant.

Paper Code: BTCHL102	P	C
Paper: Environmental Studies Lab	2	1

Paper Code: BTEEL101

P C

Paper: Basic Electrical Engineering Lab

2 1

List of Experiments

1. Verification of Thevenin's theorem
2. Verification of Superposition theorem,
3. Verification of Norton theorem,
4. Verification of Max. power transfer theorem,
5. Verification of Reciprocity theorem
6. Phasor Diagram and Power factor of LCR circuit.
7. Measurement of Power and Power factor in single phase Load using three ammeters/voltmeters.
8. Calibration of Energy Meter/Wattmeter/Voltmeter/Ammeter
9. Two wattmeter method of measuring power in three phase circuit (resistive load only)
10. Load test on Single Phase Transformer, Regulation and Efficiency of Transformer
11. Short Circuit/Open Circuit tests on Single Phase transformer
12. To find out resonance and quality factor of a series circuit.
13. To find out resonance and quality factor of a parallel circuit.
14. Verification of KCL and KVL.

Note: At list 10 experiments to be performed

UNIT I

Fitting Shop: Learning use of fitting hand tools, marking tools, marking gauge.
s made out of MS Flats, making saw – cut filling V-cut taper at the corners, circular cut, fitting square in square, triangle in square.

To make a square piece of mild steel.

To make a V-matching joint of mild steel.

Foundry Shop: Introduction to moulding materials, moulds, use of cores, tools and equipments used in foundry.

To make a single piece pattern mould.

To make split pattern mould.

UNIT II

Smithy and Forging Shop: Introduction to forging tools, equipments and operations.

To make a ring of mild steel by cold forging process.

To make S hook by hot forging process.

To make Chisel by hot forging process.

UNIT III

Welding Shop: Electric arc welding, Edge preparations, Exercises making of various joints. Bead formation in horizontal, vertical and overhead positions.

To make a lap joint.

To make a T joint.

To make a V-butt joint.

Gas Welding: Oxy-Acetylene welding and cutting of ferrous metals.

Soldering: Dip soldering.

Brazing: With Oxy-Acetylene gas.

UNIT 4

Wood Working Shop: Various types of timber and tools, making of various joints, Pattern making.

To make a “ T” lap joint.

To make Mortise joint.

Machine Shop: Introduction to various Machine tools and machine parts such as Lathes, Drilling machine, Grinders etc. Cutting tools and operations.

Facing and turning on mild steel rod on Lathe machine.

To make a Groove on Lathe machine.

Taper turning operation on Lathe machine.

THIRD SEMESTER EXAMINATION

Paper Code: BTMAT203

L T C

Paper: Applied Mathematics -III

3 1 4

Instructions to the paper setters:

Max Marks = 100

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UNIT-1

Introduction : Theory of Probability, Probability concepts, random experiment and events, Mathematical Notion, probability function, Law of addition of probability, extension of general Law of addition of probabilities, multiplication law of probability and conditional probability, extension of multiplication Law of Probability, probability of occurrence of n Independent events, Independent events, condition for mutual independence of n events, Bayes Theorem,

Random Variable s and distribution functions: Random Variable ,distribution Function ,discrete random variable ,probability mass function ,discrete distribution function, continuous random variable, probability density function,, Normal distribution , Poission distribution , binomial distribution,geometric distribution,exponential distribution.

UNIT-2

Measures of Central Tendency: central Tendency, arithmetic mean, median , mode.

Measures of Dispersion: Meaning of Dispersion , range , mean deviation, Standard Deviation,quartile deviation, measures of relative dispersion.

Bivariate Frequency Distribution : Bivariate data, Correlation, correlation coefficient, properties of correlation coefficient, calculation of Correlation coefficient from grouped data. Regression lines ,some important results relating to regression line, Limitation of correlation coefficient.

UNIT-3

Solution Of Algebraic and Transcendental Equations:

Bisection method, method of false position, secant method, Iteration method, Newton – Raphson Method, Generalized Newton-Raphson Method.

Solution of Simultaneous Algebraic Equations :

Jacobi's Method, Gauss- Seidal Method, Relaxation Method.

UNIT-4

Finite Differences & Interpolation:

Introduction, Newton's Forward and Backward Interpolation Formulae. Central Difference Interpolation Formula. Gauss's Forward and Backward Interpolation formulae. Lagrange's Interpolation formula and Newton's Divided Difference formulae.

Numerical Integration :

Trapezoidal Rule, Simpson's $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rules, Romberg's Integration.

Text Books:

1. Kishore S. Trivedi, "Probability & Statistics with Reliability, Queuing and Computer Science Application, Prentice Hall of India Pvt Ltd., 2000.
2. S.C. Gupta and V. K. Kapoor, "Fundamentals of Mathematics Statistics", Sultan Chand & sons, New Delhi, 2001.
3. A.M. Goon, M.K. Gupta & B. Dasgupta, "Fundamental of Statistics", Vol. 1, The World Press Pvt. Ltd. Calcutta, 2000.
4. Numerical Method of Engineering & Sciences: B.S. Grewal: Khanna Publishers.
5. Numerical Methods for Scientific & Engg. Computation: M.K. Jain, S.R.K. Iyengar & R.K. Jain; Wiley Eastern Ltd.

Paper Code: BTECT202

L T C

Paper: Analog Electronics

3 1 4

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Unit – I

[Hours: 10]

Multistage amplifier: General cascaded system, RC-coupled amplifier, transformer-coupled amplifier, direct-coupled amplifier, cascaded amplifier, multistage frequency effects. Oscillators: Hartley, colpitt, RC Phase shift, wein bridge oscillators (using transistors)

Unit – II

[Hours: 10]

Power Amplifiers: Power dissipations in transistors, Harmonic distortion, Amplifiers Classification, (Class-A, Class-B, Class-C, Class-AB) Efficiency, Push-pull and complementary Push-pull amplifiers, Tuned amplifiers.

Unit – III

[Hours: 10]

Integrated Circuits Building Blocks of Analog ICs: Differential amplifier, Op-amp Model, op-amp DC & AC parameters, virtual ground, Inverting and non-inverting amplifiers, Integrator and Differentiator.

Advantages of IC's over analogue circuits, classification of IC's based on density levels, Introduction to monolithic and hybrid ICs, Basic applications of OPAMP, differential amp, adders, Voltage to current, current to voltage Converter, Current mirrors, Active loads, Level shifters and output stages,

Unit – IV

[Hours: 10]

Linear & Non Linear Wave shaping: Clipping & Clamping Circuits, Comparators, log/antilog circuits using Op-amps, precision . Active RC Filters: Idealistic & Realistic response of filters (LP, BP, HP), Introduction of All pass & Notch Filter

Text Books

1. J. Millman and Halkias, "Electronic devices and circuits" TMH, 1999.
2. Salivahanan, Suresh Kumar, Vallavaraj, "Electronic devices and circuits" TMH, 1999
3. Linear integrated circuits," gayakwad"
4. Linear integrated circuits by jain & Chaudhary

Reference Book

1. J. Millman and Halkias, "Integrated Electronics, Analog & Digital Circuits & Systems" TMH – 2000.
2. Boylestad & Nashelsky, "Electronic Devices & Circuit Theory" PHI – VIth Edition.
3. Sedra & Smith, "Micro Electronic Circuits" Oxford University Press, 2000
4. J.B.Gupta, "Electronic Devices & Circuits" S. K. Kataria, IInd Edition.

Instructions to the paper setters:

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit-I

Introduction to continuous and discrete signals, their classification and types, periodic waveforms and signal synthesis, LTI systems and their properties; system modeling in terms of differential equations and transient response of R, L, C circuits for impulse, step, ramp, sinusoidal and exponential signals.

[Hours: 10]

Unit-II

Laplace Transform: Review of properties and applications of Laplace transform of complex waveform and transient response of R, L, C series, parallel, series-parallel circuits for all kinds of **excitations**.

[Hours: 10]

Unit-III

Graph theory and its applications, two port networks – z, y, ABCD, h, g, inverse ABCD parameters their interconversion, interconnection of two 2-port networks, concept of transform impedance, Network theorems: Reciprocity, Superposition, Thevenin, Norton, Millman, Maximum Power Transfer and Tellegan

[Hours: 10]

Unit IV

Elements of Network Synthesis: Foster's I and II, Cauer's I& II forms, Synthesis of LC, RC, RL Networks

[Hours: 10]

Text Books:

1. Valkenburg, "Network analysis" PHI, 2000.
2. D. R. Choudhary, "Networks and Systems" New Age International, 1999.

Reference Books

1. Bhise, Chadda, Kulshreshtha, "Engineering network analysis and filter design" Umesh publication, 2000.
2. Kuo, "Network analysis and synthesis" John Wiley and Sons, 2nd Edition.

Instructions to the paper setters:**Max Marks = 100**

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Formal Logic: Statement, Symbolic Representation and Tautologies, Quantifiers, Predicate and validity, Normal form. Propositional Logic, Predicate Logic, Logic Programming and Proof of correctness.

Proof, Relation and Analysis of Algorithm: Techniques for theorem proving: Direct Proof, Proof by Contra position, Proof by exhausting cases and proof by contradiction, principle of mathematical induction, principle of complete induction. Recursive definitions, solution methods for linear, first-order recurrence relations with constant coefficients, Analysis of Algorithms involving recurrence relations-recursive binary search, quick sort, solution method for a divide-and-conquer recurrence relation.

[No. of Hrs.: 11]**UNIT – II**

Sets and Combinations: Sets, Subsets, powersets, binary and unary operations on a set, set operations/set identities, fundamental counting principles, principle of inclusion, exclusion and pigeonhole principle, permutation and combination, Pascal's triangles, binomial theorem, representation of discrete structures.

Relation/function and matrices: Relation, properties of binary relation, operation on binary relation, closures, partial ordering, equivalence relation, Function properties of function, composition of function, inverse, binary and n-ary operations, characteristics for, Permutation function, composition of cycles, Boolean matrices, Boolean matrices multiplication.

[No. of Hrs.: 11]**UNIT – III**

Lattices & Boolean Algebra: Lattices: definition, sublattices, direct product, homomorphism Boolean algebra: definition, properties, isomorphic structures (in particular, structures with binary operations) subalgebra, direct product and homomorphism, Boolean function, Boolean expression, representation & minimization of Boolean function.

[No. of Hrs.: 11]**UNIT – IV**

Graph Theory: Terminology, isomorphic graphs, Euler's formula (proof) four color problem (without proof) and the chromatic number of a graph, five color theorem. Trees terminology, directed graphs, Computer representation of graphs, Warshall's, algorithms, Decision Trees, Euler path & hamiltonian circuits, Shortest path & minimal spanning trees, Depth-first and breadth first searches, trees associated with DFS & BFS). Connected components, in order, preorder & post order trees traversal algorithms.

[No. of Hrs.: 11]**TEXT BOOKS:**

1. Kenneth H. Rosen, "Discrete Mathematics and Its Applications", TMH, 1999.
2. C.L. Liu, "Elements of Discrete Mathematics", TMH, 2000.

REFERENCES BOOKS:

1. Kolman, Busby & Ross, "Discrete Mathematical Structures", PHI, 1996.
2. Narsingh Deo, "Graph Theory With Application to Engineering and Computer Science", PHI, 2004.
3. J. P. Trembly & P. Manohar, "Discrete Mathematical Structures with Applications to Computer Science", McGraw Hill, 1997.
4. Vinay Kumar, "Discrete Mathematics", BPB Publications, 1998.

Instructions to the paper setters:**Max Marks = 100**

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction: Introducing Object-Oriented Approach related to other paradigms (functional, data decomposition), Characteristics of Object-Oriented Languages.

Basic terms and ideas: Abstraction, Encapsulation, Information hiding, Inheritance, Polymorphism, Review of C, Difference between C and C++.

[No. of Hrs: 11]**UNIT – II**

Classes and Objects: Abstract data types, Object & classes, attributes, methods, C++ class declaration, State identity and behavior of an object, Constructors and destructors, instantiation of objects, Default parameter value, Copy Constructor, Static Class Data, C++ garbage collection, dynamic memory allocation.

[No. of Hrs. 11]**UNIT – III**

Inheritance and Polymorphism: Inheritance, Types of Inheritance, Class hierarchy, derivation – public, private & protected, Aggregation, Polymorphism, Type of Polymorphism – Compile time and runtime, Method polymorphism, Polymorphism by parameter, Operator overloading, Parametric polymorphism, Generic function – template function, function name overloading, Overriding inheritance methods.

[No. of Hrs: 11]**UNIT – IV**

Files and Exception Handling: Persistent objects, Streams and files, Namespaces, Exception handling, Generic Classes

Standard Template Library: Standard Template Library, Overview of Standard Template Library, Containers, Algorithms, Iterators, Other STL Elements, The Container Classes, General Theory of Operation, Vectors.

[No. of Hrs: 11]**TEXT BOOKS:**

1. A.R.Venugopal, Rajkumar, T. Ravishanker “Mastering C++”, TMH, 1997.
2. R. Lafore, “Object Oriented Programming using C++”, BPB Publications, 2004.
3. Schildt Herbert, “C++ Programming”, 2nd Edition, Wiley DreamTech.

REFERENCE BOOKS:

1. D. Parsons, “Object Oriented Programming with C++”, BPB Publication, 1999.
2. Steven C. Lawlor, “The Art of Programming Computer Science with C++”, Vikas Publication, 2002.
3. Yashwant Kanethkar, “Object Oriented Programming using C++”, BPB, 2004.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Fundamentals of algorithm analysis: Big ‘O’ notations, Time and space complexity of algorithms., Elementary data structures and their applications

Arrays: ordered lists, representation of arrays, sparse matrices, linked lists: singly and doubly linked lists, stacks, queues, multiples stacks and queues, Applications: polynomial arithmetic, infix, postfix and prefix arithmetic expression conversion and evaluations.

[No. of Hrs: 12]

UNIT – II

Trees: Definitions & basic concepts, linked & contiguous tree representation, binary tree, binary tree traversal, insertion, deletion & searching in binary trees, heap trees, heap sort algorithm, height balanced trees (AVL trees).

Graphs: Definitions, linked & sequential representation of Graphs, adjacency matrix, operation on graphs, graph traversal, **shortest path algorithms:** Dijkstra’s Algorithm, Floyd Warshall’s Algorithm, and Minimum Spanning Tree Definitions.

[No. of Hrs: 11]

UNIT – III

Searching & Sorting: Hashing: Hash function, Hash table, Internal sort: Radixsort, Insertion sort, Exchange sort, Selection sort, Quicksort, Shellsort, Mergesort, Heapsort, External sort: K-way mergesort, balanced mergesort, polyphase mergesort

[No. of Hrs: 11]

UNIT – IV

Files: Files, Queries and sequential organization; Cylinder surface indexing, Hashed Indexed, Tree Indexing, B-Trees, Trie Indexing, Sequential file organizational, random file organization, Hashed file organization, Inverted files, cellular partitions. **[No. of Hrs: 10]**

TEXT BOOKS:

1. E. Horowitz and S. Sahani, “Fundamentals of Data Structures”, Galgotia Booksource Pvt. Ltd, 1999.
2. R. L. Kruse, B. P. Leung, C. L. Tondo, “Data Structures and program design in C”, PHI, 2000.

REFERENCES BOOKS:

1. Schaum’s outline series, “Data Structure”, TMH, 2002
2. Y. Langsam et. al., “Data Structures using C and C++”, PHI, 1999.
3. Yashwant Kanetkar, “Data Structure through C”, BPB, 2005.

Code No. : BTECL202

Paper: Analog Electronics Lab.

L	P	C
0	2	1

Practical will be based on Analog Electronics. Some lab experiments must be performed using any circuit simulation software e.g. PSPICE.

Code No. : BTECL203

Paper: Circuits & Systems Lab.

L	P	C
0	2	1

Practical will be based on Circuits & Systems. Some lab experiments must be performed using any circuit simulation software e.g. PSPICE.

Code No. : BTCSL203

Paper: Object Oriented Programming using C++ Lab.

L	P	C
0	2	1

Practical's will be based on Object Oriented Programming using C++. Following list of Experiments is being recommended:

1. A Class Student Has Three Data Members: Name, Roll, Marks Of 5

Subjects and Member Functions To Assign Streams On The Basis Of The

Table Given Below:

Average Marks	Stream
96% And More	Computer Science
91% - 95%	Electronics
86% - 90%	Mechanical
81% - 85%	Electrical
76% - 80%	Chemical
71% - 75%	Civil

Declare The Class Student And Define The Member Functions.

2. Define A Class Book With The Following Definitions:

Private Members Of Class Book Are:

Book_No

Book_Title

Price

Total_Cost(Int N)

Public Members Of Class Book Are:

Input()

Purchase()

3. Define A Class Serial With Following Specifications:

Private Members:

Serial Code	Integer
Title	20 Character
Duration	Float
Noofepisodes	Integer

Public Member Function Of Class Serial:

1. A Constructor To Initialize Duration As 30 And Noofepisodes As 10
2. Newserial() To Accept Values Of Serial Code And Title
3. Otherentries() To Assign Value To Duration And Noofepisodes With The Help Of Values Passed To The Function
4. Dispdata() To Display The Data Members On The Screen
4. Design A Program On Concept Of Same Function Name In Base And Derived Class (Overriding).
5. Program Showing The Concept Of Removing Ambiguity In Case Of Hybrid Inheritance (Virtual Base Class).
6. Design A Program To Count Total Number Of Letters In A File.
7. Program To Transfer Data From One File To Another One Character At A Time.
8. Program To Enter Data Into Hotelfile Using Class, And Count The Total Number Of Customers.
9. Program On Merging Of Records From 2 Files.
10. Design A Program To Overload +, --, New Operators.
11. Design A Program To Show Concept Of Late Binding.
12. Design A Program To Show Concept Of Exception Handling.
13. Design A Program To Show Concept Of Containership.

Practical will be based on Object Oriented Programming using C++.

Code No. : BTCSL204

Paper: Data Structure Lab.

L	P	C
0	2	1

Practical will be based on Data Structure.

FOURTH SEMESTER EXAMINATION

Code No.: BTCST206
Paper: Software Engineering

L	T	C
3	1	4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction: Software Crisis, Software Processes & Characteristics, Software life cycle models, Waterfall, Prototype, Evolutionary and Spiral Models

Software Requirements analysis & specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD & Use case approach, requirements analysis using DFD, Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS.

[No. of Hrs.: 11]

UNIT – II

Software Project Planning: Size Estimation like lines of Code & Function Count, Cost Estimation Models, COCOMO, COCOMO-II, Putnam resource allocation model, Risk Management.

Software Design: Cohesion & Coupling, Classification of Cohesiveness & Coupling, Function Oriented Design, Object Oriented Design

[No. of Hrs.: 11]

UNIT - III

Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, Data Structure Metrics, Information Flow Metrics

Software Reliability: Importance, Hardware Reliability & Software Reliability, Failure and Faults, Reliability Models, Basic Model, Logarithmic Poisson Model, Software Quality Models, CMM & ISO 9001.

[No. of Hrs.: 11]

UNIT - IV

Software Testing: Testing process, Design of test cases, functional testing: Boundary value analysis, Equivalence class testing, Decision table testing, Cause effect graphing, Structural testing, Path Testing, Data flow and mutation testing, Unit Testing, Integration and System Testing, Debugging, Alpha & Beta Testing, Testing Tools & Standards.

Software Maintenance: Management of Maintenance, Maintenance Process, Maintenance Models, Regression Testing, Reverse Engineering, Software Re-engineering, Configuration Management, Documentation.

[No. of Hrs.: 11]

TEXT BOOKS:

1. K. K. Aggarwal & Yogesh Singh, “Software Engineering”, 2nd Ed., New Age International, 2005.
2. R. S. Pressman, “Software Engineering – A practitioner’s approach”, 5th Ed., McGraw Hill Int. Ed., 2001.

REFERENCE BOOKS:

1. Stephen R. Schach, “Classical & Object Oriented Software Engineering”, IRWIN, TMH, 1996.
2. James Peter, W. Pedrycz, “Software Engineering: An Engineering Approach”, John Wiley & Sons, 2004.
3. I. Sommerville, “Software Engineering”, Addison Wesley, 2004
4. K. Chandrasekhakar, “Software Engineering & Quality Assurance”, BPB, 2005.

Instructions to the paper setters:

Max Marks = 100

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Preliminaries: Review of growth of functions, Recurrences: The substitution method, The iteration method, The master method, Data Structures for Disjoint Sets.

Divide and Conquer Approach: Merge Sort, Quick sort, Medians and Order statistics, Strassen's algorithm for Matrix Multiplications. **[No. of Hrs.: 11]**

UNIT – II

Dynamic Programming: Elements of Dynamic Programming, Matrix Chain Multiplication, Longest common subsequence and optimal binary search trees problems.

Greedy Algorithms: Elements of Greedy strategy, An activity selection problem, Huffman Codes, A task scheduling problem. **[No. of Hrs.: 11]**

UNIT – III

Graph Algorithms: Representation of Graphs, Breadth First Search, Depth First Search, Topological Sort, Strongly Connected Components, Algorithm for Kruskal's and Prim's for finding Minimum cost Spanning Trees, Dijkstra's and Bellman Fort Algorithm for finding Single source shortest paths. All pair shortest paths and matrix multiplication, Floyd – Warshall algorithm for all pair shortest paths. **[No. of Hrs.: 11]**

UNIT – IV

String matching: The naïve String Matching algorithm, The Rabin-Karp Algorithm, String Matching with finite automata, The Knuth-Morris Pratt algorithm.

NP-Complete Problem: Polynomial-time verification, NP-Completeness and Reducibility, NP-Completeness Proof, NP-Complete problems. **[No. of Hrs.: 11]**

TEXT BOOKS:

1. T. H. Cormen, C. E. Leiserson, R. L. Rivest, Clifford Stein, "Introduction to Algorithms", 2nd Ed., PHI, 2004.

REFERENCES BOOKS:

1. A. V. Aho, J. E. Hopcroft, J. D. Ullman, "The Design and Analysis of Computer Algorithms", Addison Wesley, 1998.
2. Ellis Horowitz and Sartaz Sahani, "Computer Algorithms", Galgotia Publications, 1999.
3. D. E. Knuth, "The Art of Computer Programming", 2nd Ed., Addison Wesley, 1998

Code No.: BTECT206

L T C

Paper: Digital Circuits & System – I

3 1 4

Instructions to the paper setters:

Max Marks = 100

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Analog & Digital signals, AND, OR, NOT, NAND, NOR & XOR gates, Boolean algebra. Standard representation of Logical functions, K-map representation and simplification of logical functions, Don't care conditions, X-OR & X-NOR simplification of K-maps. Combinational circuits: Multiplexers, demultiplexers, Decoders & Encoders, Adders & Subtractor, Code Converters, comparators, decoder/drivers for display devices

[Hrs.: 10]

UNIT – II

Flip Flops: S-R, J-K, D & T Flip-flops, excitation table of a flip-flop, race around condition. Sequential circuits: Shift registers, Ripple counter, Design of Synchronous counters, 555 Timer and its application as mono-stable, astable and bistable multi-vibrator. Schmitt trigger.

[Hrs.: 10]

UNIT - III

A/D and D/A converters: Binary-weighted DAC, R-2R Ladder type networks, Successive-approximation ADC, Linear-ramp ADC, Dual-slope ADC Bipolar-Transistor Characteristics, RTL and DTL circuits, TTL, ECL and CMOS Logic families.

[Hrs.: 10]

UNIT - IV

Logic Implementations using ROM, PAL & PLA., Semiconductor Memories: Memory organization & operation, classification and characteristics of memories, RAM, ROM and content addressable memory.

[Hrs.: 10]

TEXT BOOKS:

1. R.P. Jain, "Modern Digital Electronics", TMH, 3rd Ed, 2004.
2. Morris Mano, "Digital Design", PHI, 2nd Ed, 2002.

REFERENCE BOOKS:

1. R. J. Tocci, "Digital Systems", PHI, 2000
2. Malvino and Leach, "Digital principles and applications", TMH, 2000.
3. I. J. Nagrath, "Electronics, Analog & Digital", PHI, 1999.
4. B. S. Nai, "Digital Electronics and Logic Design", PHI, 2000.
5. Balabanian and Carlson, "Digital Logic Design Principles", Wiley Pub., 2000.

Instructions to the paper setters:

Max Marks = 100

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT - I

Analog Modulation: Amplitude Modulation, Generation & Demodulation of AM DSBSC waves, Coherent Detection of DSBSC Signal, Quadrature-Carrier Multiplexing, Generation of SSB waves, Demodulation of SSB waves.

Pulse Analog Modulation: Sampling theorem, Sampling of Low Pass and band pass signals, Aliasing, Aperture effect, PAM, PWM and PPM generation and modulation, TDM, Cross talk, Spectral analysis of PAM, PWM and PPM Waves, S/N ratio for different pulse modulation.

[No. of Hrs.: 12]

UNIT – II

Angle Modulation: Frequency & phase Modulation, narrow & wide-band, FM, BW of FM waves, Generation & demodulation of FM waves, S/N ratio, Comparison of AM, FM & PM.

Random Process: Probability Random variable, Probability density, mean, moments, transformation of random variables, Stationary Process, mean, autocorrelation and covariance functions, ergodicity, power spectral density, response of linear systems to random signals, Gaussian distribution, central limit theorem.

[No. of Hrs.: 12]

UNIT – III

Pulse Digital Modulation: Pulse Code Modulation signal to quantization noise ratio, Companding, Probability of error for PCM in AWGN Channel, DPCM, DM and ADM modulators and demodulators, Prediction Filter, line coding, Inter symbol Interference.

Digital transmission through carrier modulation

Amplitude, Frequency and phase shift keying, Differential phase shift keying, CPFSK, MSK OPSK and QAM modulation & detection, probability of error calculation, Matched Filter.

[No. of Hrs.: 11]

UNIT - IV

Introduction to Information Theory: Measurement of Information, mutual information Shannon's Theorem Source coding, channel coding and channel capacity theorem. Huffman code, Lempel – ziv code.

[No. of Hrs.: 09]

TEXT BOOKS:

1. Taub & Schilling, "Principles of Communication Systems", TMH, 1998.

REFERENCE BOOKS:

1. J. C. Hancock, "An Introduction to the Principles of Communication Theory", TMH, 1998.
2. Simon Haykins, "Communication Systems", John Wiley, 1998.

Code No.: BTCST208
Paper: Computer Graphics

L	T	C
3	1	4

Instructions to the paper setters:

Max Marks = 100

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UNIT – I

Transformation, Projections, and Clipping Algorithms: Bresenham's Line Drawing Algorithm, Homogeneous Coordinate System for 2D and 3D, Various 2D, 3D Transformation matrices (Translation, Scaling, Rotation, Shear), Rotation about an arbitrary point (2D), Rotation about an arbitrary axis (3D), Computing location of V.P, Clipping Algorithms, Sutherland-Cohen Clipping Algorithm.

[No. of Hrs. : 11]

UNIT – II

Curves and Surfaces: Bresenham's Circle Drawing Algorithm, Bezier Curves, 4 point and 5 point Bezier curves using Bernstein Polynomials, Conditions for smoothly joining curve segments, Bezier bi-cubic surface patch, B-Spline Curves, Cubic B-Spline curves using uniform knot vectors.

[No. of Hrs: 11]

UNIT – III

Projection and Solid Modelling: Parallel Projection, Oblique Projection on xy plane, Isometric Projection, Perspective Projection, One Vanishing Point (V.P.) projection from a point on z axis, Generation of 2 V.P. Projection, Isometric Projection, Perspective, Projection, one vanishing Pint (VP), projection from 0 point on z axis, Generation of 2 VP Projector & Projections, Solid Modelling.

[No. of Hrs: 11]

UNIT – IV

Shading and Hidden Surface Removal: Shading, Illumination Model for diffused Reflection, Effect of ambient lighting, distances, Specular Reflection Model, Computing Reflection Vector, Curved Surfaces, Polygonal Approximations, Gourard Shading, Phong Model, Hidden Surface Removal, Back Face Detection, Depth Buffer (Z-Buffer, A-Buffer) Method, Scan Line Method, Depth Sorting Method, Area Subdivision Method.

[No. of Hrs: 11]

TEXT BOOKS:

1. Foley et. al., "Computer Graphics Principles & practice", Addison Wesley, 1999.
2. David F. Rogers, "Procedural Elements for Computer Graphics", McGraw Hill Book Company, 1985.

REFERENCES BOOKS:

1. D. Rogers and J. Adams, "Mathematical Elements for Computer Graphics", MacGraw-Hill International Edition, 1989.
2. D. Hearn and P. Baker, "Computer Graphics", Prentice Hall, 1986.
3. R. Plastock and G. Kalley, "Theory and Problems of Computer Graphics", Schaum's Series, McGraw Hill, 1986.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction, What is an Operating System, Simple Batch Systems, Multi programmed Batches systems, Time-Sharing Systems, Personal-computer systems, Parallel systems, Distributed Systems, Real-Time Systems

Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation, Segmentation with Paging

Virtual Memory: Demand Paging, Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations, Demand Segmentation

[No. of Hrs.: 12]

UNIT – II

Processes: Process Concept, Process Scheduling, Operation on Processes, Cooperating Processes, Interprocess Communication

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling, Real-Time Scheduling, Algorithm Evaluation

Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Critical Regions, Monitors, Synchronization in Solaris 2, Atomic Transactions

[No. of Hrs.: 11]

UNIT – III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined Approach to Deadlock Handling.

Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Virtual Devices; Device Characteristics-Hardware Consideration, Input or Output Devices, Storage Devices, Channels and Control Units, Independent Device Operation, Buffering, Multiple Paths, Block Multiplexing, Device Allocation Consideration,

Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management, Disk Reliability, Stable-Storage Implementation

[No. of Hrs.: 11]

UNIT – IV

Information Management: Introduction, A Simple File System, General Model of a File System, Symbolic File System, Basic File System, Access Control Verification, Logical File System, Physical File System File-System Interface: File Concept, Access Methods, Directory Structure, Protection, Consistency Semantics File-System Implementation: File-System Structure, Allocation Methods, Free-Space Management, Directory Implementation, Efficiency and Performance, Recovery.

[No. of Hrs.: 10]

TEXT BOOKS:

1. Silberschatz and Galvin, "Operating System Concepts", Pearson, 5th Ed., 2001
2. Dr. R. C. Joshi, "Operating Systems", Wiley Dreamtech, 2005.

REFERENCES BOOKS:

1. Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000
2. E. Madnick, J. Donovan, "Operating Systems", Tata McGraw Hill, 2001

Code No. : BTCSL205	L	P	C
Paper: Software Engineering Lab.	0	2	1

Practical will be based on Software Engineering.

Code No. : BTCSL206	L	P	C
Paper: Algorithm Analysis & Design Lab.	0	2	1

Practical will be based on Algorithm Analysis & Design.

Code No. : BTECL205	L	P	C
Paper: Digital Circuits & Systems - I Lab.	0	2	1

Practical will be based on Digital Circuits & Systems – I. Some lab experiments must be performed using any circuit simulation software e.g. PSPICE. Following list of Experiments is being recommended:

- (1) To verify the truth table of Logic Gates :-AND,OR,NOR,NAND,XOR & NOT.
- (2) To verify the truth table of Half Adder,Full Adder,Half Subtractor & Full Subtractor.
- (3) To design the circuit for BCD to EXCESS-3 code convertor.
- (4) To design the circuit for Binary to Gray & Gray to Binary code convertor.
- (5) To design the circuit for 3-Bit parity checker & Generator.
- (6) To design the circuit for 4:1 Multiplexer using IC-74153 & using Gates.
- (7) To design the circuit for 8:1 Multiplexer using two 4:1 Multiplexer's..
- (8) To design the circuit for D-flip flop using NAND-Gates.
- (9) To design the circuit for JK-flip flop using IC-7473.

Code No. : BTCSL207	L	P	C
Paper: Computer Graphics Lab.	0	2	1

Practical will be based on Computer Graphics.

Code No. : BTCSL208	L	P	C
Paper: operating system Lab.	0	2	1

Practical will be based on Computer Graphics.

FIFTH SEMESTER EXAMINATION

Code No.:BTECT310

Digital Circuits & Systems – II

L T Paper:
3 1 4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction: Introduction to Computer-aided design tools for digital systems. Hardware description languages, Introduction to VHDL, Data objects, Classes and data types, Operators, Overloading, Logical operators. Types of delays, Entity and Architecture declaration. Introduction to behavioural, dataflow and structural models.

[Hrs.: 12]

UNIT – II

VHDL Statements: Assignment statements, sequential Statements and process, Conditional statements, Case statements, Array and loops, Resolution functions, Packages & Libraries, Concurrent statements.

[Hrs.: 10]

UNIT – III

Combinational Circuit Design: VHDL models and simulation of combinational circuits such as Multiplexers, Encoders, Decoders, Code converters, Comparators, Implementation of Boolean functions etc.

Sequential Circuit Design: VHDL Models and simulation of sequential circuits, Flip flops, Shift registers, Counters ,etc.

[Hrs.: 10]

UNIT-IV

Generics and Configuration, Functions and Procedure, Model simulation, Writing a test bench Design with CPLDs and FPGAs: Programmable logic devices : ROM, PLAs, GAL, PEEL, CPLDs and FPGA. Design and implementation using CPLDs and FPGAs.

[Hrs.: 08]

TEXT BOOKS:

1. J. Bhaskar, “ A VHDL Primer”, Addison Wesley, 1999.
2. C. H. Roth, “Digital System Design using VHDL”, PWS Publishing, 2003.
3. Moris Mano, “Fundamentals of Logic Design”, Pearson Education, 3rd Edition, 2003.

REFERENCES BOOKS:

1. M. Ercegovic, T. Lang and L.J. Moreno, ”Introduction to Digital Systems”, Wiley, 2000
2. J.F. Wakerly, “Digital Design-Principles and Practices”, PHL, 2000.
3. Douglas Perry, “VHDL”, MGH, 2000.
4. Michae John Sebastian Smith, “Application-Specific Integrated Circuits”, Addison-Wesley, 2000.
5. Z. Navabi, “ VHDL-Analysis and Modeling of Digital Systems”, MGH, 2000.

Instructions to the paper setters:**Max Marks = 100**

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction to Java: Importance and features of Java, Keywords, constants, variables and Data Types, Operators and Expressions, Decision Making, Branching and Looping: if..else, switch,?: operator, while, do, for statements, labeled loops, jump statements: break, continue return. Introducing classes, objects and methods: defining a class, adding variables and methods, creating objects, constructors, class inheritance.

Arrays and String: Creating an array, one and two dimensional arrays, string array and methods, Classes: String and String Buffer classes, Wrapper classes: Basics types, using super, Multilevel hierarchy abstract and final classes, Object class, Packages and interfaces, Access protection, Extending Interfaces, packages.

[No. of Hrs.: 12]**UNIT – II**

Exception Handling: Fundamentals exception types, uncaught exceptions, throw, throw, final, built in exception, creating your own exceptions, Multithreaded Programming: Fundamentals, Java thread model: priorities, synchronization, messaging, thread classes, Runnable interface, inter thread Communication, suspending, resuming and stopping threads. Input/Output Programming: Basics, Streams, Byte and Character Stream, predefined streams, Reading and writing from console and files. Using Standard Java Packages (lang, util, io, net). Networking: Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Data-gram Programming

[No. of Hrs.: 12]**UNIT – III**

Event Handling: Different Mechanism, the Delegation Event Model, Event Classes, Event Listener Interfaces, Adapter and Inner Classes, Working with windows, Graphics and Text, using AWT controls, Layout managers and menus, handling Image, animation, sound and video, Java Applet. Beans: Introduction to Java Beans and Swings, Servlets

[No. of Hrs.: 10]**UNIT – IV**

Website Designing: Overview of Internet and Intranet Services, Sending and Receiving Mails, HTML Tags, Creating Tables, Check Boxes, Text Books, Frames, Graphical and animation techniques, Static & Dynamic Web Pages, Guidelines for a good website design, DHTML, ASP, Javascript

[No. of Hrs.: 10]**TEXT BOOKS:**

1. Patrick Naughton and Herbertz Schildt, “Java-2 The Complete Reference”, 1999, TMH
2. Rick Dranell, “HTML 4 unleashed”, Techmedia Publication, 2004.
3. Shelley Powers, “Dynamic Web Publishing”, 2nd Ed., Techmedia, 1998.

REFERENCES BOOKS:

1. E. Balaguruswamy, “Programming with Java: A Primer”, TMH, 1998.
2. Horstmann, “Computing Concepts with Java 2 Essentials”, John Wiley, 2004.
3. Decker & Hirshfield, “Programming Java: A introduction to programming using JAVA”, Vikas Publication, 2000.
4. Tmy Gaddies, “Starting out with Java”, Wiley Dreamtech, 2005.
5. Holzner, “HTML Blackbook”, Wiley Dreamtech, 2005.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

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Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction and overview: Review of digital components, Evolution of computers.

Register Transfer and Microoperation: Register transfer language, register transfer, bus and memory transfer, arithmetic microoperations, logic micro operations, shift microoperations.

Basic Computer Organization and Design: Instruction codes, computer registers, computer instructions, timing & control, instruction cycle, memory reference instructions, input-output and interrupts, design of basic computer, design of accumulator logic. **[No. of Hrs: 11]**

UNIT – II

Microprogrammed Control Unit: Control memory, address sequencing.

Central Processing Unit: Introduction, general register organization, stack organization, instruction formats, addressing modes.

Pipeline and vector processing Parallel Processing, pipelining, arithmetic pipeline, RISC Pipeline, Vector Processing, Array Processors. **[No. of Hrs: 11]**

UNIT – III

Computer Arithmetic: Introduction, addition and subtraction, multiplication algorithms, division algorithms, floating point arithmetic operation, decimal arithmetic unit, decimal arithmetic operations.

Input-Output Organization: Peripheral devices, input-output interface, asynchronous data transfer, modes of data transfer, priority interrupt, direct memory access, input-output processor.

[No. of Hrs: 11]

UNIT – IV

Memory organization: Memory hierarchy, main memory, auxiliary memory, associative memory, cache memory, virtual memory, memory management hardware.

Multiprocessors: Characteristics of multiprocessor, Interconnection Structure, Interprocessor Communication & Synchronization **[No. of Hrs: 11]**

TEXT BOOKS:

1. M Mano, “Computer System and Architecture”, PHI, 1993.

REFERENCES BOOKS:

1. Malvino, “Digital Computer Electronics: An Introduction to Microcomputers”, McGraw Hill, 1993.
2. J. P. Hayes, “Computer Architecture and Organization”, McGraw Hill, 1998.
3. W. Stallings, “Computer Organization & Architecture”, PHI, 2001.
4. Dandamudi, “Fundamental of Computer Organization & Design”, Wiley Dreamtech, 2005.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Linux – The Operating System: Linux history, Linux features, Linux distributions, Linux's relationship to Unix, Overview of Linux architecture, Installation, Booting, Login and Shutdown Process, Start up scripts, controlling processes, system processes (an overview), Linux Security, Networking on Linux: Preparing Linux for Networking, Network Installation, configuring network setting after installation. **[No. of Hrs.: 11]**

UNIT – II

User Management: Types of users, The powers of Root, managing users (adding and deleting): using the command line, shell scripts and GUI tools.

The Linux File System: Basic Principles, Pathnames, Mounting and Unmounting File Systems, Different File Types, File Permissions, Disk Usage Limits, Directory Structure, The Ext2 and Ext3 File Systems, Check and Repair File Systems. **[No. of Hrs.: 12]**

UNIT – III

Shell in Linux: Available shells under Linux (viz. Bash, TCSH, Korn or so on), different shell features, editors, shell commands, shell scripts: shell variables, environmental variables, purpose of shell scripts, writing, storing and executing scripts, Filters- The grep family, advanced filters-sed and awk. **[No. of Hrs.: 11]**

UNIT – IV

Using the X-Windows System: What is X clients, servers and Windows Management, Exploring X Applications X – Lib Programming Model, creating and managing windows, handling events: key board and mouse management, an overview of drawing graphics, text handling colormap and manipulation. **[No. of Hrs.: 10]**

TEXT BOOKS:

1. N. Barkakati, "X-Windows System Programming", PHI, 2001
2. K. Cox, "Red Hat Linux Administrator's Guide", PHI, 2001
3. Michael Jain, "Red Hat Linux 9", BPB Publications, 2003.
4. Peterson Richard, "The Complete References Linux", 2nd Ed., Tata McGraw Hill, 2002.

REFERENCES BOOKS:

1. O'Reilly and Associates Vol. 0: Protocol Reference Manual, 1992
2. O'Reilly and Associates Vol. 1: Xlib Programming Manual, 1992
3. O'Reilly and Associates Vol. 2: Xlib Programming Manual, 1992
4. Bach, "The Design of the Unix Kernel", PHI, 2000.

INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from question no. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

UNIT – I

Basic Concepts and Conceptual Database Design: Database administrator & Database Users, Characteristics of the Database, Database Systems, Concepts and Architecture, Data Models, Schemes & Instances, DBMS Architecture & Data Independence, Database Languages & Interfaces, Overview of Hierarchical, Network & Relational Data Base Management Systems, Data Modelling Using The Entity-Relationship Model – Entities, Attributes and Relationships, Cardinality of Relationships, Strong and Weak Entity Sets, Generalization, Specialization, and Aggregation, Translating your ER Model into Relational Model

[No. of Hrs.: 11]

UNIT – II

Relational Model, Languages & Systems: Relational Data Model & Relational Algebra, Relational Model Concepts, Relational Model Constraints, Relational Algebra, SQL – A Relational Database Language, Data Definition in SQL, View and Queries in SQL, Specifying Constraints and Indexes in SQL, Practicing SQL commands using ORACLE.

[No. of Hrs.: 11]

UNIT – III

Relational Data Base Design and Oracle Architecture: Functional Dependencies & Normalization for Relational Databases, Functional Dependencies, Normal Forms Based on Primary Keys, (1NF, 2NF, 3NF,BCNF, 4NF & 5NF), Lossless Join and Dependency Preserving Decomposition, Oracle 8 Architecture, Database Storage, Oracle Software Structures, Shared Database Access Mechanism, Database Protection.

[No. of Hrs.: 11]

UNIT – IV

Transaction Management: Transaction Concept and State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Concurrency Control Techniques, Lock-Based Protocols, Timestamp-based Protocols, Deadlock Handling, Recovery System, Failure Classification, Storage Structure, Recovery and Atomicity, Log-based Recovery, Shadow Paging, Recovery with Concurrent Transactions, Buffer Management, Indexing, Hashing and Query Processing: Query Processing, Overview, Measures of Query Cost, Selection Operation, Sorting, Join Operation, Other Operations, Evaluation of Expressions, Concepts of Object Oriented Database Management Systems, Distributed Data Base Management Systems.

[No. of Hrs.: 11]

TEXT BOOKS:

1. Korth, Silberschatz, “Database System Concepts”, 4th Ed., TMH, 2003.
2. Steve Bobrowski, “Oracle 8 Architecture”, TMH, 2000

REFERENCES BOOKS:

1. C. J. Date, “An Introduction to Database Systems”, 7th Ed., Narosa Publishing, 2004
2. Elmsari and Navathe, “Fundamentals of Database Systmes”, 4th Ed., A. Wesley, 2004
3. J. D. Ullman, “Principles of Database Systems”, 2nd Ed., Galgotia Publications, 1999.

Code No.: BTHU303

Paper: Principle of Management and Organizational Behaviour

L T C

3 1 4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Meaning & Nature of Management, Management Systems and Processes, Managerial Skills, Tasks & Responsibilities of a Professional Manager.

[No. of Hrs.: 11]

UNIT – II

Planning Types and Process, Management by Objectives, Decision-Making Models, Organizational context of decisions, Problem solving techniques and processes, Controlling: Process and Techniques

[No. of Hrs.: 11]

UNIT – III

Organizational Climate, Culture and Managerial ethos, Organisational structure & Design, Managerial Communication.

[No. of Hrs.: 11]

UNIT – IV

Individual Determinants of organizational, Behaviours: Perceptions, Learning, Personality, Attitudes & Values, Motivation, Job Anxiety & Stress, Analysing, Interpersonal relations, Group Dynamics, Management of Organizational Conflicts, Management of Change, Leadership Styles & Influence.

[No. of Hrs.: 11]

TEXT BOOKS:

1. Stephen P. Robbins, David & Decenzo, "Fundamentals of Management", 3rd Edition, Pearson Education, 2002.
2. Stoner, et. al., "Management", 6th Edition, PHI, 2002.
3. J. S. Chandan, "Organisational Behaviour", Vikas Publishing House, 2004.
4. John M. Ivancevich, T. N. Duening, "Business & Management: Principles and Guidelines", biztantra, Dreamtech, 2005.

REFERENCES BOOKS:

1. Joseph W. Weiss, "Organisational Behaviour & Change, Managing Diversity, Cross-Cultural Dynamics & Ethics", 2nd Edition, Vikas Publishing House, 2003
2. Richard Pettinger, "Introduction to Management", 3rd Edition, Palgrave MacMillan, 2002.
3. Udai Pareek, "Understanding Organisational Behaviour", 1st Edition, Oxford University Press, 2004.
4. Fred Luthans, "Organisational Behaviour," 9th Edition, McGraw Hill International Edition, 2004.

Practical will be based on Digital Circuits & Systems – II. Following list of Experiments is being recommended:

1. Half Adder using
 - a. Data Flow
 - b. Behavioral
 - c. Structural
2. Full Adder using
 - a. Data Flow
 - b. Behavioral
 - c. Structural
3. 8 : 1 Mux using
 - a. Data Flow
 - b. Behavioral
 - c. Structural
 - d. Case
4. Demux using
 - a. Data Flow
 - b. Behavioral
 - c. Structural
 - d. Case
5. BCD to seven segment Decoder
 - a. Structural
 - b. Data Flow
 - c. Behavioral
 - d. Case
6. 3 : 8 Decoder
 - a. Structural
 - b. Data Flow
 - c. Behavioral
 - d. Case
7. Single bit comparator
 - a. Data Flow
 - b. Behavioral
 - c. Structural
8. Four bit comparator
 - a. Case
 - b. For
9. 4 – bit parallel adder (1) For.
10. SR flip flop with Reset (Behavioral).
11. JK flip flop with Reset (Behavioral).
12. Priority Encoder (8 x 3) using data flow.
13. Decade counter (Structural).
14. Ring Counter (Structural).
15. UP Down Counter (Structural).
16. SIPO Register (Structural).
17. PISO Register (Structural).
18. FSM (Detecting a sequence 1010).
19. Gates (6) using Test Benches.
20. D flip flop using Behavioral.
21. Positive edge triggered D flip flop with reset.
22. Positive edge triggered T flip flop with reset.

Code No. : BTCSL309	L	P	C
Paper: Java Programming & Website Design Lab.	0	2	1

Practical will be based on Java Programming & Website Design.

Code No. : BTCSL310	L	P	C
Paper: Linux & X – Windows Programming Lab.	0	2	1

Practical will be based on Linux & X – Windows Programming.

Code No. : BTCSL311	L	P	C
Paper: Database Management Systems Lab.	0	2	1

Practical will be based on Database Management System.

Code No. : BTCSP301	L	P	C
Paper: *Practical Training	0	0	1

*NUES

Practical training conducted after fourth semester will be evaluated in the fifth Semester based on Viva-Voce.

SIXTH SEMESTER EXAMINATION

Code No.:BTECT311

Paper: Microprocessors & Applications

L	T	C
3	1	4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit I

Introduction to Microprocessors : Evolution of Microprocessors, Microprocessor & Micro controller, Internal architecture of 8 bit Microprocessor 8085, concept of fetch –decode and execute.

[Hrs.: 10]

Unit II

Assembly Language Programming : 8085 instruction set, Addressing Modes, Data Transfer Instructions, Arithmetic and Logic Instructions, Program Control Instructions (Jumps, Conditional Jumps, Subroutine Call). Different examples of programming.

[Hrs.: 10]

Unit III

Memory Interfacing : Types of Memory, RAM and ROM Interfacing with Timing Considerations, DRAM Interfacing, Memory mapped I/O, I/O mapped I/O.(6)

I/O Interfacing: Concept of Interrupt , Interrupt in 8085.: Programmed I/O, Interrupt Driven I/O, DMA, Parallel I/O (8255-PPI, Centronics Parallel Port), Serial I/O (8251/8250, RS-232 **Standard**), **8259-Programmable Interrupt controller, 8237-DMA Controller, 8253/8254-Programmable Timer/Counter**

[Hrs.: 10]

Unit IV

Architecture of a 16-bit Microprocessors : Internal Organization of 8086, Bus Interface Unit, Execution Unit, Register Pin diagram, Instruction set, Assembly language programming, Assembler directives, Procedures and Macros, System Timing diagram, Interrupt and Interrupt service procedures.

[Hrs.: 10]

Text Books:

1. Singh & Singh ,Microprocessor & Interfacing,Satya prakash ,New Delhi
2. R.Gaonkar, Microprocessor Architecture, Programing & Application, Penram International Publishing.
3. Hall D. V., Microprocessors Interfacing, TMH (2nd Edition)

Reference Books:

1. Liu, G. A. Gibson, Microcomputer Systems: The 8086 / 8088 Family, PHI 2nd Ed.
2. M. Rafiqzaman, Microprocessors Theory & Applications, PHI
3. B. Ram, Microprocessor and Microcomputers, Dhanpat Rai Pub.
4. Naresh Grover, Microprocessors: Comprehensive Studies, Dhanpat Rai Pub.

Code No.: BTCST314
Paper: Object Oriented Software Engineering

L	T	C
3	1	4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introduction to Software Engineering: Software Engineering Development, Software Life Cycle Models, Comparison of various models

Requirement Elicitation: Introduction to Object Oriented Methodology, Overview of Requirements Elicitation, Requirements Model-Action & Use cases, Requirements Elicitation Activities, Managing Requirements Elicitation.

[No. of Hrs.: 11]

UNIT – II

Architecture: Introduction, System development is model building, model architecture, requirements model, analysis model, the design model, the implementation model, test model

Analysis: Introduction, the requirements model, the analysis model

[No. of Hrs.: 11]

UNIT – III

Construction: Introduction, the design model, block design, working with construction

Testing: introduction, on testing, unit testing, integration testing, system testing, the testing process

[No. of Hrs.: 11]

UNIT – IV

Modelling with UML: Basic Building Blocks of UML, A Conceptual Model of UML, Basic Structural Modeling, UML Diagrams.

Case Studies

[No. of Hrs.: 11]

TEXT BOOKS:

1. Ivar Jacobson, "Object Oriented Software Engineering", Pearson, 2004.
2. Grady Booch, James Runbaugh, Ivar Jacobson, "The UML User Guide", Pearson, 2004.
3. Wendy Boggs, Boggs, Michael Boggs "Mastering UML with Rational Rose", BPB Publication, 2003.

REFERENCES BOOKS:

1. Stephen R. Scach, "Classical & Object Oriented Software Engineering with UML and Java: McGraw Hill, 1999.
2. Richard C. Lee, William M. Tepfenhard, "UML and C++, A Practical guide to object-oriented Development", Pearson Education, 2002.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Uses of Computer Networks, Network Architecture, Reference Model (ISO-OSI, TCP/IP-Overview, IP Address Classes, Subnetting), Domain Name Registration & Registrars

The Physical Layer: Theoretical basis for data communication, transmission media-Magnetic Media, Twisted Pair, Baseband Coaxial Cable, Broadband Coaxial Cable, Fibre Cable, Structured Cabling, Cable Mounting, Cable Testing, Wireless transmission, the telephone system, narrowband ISDN, broadband ISDN and ATM. **[No. of Hrs.: 11]**

UNIT – II

The Data Link Layer: Data link layer design issues, error detection and correction, data link protocols, sliding window protocols, Examples of Data Link Protocols. **[No. of Hrs.: 11]**

UNIT - III

The Medium Access Sublayer: The channel allocation problem, multiple access protocols, IEEE standard 802 for LANS and MANS, high-speed LANs, satellite networks, Networking & internetworking devices-repeaters, hubs, switches, gateways and bridges. **[No. of Hrs.: 11]**

UNIT – IV

The Network Layer: Network layer design issues, routing algorithms, congestion control algorithm, internetworking, the network layer in the internet, the network layer in ATM networks.

[No. of Hrs.: 11]

TEXT BOOKS:

1. A. S. Tananbaum, "Computer Networks", 3rd Ed, PHI, 1999.

REFERENCE BOOKS:

1. U. Black, "Computer Networks-Protocols, Standards and Interfaces", PHI, 1996.
2. W. Stallings, "Computer Communication Networks", PHI, 1999.
3. Laura Chappell (ed), "Introduction to Cisco Router Configuration", Techmedia, 1999.
4. Michael A. Miller, "Data & Network Communications", Vikas Publication, 1998.
5. William A. Shay, "Understanding Data Communications & Networks", Vikas Publication, 1999.

Paper Code BTECT317

L T C

Paper: Digital Signal Processing & Applications

3 1 4

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

Unit I

DFT, FFT, Algorithms, Hilbert transform, stability, structures of FIR, IIR filters Design of FIR filter using window method, Park Mcdleard method, Effect of finite register length in FIR filter design.

[Hours: 10]

Unit II

Design of IIR filter, Butterworth, chebyshev and elliptic approximation, transformation methods, LP, BP, HP BS filters.

[Hours: 10]

Unit III

Algorithms for optimizations and design of digital filters

Adaptive Filters: Kalman filter, wiener filters, applications in adaptive filtering.

[Hours: 10]

Unit IV

Parametric and nonparametric spatial estimation, introduction to multirate signal processing

Application of DSP to speech and Radar signal processing DSP processor architecture

[Hours: 10]

Text Books:

1. Proakias, "Digital Signal Processing" PHI – 3rd Edition.
2. Openheing & Schafer, "Digital Signal Processing" PHI – 1997.

Reference Books:

1. S. K. Mitra, "Digital Signal Processing" (PHI) – 2nd Edition.
2. Johnny Johnson, "Introduction to Digital Signal Processing" PHI – 1992.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

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Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

The Compelling Need for data warehousing: Escalating Need for strategic information, failures of Past decision-support systems, operational versus decision-support systems, data warehousing – the only viable solution, data warehouse defined

Data warehouse – The building Blocks: Defining Features, data warehouses and data marts, overview of the components, metadata in the data warehouse

Defining the business requirements: Dimensional analysis, information packages – a new concept, requirements gathering methods, requirements definition: scope and content

[No. of Hrs.: 11]

UNIT – II

Principles of dimensional modeling: Objectives, From Requirements to data design, the STAR schema, STAR Schema Keys, Advantages of the STAR Schema

Dimensional Modeling:

Updates to the Dimension tables, miscellaneous dimensions, the snowflake schema, aggregate fact tables, families of STARS

[No. of Hrs.: 11]

UNIT – III

OLAP in the Data Warehouse:

Demand for Online analytical processing, need for multidimensional analysis, fast access and powerful calculations, limitations of other analysis methods, OLAP is the answer, OLAP definitions and rules, OLAP characteristics, major features and functions, general features, dimensional analysis, what are hypercube? Drill-down and roll-up, slice-and-dice or rotation, OLAP models, overview of variations, the MOLAP model, the ROLAP model, ROLAP versus MOLAP, OLAP implementation considerations

[No. of Hrs.: 11]

UNIT – IV

Data Mining Basics: What is Data Mining, Data Mining Defined, The knowledge discovery process, OLAP versus data mining, data mining and the data warehouse, Major Data Mining Techniques, Cluster detection, decision trees, memory-based reasoning, link analysis, neural networks, genetic algorithms, moving into data mining, Data Mining Applications, Benefits of data mining, applications in retail industry, applications in telecommunications industry, applications in banking and finance.

[No. of Hrs.: 11]

TEXT BOOKS:

1. Paul Raj Poonia, “Fundamentals of Data Warehousing”, John Wiley & Sons, 2004.
2. Sam Anahony, “Data Warehousing in the real world: A practical guide for building decision support systems”, John Wiley, 2004

REFERENCES BOOKS:

1. W. H. Inmon, “Building the operational data store”, 2nd Ed., John Wiley, 1999.
2. Kamber and Han, “Data Mining Concepts and Techniques”, Hartcourt India P. Ltd., 2001
3. “Data Warehousing”, BPB Publications, 2004.

Instructions to the paper setters:

Max Marks = 100

Question paper is divided into three parts.

Part I should consist of THREE questions. **Q1** should consist of TEN true/false questions each of ONE mark. **Q2** should consist of TEN multiple choice questions each of ONE mark. **Q3** consists of TEN short questions each of TWO marks. This part is of 40 marks

Part II should consist of SEVEN questions out of which student has to attempt FIVE questions each of FOUR marks. This part is of 20 marks.

Part III should consist of SIX questions out of which student has to attempt FOUR questions each of TEN marks. This part is of 40 marks.

Note: Examiner must ensure that each Part of the Question paper covers all the four units of the syllabus.

UNIT – I

Introductory Concepts: Multimedia – Definitions, CD-ROM and the Multimedia Highway, Uses of Multimedia, Introduction to making multimedia – The Stages of project, the requirements to make good multimedia, Multimedia skills and training, Training opportunities in Multimedia. Motivation for multimedia usage, Frequency domain analysis, Application Domain & ODA etc.

Multimedia-Hardware and Software: Multimedia Hardware – Macintosh and Windows production Platforms, Hardware peripherals – Connections, Memory and storage devices, Media software – Basic tools, making instant multimedia, Multimedia software and Authoring tools, Production Standards.

[No. of Hrs.: 11]

UNIT – II

Multimedia – making it work – multimedia building blocks – Text, Sound, Images, Animation and Video, Digitization of Audio and Video objects, Data Compression: Different Compression algorithms concern to text, audio, video and images etc., Working Exposure on Tools like Dream Weaver, 3D Effects, Flash Etc.,

[No. of Hrs.: 11]

UNIT – III

Multimedia and the Internet: History, Internet working, Connections, Internet Services, The World Wide Web, Tools for the WWW – Web Servers, Web Browsers, Web page makers and editors, Plug-Ins and Delivery Vehicles, HTML, VRML, Designing for the WWW – Working on the Web, Multimedia Applications – Media Communication, Media Consumption, Media Entertainment, Media games.

[No. of Hrs.: 11]

UNIT – IV

Multimedia-looking towards Future: Digital Communication and New Media, Interactive Television, Digital Broadcasting, Digital Radio, Multimedia Conferencing, Assembling and delivering a project-planning and costing, Designing and Producing, content and talent, Delivering, CD-ROM technology.

[No. of Hrs.: 11]

TEXT BOOKS:

1. Steve Heath, “Multimedia & Communication Systems”, Focal Press, UK, 1999.
2. Tay Vaughan, “Multimedia: Making it work”, TMH, 1999.
3. K. Andleigh and K. Thakkar, “Multimedia System Design”, PHI, PTR, 2000.

REFERENCES BOOKS:

1. Keyes, “Multimedia Handbook”, TMH, 2000.
2. Ralf Steinmetz and Klara Naharstedt, “Multimedia: Computing, Communications & Applications”, Pearson, 2001.
3. Steve Rimmer, “Advanced Multimedia Programming”, MHI, 2000.

Code No. : BTECL308

L P C

Paper: Microprocessor System-I Lab.

0 2 1

Practical will be based on Microprocessor System-I. Following list of Experiments may be considered:

Exp 1. Write a prog. To load register pair HL with 2905H and register pair BC with 3000H & Add & store the result in DE .

EXP2. Multiply two 8-bit no. Using successive addition & store the result In a particular memory location.

Exp 3. To subtract an 8 bit number from another 8 bit number using 1's complement & store the result in the given memory location.

Exp 4. To subtract an 8 bit number from another 8 bit number using 2's complement and store the result in a particular memory location.

Exp 5. To divide two 8 digit numbers stored at the location 8000H & 8001H & store the quotient & remainder at the 8002H & 8003H.

Exp6. To find square of 8 bit numbers using addition of successive odd integer.

Exp 7. To find square root of 8 bit number using successive subtraction of successive odd integers.

Exp 8. To study microprocessor based traffic controller

Exp9:Microprocessor based temperature measurement

Exp10: ADC/DAC using Microprocessor.

Code No. : BTCSL312

L P C

Paper: Object Oriented Software Engineering Lab.

0 2 1

Practical will be based on Object Oriented Software Engineering.

Code No. : BTECL314

L P C

Paper: Digital Signal Processing and Applications Lab.

0 2 1

Practical will be based on Digital Signal Processing and Applications. Following list of experiments is being recommended:

1. To perform matrix functions on matlab.
2. Generation of impulse signal.
3. Generation of step signal.
4. Generation of ramp signal.
5. Convolution of two signals.
6. Cross Correlation and auto correlation of two signals.
7. Implementation of DFT algorithm on matlab.
8. Implementation of IDFT algorithm on matlab.
9. Generation of any function using matlab programming.
10. Implementation of a low pass butterworth IIR filter on matlab.
11. Implementation of a low pass, high pass and band pass FIR filters using various window method on matlab.

Code No. : BTCSL313

Paper: Data Warehousing and Data Mining Lab.

L	P	C
0	2	1

Practical will be based on Data Warehousing and Data Mining.

Code No. : BTCSL314

Paper: Multimedia Technology Lab.

L	P	C
0	2	1

Practical will be based on Multimedia Technology.