

N. C. College of Engineering

Israna-132107 (Panipat)



Syllabus

2017-18

B.Tech First Year (1st & 2nd Semester)

Common for All the Branches

**MARKS DISTRIBUTION
(ACCORDING TO AUTONOMY)**

FOR ALL THEORY COURSES: -

1) On Semester Evaluation of all theory courses

Total: 100 Marks

Distribution

I. Mid Semester Examination	20 Marks
II. Mid Semester Examination	20 Marks
Continuous Evaluation & Assignment Test (CET)	20 Marks
Attendance	30 Marks
Teacher's Assessment	10 Marks

2) Make up tests for the students who could not appear in any one or both the Mid –Term examinations shall be conducted during Preparatory Holidays covering entire syllabus. Only those genuine cases shall be allowed for Make Up Tests whose applications and genuineness of documents are scrutinized and found correct by a committee comprising of all the HODs and Deans.

3) End Semester (Final Examination) of all theory courses

Total: 100 Marks

4) Total of On Semester + End Semester Evaluation is of 200 Marks

5) To pass a theory course, the student should obtain

Minimum: - 80 Marks out of 200.

Criterion for passing and failing in the theory courses: -

- a) The students will have to obtain 35% Marks in End Semester Examinations and 80 Marks in aggregate including On Semester Evaluation for passing. If the above passing criterion is not fulfilled, the student will be awarded “Reappear”.

- b) On Semester Marks will not be changed. Only End Semester marks will be modified as obtained in “Reappear”.

I) On Semester Evaluation of all Practical (Laboratory) Courses

Total: 120 Marks.

Distribution

Attendance	60 Marks
Record of Practicals/ Experiments	30 Marks
Teacher's Assessment	30 Marks

II) End Semester Evaluation (Final Lab Examination + Oral Test or Viva Voce)

Total: 80 Marks

III) Total of On Semester Evaluation (Final Lab Examination) + End Semester Evaluation is of 200 Marks.

IV) To pass a lab course, the student should obtain

Minimum: 80 Marks out of 200.

Criterion for passing and failing in the lab course is just like the theory course.

CALCULATION OF SEMESTER GRADE POINT AVERAGE: -

Semester grade point average (SGPA) is the weighted average of the grade for the subjects registered in a Semester and is computed as follows:

$$SGPA = \frac{\sum_i C_i \times G_i}{\sum_i C_i}$$

C_i denotes the Credits (or Units) assigned to the i th subject and G_i denotes the Grade Point Equivalent to the Letter Grade obtained for the i th subject.

Cumulative Grade Point Average (CGPA) is the weighted average of the grades of the subjects for the registered in the semester.

N.C. COLLEGE OF ENGINEERING
ISRANA, PANIPAT-132107
B.Tech. 1st year scheme (effective from the session 2017-18)
1st semester (Common to all Branches)

Theory

S.No.	Course Code	Course Title	BOS	L	T	P	Cr.
1	MATH-110	Engineering Math-I	Science	3	1	0	4
2	PHY-110	Engineering Physics-I	Science	3	1	0	4
3	HUM-110	Communication Skills in English - I	Humanities	2	0	0	2
4	CS-110	Computer-I (Problem Solving and Programming in C)	Computer Science & Engg.	3	1	0	4
5	ME-110	Basics of Engineering Drawing	Mech. Engg.	1	0	2	2
Group - A							
I.	EC-110	Basics of Electronics & Electrical Engineering	Electronics & Communication Engg.	3	1	0	4
II.	CE-110	Basics of Civil Engineering	Civil Engg.	3	0	0	3
III.	HUM-11A	Science Society and Ethical Values	Humanities	2	0	0	Audit Course
OR							
Group - B							
I.	ME-111	a) Basics of Mechanical Engineering (for other than Mech. Engg.)	Mech. Engg.	3	0	0	3
	ME-112	b) Manufacturing Technology(for Mech. Engg)		3	0	0	3
II.	CH-110	Engineering Chemistry	Science	3	1	0	4
III.	ES-11A	Basics of Environmental Science	Science	2	0	0	Audit Course

Practicals

S.No.	Course Code	Course Title	BOS	L	T	P	Cr.
1	PHY-11P	Physics Lab-I	Science	0	0	2	1
2	CS-11P	Computer Lab -I (Programming in C)	Computer Science & Engg.	0	0	2	1
Group - A							
I.	EC-11P	Basics of Electronics & Electrical Lab	Electronics & Communication Engg.	0	0	2	1
II.	HUM-11P	Language Lab	Humanities	0	0	2	1
OR							
Group - B							
I.	ME-11P	Workshop Practice	Mech. Engg.	0	0	2	1
II.	CH-11P	Chemistry Lab	Science	0	0	2	1
Total							27

N.C. COLLEGE OF ENGINEERING
ISRANA, PANIPAT-132107
B.Tech. 1st year scheme (effective from the session 2017-18)
2nd semester (Common to all Branches)

Theory

S.No.	Course Code	Course Title	BOS	L	T	P	Cr.
1	MATH-120	Engineering Math-II	Science	3	1	0	4
2	PHY-120	Engineering Physics-II	Science	3	1	0	4
3	HUM-120	Communication Skills in English-II	Humanities	2	0	0	2
4	CS-120	Computer-II (Internet & Web Design)	Computer Science & Engg.	3	1	0	4
Group – A							
I.	EC-110	Basics of Electronics & Electrical Engineering	Electronics & Communication Engg.	3	1	0	4
II.	CE-110	Basics of Civil Engineering	Civil Engg.	3	0	0	3
III.	HUM-11A	Science Society and Ethical Values	Humanities	2	0	0	Audit Course
OR							
Group – B							
I.	ME-111	a) Basics of Mechanical Engineering (for other than Mech.Engg.)	Mech.Engg.	3	0	0	3
	ME-112	b) Manufacturing Technology (for Mech. Engg)		3	0	0	3
II.	CH-110	Engineering Chemistry	Science	3	1	0	4
III.	ES-11A	Basics of Environmental Science	Science	2	0	0	Audit Course

Practicals

S.No.	Course Code	Course Title	BOS	L	T	P	Cr.
1	PHY-12P	Physics Lab-II	Science	0	0	2	1
2	CS-12P	Computer Lab –II (Internet & Web Design)	Computer Science & Engg	0	0	2	1
3	a) ME-12P	a) Computer Aided Engineering Drawing (for ME & CE students)	Mech.Engg.	0	0	3	2
	b) EC-12P	b) Software Based Circuit Simulation (for ECE & CSE students)	Electronics Communication Engineering	0	0	3	2
Group – A							
I.	EC-11P	Basics of Electronics & Electrical Lab	Electronics & Communication Engg.	0	0	2	1
II.	HUM-11P	Language Lab	Humanities	0	0	2	1
OR							
Group - B							
I.	ME-11P	Workshop Practice	Mech.Engg.	0	0	2	1
II.	CH-11P	Chemistry Lab	Science	0	0	2	1
Total							27

ENGINEERING MATHEMATICS – I
(For 1st semester, common for all branches)

MATH-110

L **T** **Cr**
3 **1** **4**
Time: 3 hrs

On Semester Evaluation: 100 Marks

End Semester Evaluation: 100 Marks

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT - I

Basics of Trigonometry & coordinate geometry: Definition of $\sin \theta$, $\cos \theta$ and $\tan \theta$. Law of Sines, Cosines and Tangents. Basic trigonometric identities, Sum and Difference formulas, Double angle and half angle formulas. Basic concepts of straight line, parabola, ellipse and hyperbola. Conversion of Cartesian coordinates into polar, spherical and cylindrical coordinates. Distance formula for two and three coordinate system,.

Calculus –I: Fundamentals of differentiation, Algebra of differentiation, Differentiation of polynomials, trigonometric functions, logarithmic functions, exponential functions, hyperbolic functions.

UNIT-II

Calculus -II Differentiation of inverse functions. Differentiation of implicit and composite functions. Successive differentiation. Leibnitz theorem (without proof) MacLaurin's and Taylor's expansion of functions. Asymptotes of Cartesian and polar curves. Curvature and Radius of curvature in Cartesian, parametric and polar coordinates.

Text Book: Grewal, B.S., "Higher Engineering Mathematics", Khanna Publishers (Chapter No. 4, Exercise : 4.1, 4.2, 4.3, 4.5, 4.12, 4.14)

UNIT-III

Integral Calculus: Fundamentals of integration, Integration of variety of functions by substitution and by partial fraction, only simple integrals of type

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}, \int \frac{(px + q)}{ax^2 + bx + c} dx, \int \frac{(px + q)}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2} dx, \int \sqrt{x^2 - a^2} dx, \int \sqrt{ax^2 + bx + c} dx, \int (px + q)\sqrt{ax^2 + bx + c} dx$$

to be evaluated, Integration by parts, Euler's Formulae, Conditions for Fourier expansions, Fourier expansion of functions having points of discontinuity, change of interval, Odd & even functions, Half-range series.

Text Book: Grewal, B.S., "Higher Engineering Mathematics", Khanna Publishers (Chapter No. 10, Exercise : (10.1, 10.3, 10.4, 10.5, 10.6)

UNIT-IV

Ordinary Differential Equations and its Applications: Basics of differential equation and its types, order and degree of a differential equation Exact differential equations. Equations reducible to exact differential equations. Applications of differential equations of first order and first degree to simple electric circuits and Newton's law of cooling . Solution of Linear differential equations of second and higher order with constant coefficients, Method of variation of parameters to find particular integral(second order differential equation).

Text Book: Grewal, B.S., "Higher Engineering Mathematics", Khanna Publishers (Chapter No. 11, 12, 13 Exercise : (11.7, 11.8, 12.12.4, 12.5, 13.1, 13.2, 13.3)

Text Books:

1. Grewal, B.S., "Elementary Engineering Mathematics", Khanna Publishers.

2. Grewal, B.S., “Higher Engineering Mathematics”, Khanna Publishers.
3. Kresyzig, E., “Advanced Engineering Mathematics”, John Wiley and Sons. (Latest edition).
4. Jain, R. K. and Iyengar, S. R. K. “Advanced Engineering Mathematics”, Narosa Publication, 2003 (2nd Ed.)
5. Ramana, B.V., “Higher Engineering Mathematics” Tata McGraw-Hill.
6. Advanced calculus – Schaum Outlines
7. Calculus – I : Tom Apostol

References:

1. Mitin, V. V.; Polis, M. P. and Romanov, D. A. “Modern Advanced Mathematics for Engineers”, John Wiley and Sons, 2001.
2. Wylie, R., “Advanced Engineering Mathematics”, McGraw-Hill, 1995.
3. Mathur, A. B. Jaggi, V. P. , “Advanced Engineering Mathematics”, Khanna Publishers.
4. Piskunov, “Differentials and Integral Calculus”.
5. Sastry, S. S. , “Engineering Mathematics Part-I” PHI Ltd.
6. Michael D Greenberg, “Advanced Engg Mathematics”. Pearson Education
7. Shanti Narayan, “Differential Calculus” S.Chand.
8. Shanti Narayan, “Integral Calculus” S.Chand.

ENGINEERING MATHEMATICS – II
(For 2nd semester, common for all branches)
MATH-120

L T Cr
3 1 4
Time: 3 hrs

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Matrices and its Applications: Elementary matrices, Elementary transformations, Rank of a matrix, inverse using elementary transformations(Guass Jordan Method), normal form of a matrix, linear dependence and independence of vectors, consistency of linear system of equations, linear and orthogonal transformations, eigen values and eigen vectors, properties of eigen values, Cayley-Hamilton theorem and its applications to find inverse of matrix.

Text Book: Grewal, B.S., “Higher Engineering Mathematics”, Khanna Publishers (Chapter No. 2, Exercise : (2.4, 2.7, 2.8, 2.9))

UNIT – II

Partial Differentiation & its Applications: Functions of two or more variables, partial derivatives, Total differential and differentiability, Derivatives of composite and implicit functions, Jacobians, Higher order partial derivatives. Homogenous functions, Euler’s theorem, maxima-minima of function of two variables, Lagrange’s method of undetermined multipliers, Differentiation under integral sign.

Text Book: Grewal, B.S., “Higher Engineering Mathematics”, Khanna Publishers (Chapter No. 5, Exercise : (5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.10, 5.11))

UNIT-III

Laplace Transforms and its applications: Definition of Laplace transform, existence conditions, Laplace transforms of elementary functions, properties of Laplace transforms, transforms of derivatives, transforms of integrals, multiplication by t^n , division by t . Evaluation of integrals by Laplace transforms. Laplace transform of Unit step function, unit impulse function and periodic function. Inverse Laplace transforms, convolution theorem, application to linear differential equations.

Text Book: Grewal, B.S., “Higher Engineering Mathematics”, Khanna Publishers (Chapter No. 21, Exercise : (21.1, 21.2, 21.3, 21.4, 21.5, 21.6))

UNIT-IV

Fourier Transforms: Fourier integrals, Fourier transforms, Fourier cosine and sine transforms. Properties of Fourier transforms, Convolution theorem, Parseval’s identity, Relation between Fourier and Laplace transforms, Fourier transforms of the derivatives of a function, Application to boundary value problems

Text Book: Grewal, B.S., “Higher Engineering Mathematics”, Khanna Publishers (Chapter No. 22, Exercise : (22.1, 22.2, 22.3, 22.4))

Text Books:

1. Grewal, B.S., “Higher Engineering Mathematics”, Khanna Publishers.
2. Kresyzig, E., “Advanced Engineering Mathematics”, John Wiley and Sons. (Latest edition).
3. Ramana, B.V., “Higher Engineering Mathematics” Tata McGraw-Hill.
4. Jain, R. K. and Iyengar, S. R. K. “Advanced Engineering Mathematics”, Narcosis, 2003 (2nd Ed.)
5. Mathur, A. B. Jaggi , V. P. , “Advanced Engineering Mathematics”, Khanna Publishers.

References:

1. Mitin, V. V., Polis, M. P. and Romanov, D. A., “Modern Advanced Mathematics for Engineers”, John Wiley and Sons, 2001.
2. Wylie, R., “Advanced Engineering Mathematics”, McGraw-Hill, 1995.
3. Sastry , S. S. , “Engineering Mathematics Part-II” . PHI Ltd.
4. Michael D Greenberg, “Advanced Engg Mathematics”. Pearson Publications.

ENGINEERING PHYSICS-I
PHY-110

L **T** **Cr**
3 **1** **4**

On Semester Evaluation:100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note: - 1.** There are NINE questions in a set of question-paper. All questions carry equal marks.
- 2.** Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.
- 3.** Examiners (Paper Setters) are requested to include 25-30% numerical problems.

UNIT-I

Interference of light: - Introduction, types of interference, coherent sources, conditions for interference, path and phase difference, division of wave front and division of amplitude, Fresnel's bi-prism, thickness measurement of thin transparent film. Newton Rings (by reflected and transmitted light) and its applications: for determination of wavelength and refractive index. Michelson interferometer and its applications (determination of refractive index and wavelength).

Diffraction of light: -Introduction, Fresnel's and Fraunhofer's diffraction phenomena, Fraunhofer's diffraction via: single slit, plane transmission grating, important applications of diffraction grating, difference between interference and diffraction.

UNIT-II

Polarization of light: -Introduction, polarization of light, double refraction, optic axis, principal plane and principal section, types of crystals, Calcite crystal: Geometry; Nicol's prism: Principal, construction and working; Production of plane, circular and elliptical polarized light, quarter and half wave plate.

Laser: - Basic ideas of laser, laser beam characteristics, stimulated absorption, spontaneous emission, stimulated emission, Einstein's coefficients, pumping, population inversion, types of laser- He-Ne Laser and Semiconductor laser, Important applications of laser.

UNIT-III

Fiber Optics: - Introduction, propagation of light through a fiber, numerical aperture, Types of fiber, modes of propagation (simple idea), V-number, advantages and important applications of fiber.

Electromagnetic Wave Theory:-Scalar and vector field, Gradient, Divergence and Curl with their physical significance introduction of electromagnetic waves, Maxwell's equations (differential form), plane wave equation, Poynting vector.

UNIT-IV

Dielectrics: - Introduction, electrical polarization – an atomic view, polarization in a material, electrical susceptibility, dielectric constant, absolute permeability, relation between three electric vectors (**E**, **D**, **P**), Gauss's law in presence of dielectric.

Plasma Physics: Elementary ideas of plasma state of matter, plasma in nature, plasma example, classification and characteristics parameters of plasma, plasma frequency, Debye length, plasma applications.

Text Books: -

1. Engineering Physics, S.P.Taneja (S. Chand)
2. Engineering Physics, SatyaPrakash (PragatiPrakashan).
3. Engineering Physics, Avadhnulu&Khrishsagar

Syllabus B.Tech 1st & 2nd Semester, Common for All Branches (2017-18)

Reference Books: -

1. Optics, A.Ghatak.
2. Laser Fundamental, W.T.Silfvast, Cambridge Univ. Press.
3. Fiber Optics, R.AllenShotwel.PHI.
4. Electrodynamics, D.J.Griffith
5. Introduction to plasma physics and controlled fusion, F.F. Chen

ENGINEERING PHYSICS-II
PHY-120

L **T** **Cr**
3 **1** **4**

On Semester Evaluation:100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note: - 1.** There are NINE questions in a set of question-paper. All questions carry equal marks.
- 2.** Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.
- 3.** Examiners (Paper Setters) are requested to include 25-30% numerical problems.

UNIT-I

Crystal Structure: Introduction, general terminology of crystallography, symmetry operation, unit cell and primitive cell, three dimensional Bravais lattice, calculation of no. of atoms per unit cell, atomic radius, co-ordination no. and packing fraction for cubic structure, Miller indices, planes and interplanar spacing, NaCl, CsCl and diamond structure, X-rays, origin of X-rays, properties and applications of X-rays, diffraction of X-rays, Bragg's law.

UNIT-II

Quantum Physics: Difficulties with classical physics, qualitative ideas: black body radiation, Rayleigh-Jean's law, Planck's radiation law, Photoelectric effect, Compton effect. Heisenberg uncertainty principle, group velocity and phase velocity- various relations between them, time dependent and time independent Schrödinger wave equations, properties and physical significance of wave function, elementary ideas of classical and quantum statistics.

UNIT-III

Free Electron Theory: Introduction, Drude's model, Weidemann-Franz law, limitations of classical free electron theory, quantum theory of free electron (particle in a box), eigen values and functions, concept of Fermi energy, thermionic emission (basic idea only).

Band Theory of Solids: Introduction to band theory of solids, Kroning-Penney model (qualitative idea), origin of energy bands and energy gap, E-K diagram, Brillouin Zones, Hall effect and its applications.

UNIT-IV

Fundamentals of Solar Cells: The need for alternate energy source, formation of p-n junction, structure and working of solar cell, types of solar cell, solar cell equation, fill factor and maximum power, thin film solar cell.

Superconductivity: Introduction, factors affecting superconductivity, types of superconductors, Meissner's effect, London's equation, penetration depth, applications of superconductivity.

Nanosystems: Basic idea, top-down and bottom-up approach of nanosystems, effect of size on electrical, optical and mechanical properties, important applications of nanomaterials.

Text Books:

1. Engineering Physics, S.P. Taneja (S. Chand)
2. Engineering Physics, SatyaPrakash (PragatiPrakashan)
3. Engineering Physics, Avadhnulu&Khrishsagar

Reference Books:

1. Solid State Physics, S.O. Pillai, (New Age).
2. Semiconductor Physics, S.M.Seze.
3. Quantum Mechanics, SatyaPrakash, (PragatiPrakashan).
4. Solid State Physics, M.A.Wahab, (NarosaPuablications).
5. Solar Cells: Operating principles, technology and system applications, A. Martin Green (PHI)

COMMUNICATION SKILLS IN ENGLISH-I
HUM-110

L **T** **Cr**
2 **0** **2**

On Semester Evaluation:100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note:**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT I

Writing: Scientific English versus General English
Sentence Patterns and Types (Assertive, Interrogative, Imperative and Exclamatory)
Grammar: Articles; Subject-Verb Agreement; Tenses
Vocabulary: High Frequency Word List 1
Speaking: Telephonic Communication (5 minutes for speech + 2 minutes for feedback)

UNIT II

Writing: Sentence Formation; Précis Writing
Grammar: Direct and Indirect Speech; Active and Passive Voice
Vocabulary: High Frequency Word List 2
Speaking: Role Play (10 minutes preparation time + 5 minutes for enactment + 5 minutes for feedback)

UNIT III

Writing & Reading: Dialogue Writing; Reading Comprehension
Grammar: Primary Auxiliary verbs (BE forms; HAVE forms; DO forms)
Vocabulary: Phrasal verbs
Speaking: Seminar Speech (2 days preparation time + 5 minutes speech + 2 minutes feedback)

UNIT IV

Writing & Reading: Study Skills - Skimming, Scanning, Note-taking & Note-making
Grammar: Modal Auxiliary verbs
Vocabulary: Words often confused
Speaking: Group discussion (10 minutes preparation time + 10 minutes for discussion)

References:

1. Bolton, D. and N. Goodey (2008). *English Grammar in Steps: Practice Book* Hyderabad & Noida: Orient Blackswan
2. Wood, F. T. (2000). *Remedial English Grammar* New Delhi: Macmillan
3. Murphy, R. (2nd ed.). *Intermediate English Grammar* Cambridge: CUP
4. Sharma S. and B. Mishra (2009). *Communication Skills for Engineers and Scientists* New Delhi: PHI
5. Bhatnagar, N and Bhatnagar M. (2010) *Communicative English for Engineers and Professionals* New Delhi: Pearson
6. Essays and articles from literature and scientific texts

COMMUNICATION SKILLS IN ENGLISH-II
HUM-120

L **T** **Cr**
2 **0** **2**

On Semester Evaluation:100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note:**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT I

Technical Writing: Seven C's of Writing; Memo Writing

Grammar: Types of sentences (Simple, Compound, Complex); Types of Clauses and Phrases

Vocabulary: High Frequency Word List 3

Speaking: Articulation system; Sounds: Vowel and Consonant; Phonetic transcription of words

UNIT II

Technical Writing: Notice/Circular; Business Letters: order, complaint, adjustment, creditand collection letters

Grammar: Analysis and Synthesis of Sentences; Prepositions

Vocabulary: High Frequency Word List 4

Speaking: Word Stress; Intonation (falling and rising); Weak forms

UNIT III

Technical Writing: Technical Proposal; E- Mail

Grammar: Common errors in the use of Noun, Pronoun, Agreement

Vocabulary: Idioms and Phrases

Speaking: Power point presentation (2 days preparation time; 5 content slides; 3 minutes presentation; 2 minutes feedback)

UNIT IV

Technical Writing: Reports -format, definition and types

Grammar: Common errors in the use of Adjective, Adverb, Agreement

Vocabulary: Prefixes and Suffixes

Speaking: Power point presentation (2 days preparation time; 5 content slides; 3 minutes presentation; 2 minutes feedback)

References:

1. Bolton, D. and N. Goodey (2008). *English Grammar in Steps: Practice Book* Hyderabad & Noida: Orient Blackswan
2. Wood, F. T. (2000). *Remedial English Grammar* New Delhi: Macmillan
3. Murphy, R. (2nd ed.). *Intermediate English Grammar* Cambridge: CUP
4. Sharma S. and B. Mishra (2009). *Communication Skills for Engineers and Scientists* New Delhi: PHI
5. Bhatnagar, N and Bhatnagar M. (2010) *Communicative English for Engineers and Professionals* New Delhi: Pearson
6. Essays and articles from literature and scientific texts

BASICS OF ELECTRONICS & ELECTRICAL ENGINEERING

EC-110

L T Cr
3 1 4

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT 1

D.C. CIRCUITS: Ohm's Law, Ideal Current and Ideal Voltage source, Kirchhoff's Laws, Nodal and Loop methods of analysis.

A.C. CIRCUITS: Sinusoidal signal, instantaneous and peak values, RMS and average values, phase angle, polar & rectangular, exponential and trigonometric representations; R, L and C components, behaviors of these components in A.C. circuits. Star to Delta and Delta to Star Conversions.

NETWORK THEOREMS: Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem.

UNIT II

TRANSFORMERS: Magnetic circuits, Equivalent circuit of a transformer. Open and Short-circuit tests on a Transformer. Losses and Efficiency of a Transformer.

D.C MACHINES: Principle. Construction and working of DC machines.

A.C. MACHINES: Principle. Construction and working of single induction motor.

UNIT III

SEMICONDUCTOR DIODES- Semiconductor materials-Energy Band diagram for an intrinsic and extrinsic semiconductor, P-N junction, Ideal Diode, Terminal characteristics of diodes:- Biasing of a p-n junction, p-n junction in breakdown region, LED, LCD, Plasma and their characteristics, Introduction to rectifiers, Regulators.

UNIT IV

BIPOLAR JUNCTION TRANSISTORS (BJTs): - Input and output characteristics of BJT (NPN & PNP) transistor, D.C. analysis of transistor circuits, Transistor as an amplifier, Basic BJT amplifier configuration: common emitter, common base and common collector amplifiers, Transistor as a switch.

CRO AND TRANSDUCERS

C.R.O Construction, block diagram and applications of C.R.O.

Transducers- Classification, Resistive, Inductive and Capacitive Transducers. LVDT and its applications.

Text Books/ References:

1. Electronic Devices & Circuits – Boylestad & Nashelsky (Person Education)
2. Integrated Electronics By Millman & Halkias (TMH)
3. Basic Electrical Engg (2nd Edition): Kothari & Nagarath, TMH
4. Electrical Technology (Vol-I): B.L.Theraja & A K Theraja, S.Chand.

SCIENCE, SOCIETY AND ETHICAL VALUES(Audit Course)

HUM-11A

L **T** **Cr**
2 **0** **0**

On Semester Evaluation: 50 Marks
End Semester Evaluation: 50 Marks

Time (End semester) : 90 min

Note: -

1. It is an audit course; hence this paper will be of qualifying nature. Total marks obtained (on + end semester) in this subject will not be added for SGPA/CGPA calculations. But it is mandatory to appear in the examination and qualify it.
2. **On semester evaluation scheme:**10 marks (lecture attendance) + 20 marks (mid-terms) + 10 marks (teacher assessment) +10 marks (Assignment) = total 50 marks.
3. **End semester:** Examiners are requested to set total seven questions (of 10 marks each) from the whole syllabus and students will attempt any five questions in all.
4. Students need to score minimum 20 marks (on semester) + 20 marks (end semester) = total 40 marks to qualify this paper.

Intelligence: Meaning, Definitions, Nature of Intelligence;Models of Intelligence, Psychological Tests and Assessment of Intelligence.

Personality: Meaning, Definitions, Natureof Personality; Personality Assessment; Determinants of Personality;Psychological Conflict.

Personal Ethics: Value of Self, Others and Society, Social Norms.

Service to Community: Corruption, Indian and Western Culture, Simple Living and High Thinking, Science and Spirituality.

Engineering Profession: Ethical Obligations of Engineering Professionals, Roles of Engineers in Industry, Society, Nation and the World.

Science, Technology and Social Behavior

History of Science and Technology, Interrelationship between Science and Technology, Impact of Technology, Introduction of Social Behaviour, Interpersonal Attraction, Prosocial Behaviour, Aggression, Changing Others Behaviour, Nature of Intergroup Relation.

Indian Constitution and Fundamental Rights

The Basic Principles of Indian Constitution, Need, Structure and Characteristics, Fundamental Rights.

Text Books:

1. Professional Ethics, R. Subramanian, Oxford University Press.
2. Professional Ethics & Human Values: S.B. Srivasthva, SciTech Publications (India) Pvt. Ltd. New Delhi.
3. Professional Ethics & Human Values: Prof. D.R. Kiran, TATA McGraw Hill Education.
4. Morgan, C.T., King, R.A., Weisz, J.R. and Schopler, J. Introduction to Psychology. Singapore: McGraw Hill.
5. Atkinson, R.L., Atkinson, R.C., and Hilgard, E.R. Introduction to Psychology. Harcourt Brace Jovanovich Inc.
6. Baron, R.A. Psychology. New Delhi: Prentice Hall of India.

Reference Books:

1. Charles E. Harris et al, Engineering Ethics, Cengage, 2009
2. N. N. Das, Ethical Considerations.
3. Professional Ethics by R. Subramaniam, Oxford University Press

BASICS OF ENGINEERING DRAWING

ME- 110

L **T** **P** **Cr**
1 **0** **2** **2**

Time: 3 hrs

On Semester Evaluation: 100 Marks

End Semester Evaluation: 100 Marks

Unit-I

Importance of Engineering Graphics, Drawing Instruments and their use, Dimensioning & Standards as per BIS. Various types of projections, 1st & 3rd angle systems of orthographic projections. Projections of points in different quadrants.

Projections of straight lines-parallel to one or both reference planes, contained by one or both planes, perpendicular to one of the planes, inclined to one plane & parallel to other plane, inclined to both planes, true length of a line & its inclination with reference planes, traces of a line.

Unit-II

Projections of Planes: types of planes, planes parallel to both HP and VP, planes parallel to one reference plane and perpendicular to other, plane parallel to one but inclined to the other reference plane, plane inclined to both the reference planes, traces.

Projections of Polyhedra solids & solids of revolution in-simple positions with axis perpendicular to a plane, with axis parallel to both planes, with axis parallel to one plane & inclined to other.

Unit-III

Orthographic views: Orthographic projections from the isometric views of the given solids in first angle of projection system only.

Isometric Projections: Principles of Isometric Projections, Isometric Scales, Isometric Views, and conventions, Isometric Projections of objects having Isometric lines and non-isometric lines, isometric projection of curved parts.

Unit-IV

Sectioning of Solids, Cutting Planes – Auxiliary horizontal, vertical and Inclined planes. Orthographic projections of solids with axis perpendicular to HP and parallel to VP, sectioned by auxiliary horizontal, auxiliary vertical and auxiliary inclined planes.

Development of surfaces of various simple solids such as Cubes, Cylinders, Prisms, Pyramids etc. Development of cut solids.

Textbooks and Reference:

1. Engineering graphics and drawing - P.S. Gill., Kataria Publication, New Delhi.
2. Engineering graphics and drafting - P.S. Gill, Millennium Edition, S.K. Kataria and Sons.
3. Engineering Drawing Plane and Solid Geometry: N.D. Bhatt and V.M.Panchal, Forty-Fourth Edition 2002, Charotar Publishing House.
4. Engineering graphics and drawing - Reddy & Kannaiah., New Age International Publishers, New Delhi.
5. Engineering Drawing – M B Shah & B C Rana, Pearson Publications.
6. Engineering Drawing & Computer Graphics – Harwinder Singh, Dhanpat Rai Publishing Company

BASICS OF MECHANICAL ENGINEERING

ME- 111

L T Cr
3 0 3

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

Note :-

1. There will be NINE questions in the question-paper. All questions carry equal marks.
2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.
3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units

UNIT I

Simple Lifting Machines: Definition of machine, Velocity ratio, Mechanical advantage, Efficiency, Laws of Machines, Reversibility of Machine, Wheel and axle, Differential pulley block, Worm And Worm Wheel, Single and Double Purchase Winch Crabs, Simple and compound screw jacks **and related numerical.**

Stresses and Strains: Introduction, Concept & types of Stresses and Strains, Poisson's ratio, stresses and strains in simple under axial loading **and related numerical**, Stress-Strain Diagrams, Hooks law, Elastic constants & their relationships

UNIT II

Fundamental Concepts of Thermodynamics: System, surrounding and universe, Phase, Macroscopic & microscopic point of view. Density, specific volume, pressure, temperature, Thermodynamic Equilibrium, Property, state, Path, Process, Cyclic Process, Energy and its form, work and heat, Enthalpy, Universal gas constant.

Laws of Thermodynamics: Zeroth Law of thermodynamics, Concept of temperature, First law of Thermodynamics, C.O.P. of Heat Pump and Refrigerator **and related numerical**, Second law of Thermodynamics Kelvin- Planks Statement, Clausius Statement, and Equivalence of two statements

UNIT III

Properties of Steam: Formation of steam at constant pressure, Thermodynamic properties of Steam, Use of steam tables **and related numerical** and Measurement of dryness fraction by throttling calorimeter.

Properties of Fluid: Density, Specific weight, specific volume, specific gravity, viscosity and its units, Newton's Law of viscosity, types of fluids, Surface Tension **and related numerical.**

UNIT IV

Introduction to Manufacturing Processes

- Introduction to cutting tool, Signature of a Single point cutting tool
- **Casting:** Basic Steps in Casting Process, Pattern, Types of Patterns, Pattern Allowances, Gating System and its component, Type of Moulding Sand, Casting Defects and Remedies.
- **Welding:** Welding Process and its classification, Gas Welding, Arc Welding, TIG, MIG, Welding Defects and Remedies, Soldering & Brazing.

Text Books:

1. Strength of Materials - G.H. Ryder, Pub.- ELBS.
2. Hydraulic and Fluid Mechanics – Modi and Seth, Pub. – Standard Book House, New Delhi
3. Engineering Thermodynamics – C.P. Arora, Pub. - TMH, New Delhi
4. Thermal Engineering – A.S. Sarad, Pub. - Satya Prakashan, New Delhi.
5. Engineering Mechanics – K.L. Kumar, Pub. - TMH, New Delhi.
7. Mechanics of Solids- Dr. V.S. Prasad, Galgotia Publication, New Delhi.
8. Manufacturing Process – P.N Rao, Pub.- TMH, New Delhi.
9. Introduction to Workshop technology – R.S Raghuvanshi ,Dhanpat Rai publications, New Delhi

Reference Books:

1. Strength of Materials – Popov, Pub. - PHI, New Delhi.
2. Hydraulic Machines – Jagdish Lal, Pub.- Metropolitan, Allahbad.
3. Thermal Science and Engineering – D.S. Kumar, Pub. – Kateria & Sons, New Delhi.
4. Thermal Engineering – A.S. Sarad, Pub. - Satya Prakashan, New Delhi.
5. Engineering Mechanics – K.L. Kumar, Pub. - TMH, New Delhi.

MANUFACTURING TECHNOLOGY
ME- 112

L T Cr
3 0 3

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

Note: -

1. There will be NINE questions in the question-paper. All questions carry equal marks.
2. First question covers the whole syllabus. It is objective/ short answer type (at least ten questions). Two questions will be taken from each of the four units.
3. Attempt five questions in all. FIRST question is compulsory. Attempt ONE question from each of the other four Units

Unit I

Introduction: Introduction to Manufacturing Processes and their Classification.

Industrial Safety; Introduction, Types of Accidents, Causes and Common Sources of Accidents, Methods of Safety, First Aid

Plant Layout, Objectives of Layout, Types of Plant Layout and their Advantages.

Unit II

Engineering Materials: General Properties and Applications of Engineering Materials, Mild Steel, Medium Carbon Steel, High Carbon Steel, High Speed Steel and Cast Iron

Welding: Introduction to Welding, Classification of Welding Processes, Gas Welding: Oxy-Acetylene Welding, Resistance Welding; Spot and Seam Welding, Arc Welding: Metal Arc, TIG & MIG Welding, Welding Defects and Remedies, Soldering & Brazing.

Unit III

Foundry: Introduction to Casting Processes, Basic Steps in Casting Process, Pattern, Types of Patterns, Pattern Allowances, Risers, Runners, Gates, Moulding Sand and its composition, Sand Preparation, Molding Methods, Core Sands and Core Making, Core Assembly, Mold Assembly, Melting (Cupola) and Pouring, Fettling, Casting Defects and Remedies.

Unit IV

Cold Working (Sheet Metal Work): Sheet Metal Operations, Measuring, Layout Marking, Shearing, Punching, Blanking, Piercing, Forming, Bending and Joining, Advantages and Limitations.

Hot Working Processes: Introduction to Hot Working, Principles of Hot Working Processes, Forging, Rolling, Extrusion, Wire Drawing.

Text Books :

1. Workshop Technology Volt.I & II - Hazra & Chaudhary, Asian Book Comp., New Delhi.
2. Process and Materials of Manufacture -- Lindberg, R.A. Prentice Hall of India, New Delhi.
3. Principles of Manufacturing Materials and Processes - Campbell, J.S.- McGraw- Hill.

Reference Books:

1. Manufacturing Science - Amitabha Ghosh & Ashok Kumar Malik, - East-West Press.
2. Manufacturing Process and Systems - Ostwald, Munoz , John Wiley.
3. Workshop Technology, Vol. 1, 2 & 3 – Chapman, WAJ, Edward Arnold.

ENGINEERING CHEMISTRY
CH-110

L T Cr
3 1 4

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-1

WATER TREATMENT: Hardness, Types of hardness, Units and Interconversions of Units, Estimation of hardness by EDTA method, Alkalinity & Its determination, Numerical problems based on EDTA method & Alkalinity, Scale and sludge formation, Disadvantages and its prevention. Water softening methods-Lime-Soda Process, Ion-exchange method, Desalination of water - Reverse Osmosis and Electrodialysis, Disinfections of water- Chlorination, Breakpoint Chlorination and related numerical problems based on Lime-Soda Process.

UNIT-II

CORROSION & ELECTROCHEMICAL ENERGY STORAGE: Introduction, Classification, Types of wet or electrochemical corrosion, Control of corrosion – Cathodic Protection, Proper designing, Protective Coating (metallic coatings). Concept and Classification of Batteries, Lead-Acid Battery, Lithium Batteries (Primary), Liquid Organic Electrolyte Cells, Polymer Electrolyte Cells, Lithium ion Cells.

LUBRICANT: Introduction and functions of Lubricant, Types of lubricants- Solid, Semisolid or Greases, Liquid, Properties of lubricants and their Significance- Viscosity, Iodine Value, Flash and Fire point, Saponification Value.

UNIT-III

PHASE RULE: Definition, Terminology- Phase, Component, Degree of freedom, Equilibrium, Phase diagram of one component system- H₂O system, Classification of two component System, Eutectic System (Ag-Pb system) in detail, Desilverisation of lead, Application of eutectic system- Freezing Mixtures, Solders, Safety Fuses, Numerical problems based on Phase rule.

EXPLOSIVES AND PROPELLANTS: Introduction, Explosive, Classification of Explosive, Precaution during storage of explosive, Propellants, Classification, Characteristics of a Good Propellant, , Rocket Propellants.

UNIT-IV

POLYMER CHEMISTRY: Introduction, Basic concepts, Types of polymerization, Preparation, Properties and Technical Application of Thermoplastic (PVC, Teflon), Thermosetting Plastic (PF resin, UF resin), Inorganic polymer (silicone), Elastomer (GR-S, GR-N), General introduction of Biodegradable Polymer.

ANALYTICAL TECHNIQUES: Thermal method of analysis-Thermogravimetric Analysis (TGA), Differential Thermal Analysis (DTA), Differential Scanning Calorimeter (DSC), Conductometric titration-Strong Acid and Strong Base & Weak Acid and Strong Base, pHmetric Titration, Spectrophotometry.

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TEXT BOOKS:

1. Engineering Chemistry, O G PalannaMcGrawHill
2. Chemistry in Engineering & Tech., Vol. I & II, Rajaram, Kuriacose (TMH).
3. Engineering Chemistry, RaghupatiMukhopadhyay, SriparnaDatta (New Age)
4. Engineering Chemistry, ShashiChawla, DhanpatRai& Co.

REFERENCE BOOKS:

1. Instrumental methods of Chemical Analysis, MERITT & WILLARD (East-West Press).
2. Physical Chemistry, P.W. Atkin (ELBS, Oxford Press).
3. Physical Chemistry, W.J. Moore (Orient-Longman).

COMP-I (Problem Solving and Programming in C)

CS-110

L T Cr
3 1 4

On Semester Evaluation: 100 Marks

End Semester Evaluation: 100 Marks

Time: 3 hrs

Note : 1. There are Nine questions in a set of question-paper. All questions carry equal marks.

- 2. Attempt five questions in all, First question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Introduction: Introduction to problem solving, Introduction to Algorithms: Properties & Examples, Programming Methodologies, Introduction to Flowcharts: Properties, Rules for designing a flowchart, Examples, Characteristics of a good program and programming style.

Number System: Binary, Octal, Hexadecimal number system & their interconversion, Binary arithmetic.

UNIT-II

Programming Fundamental in C: Introduction to C, Structure of a C program, How to run C program, Types of errors, Handling errors, Concepts of variable declaration, Data types, Keywords, Constants in a program, formatted & Unformatted Input output statements.

Operators in C: Unary, Binary, Conditional operators, bitwise operators, Expressions, relational and logical operators, Type conversion

Control Statements:- Selection, Loops, nested loops, Switch-case-default, Break and Continue, goto statement.

UNIT-III

Arrays: 1-D, 2-D, 3-D Arrays, Processing of arrays, Storage classes.

Strings: String Library functions, Array of strings, operations on strings.

Functions: Defining, initializing, Characteristics of functions, Argument passing: simple variables and arrays, returning values, Recursive functions.

UNIT-IV

Pointers: Introduction to pointers, pointers and arrays, pointers and functions.

Structures: Defining, initializing and implementation, passing structure to a function, Enumerated data types, Unions & their operations.

Introduction to file handling in C.

Text Books:

Lets us C by Yashwant Kanitkar. BPB Publication

Reference Books:

1. Computer Fundamentals and C Programming by E. Balagurusami, TMH Publication.
2. The Spirit of C by Mullish Cooper, Jaico Publishing House
3. Computing Fundamentals and Programming in C by Nasib Singh Gill, Khanna books Pub. Co., New Delhi
4. Computer Fundamentals and Programming in C by A.K.Sharma, Dhanpat Rai and Sons New Delhi

COMP-II(Internet and Web Design)

CS-120

L T Cr
3 1 4

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Time: 3 hrs

- Note: 1. There are nine questions in a set of question paper. All questions will carry equal marks.
2. The students are required to attempt five questions in all selecting at least one from each unit and First question is compulsory.

UNIT-I

Computer Networks Basics: Introduction, Transmission media, Topologies.

The Internet : Introduction, history, Internet, Intranet & Extranet, Working of Internet, Internet Congestion, internet culture. Modes of connecting to Internet. Internet Service Providers (ISPs), Introduction to networks, Internet address, domain name, DNS, Internet tools.

UNIT-II

World Wide Web: Introduction, Miscellaneous Web Browser details, searching the www: Directories search engines and Meta search engines, search fundamentals, search strategies, working of the search engines, Telnet and FTP, HTTP, TCP/IP.

Basics of HTML: hypertext markup language, web page installation, web page setup, formatting and hyperlink creation. Using FrontPage Express, Plug-ins.

UNIT-III

Electronic Mail: Introduction, advantages and disadvantages, user id, passwords, e-mail addresses, message components, message composition, mailer features, E-mail inner working, E-mail Management, MIME types, Newsgroups, Mailing Lists, chat rooms, secure-mails, SMTP, Online ref. Works.

UNIT-IV

Privacy and Security Topics: Introduction, attacks, security and privacy levels, security policy, accessibility and risk analysis, Encryption schemes, Secure Web document, Digital Signatures, Firewalls, intrusion detection system, Cyber crime- offences and punishment under IT Act, Cyber security..

Text Book:

1. Fundamentals of the Internet and the World Wide Web, Raymond Greenlaw and Ellen Hepp – 2001, TMH
2. Internet & World Wide Programming, Deitel, Deitel & Nieto, 2000, Pearson Education

Reference Books:

1. Network Firewalls, Kironjeet syan, - New Rider Pub.
2. Networking essentials- Firewall Media .

BASICS OF CIVIL ENGINEERING
CE-110

L T Cr
3 0 3
Time: 3 hrs
Note: -

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

1. There are NINE questions in a set of question paper. All questions carry equal marks.
2. Attempt five questions in all. FIRST question is compulsory which cover the whole syllabus. Attempt ONE question from each of the other four units.

UNIT-I

Introduction:

Civil engineering, basic human needs, Role of civil engineer, Branches of civil engineering.

Elements of building construction:

Planning: Elementary principles & basic requirements of a building planning, selection of site, orientation of building, elements of building drawing, Layout & drawing of residential & industrial buildings, foundation plan, Electrical insulation plan.

Construction:

Classification of building based on occupancy & structure, design loads, common building components their functions & nominal dimensions, building byelaws.

UNIT-II

Surveying:

Principles of surveying, classification of surveys, chain survey: Introduction to metric chain & tapes, error in chaining, nominal scale & R.F., ranging, chaining & offsetting, index plan, location sketch & recording of field book; Chain & compass survey: Meridian, bearing & its types, system of bearing, types of compass; leveling: terms used in leveling, use of dumpy level, temporary adjustments, types of leveling.

UNIT-III

Transportation engineering:

Transportation classification, cross section & component of road, classification of roads, BOT projects, traffic control; Railway cross section & component of permanent way-functions; Docks & Harbor, its classification & components; Bridge, Components of bridge.

UNIT-IV

Water supply & sewage disposal:

Dams, purpose, selection of site, types, gravity dam (cross section only); water supply, objective, quantity of water, sources, standard of drinking water, distribution system; sewage, classification, technical terms, septic tank, component & functions.

Text Books:

1. G.K. Hiraskar, Basic Civil Engineering, Dhanpat Rai Publication.
2. Rakesh Beohar, Basic Civil Engineering, Luxmi publication.
3. Madan Mohan & Bhargab Mohan Dass, Elements of Civil Engineering, PHI learning.
4. Raju .K.V.B, Ravichandran .P.T, Basics of Civil Engineering, Ayyappa Publications.

Reference Books:

1. Dr. B.C. Punmia, Building Construction, Luxmi Publications.
2. Dr. B.C. Punmia, Surveying, Vol-I, Vol-II, Luxmi Publications.
3. S.K. Garg, Irrigation Engineering & Hydraulic Structures.
4. Khanna & Justo, Highway Engineering, Nem Chand & Bros., Roorkee.
5. S.K. Garg, Water supply Engineering.

BASICS OF ENVIRONMENTAL SCIENCES

(Audit Course)

ES-11A

L T Cr
2 0 0

On Semester Evaluation: 50 Marks

End Semester Evaluation: 50 Marks

Time (End semester) : 90 min

Note: -

1. It is an audit course; hence this paper will be of qualifying nature. Total marks obtained (on + end semester) in this subject will not be added for SGPA/CGPA calculations. But it is mandatory to appear in the examination and qualify it.
2. **On semester evaluation scheme:** 10 marks (lecture attendance) + 20 marks (two mid-terms) + 10 marks (teacher assessment) + 10 marks (minor project/case study) = total 50 marks.
3. **End semester:** Examiners are requested to set total seven questions (of 10 marks each) from the whole syllabus and students will attempt any five questions in all.
4. Students need to score minimum 20 marks (on semester) + 20 marks (end semester) = total 40 marks to qualify this paper.

ENVIRONMENTAL POLLUTION: Air pollution, Water pollution, Soil Pollution & Noise Pollution, Nuclear hazards.

SOCIAL ISSUES AND ENVIRONMENT: Sustainable use of environmental resources Water conservation, Global warming, Acid rain, Ozone layer depletion, various acts for the protection of environment and living systems.

INTRODUCTION TO ECOSYSTEM: Various types of ecosystem - Grassland, Desert and Aquatic ecosystem. Structures of ecosystems - Energy flow, Food chain, Food web and ecological pyramid.

BIODIVERSITY AND ITS CONSERVATION: Introduction & Definition of Biodiversity. Threats to Biodiversity: habitat loss, illegal poaching of wildlife. Threatened species of India, Methods of conservation of biodiversity.

Text Books/ Reference Books:

1. An Introduction to Environmental Sciences by SurinderDeswal&AnupamaDeswal.
2. Basics of Environmental Sciences by Dr. A.J. Nair.

PHYSICS LAB-I
PHY-11P

L T P Cr
0 0 2 1

On Semester Examination : 120 Marks
End Semester Examination: 80 Marks

Note: At least ten experiments are to be performed by the students.

List of Experiments

1. To verify Newton Formula and hence to find the focal length of Convex lens.
2. To find the wavelength of monochromatic light by using Diffraction Grating.
3. To find the low resistance by Carey Foster Bridge.
4. To find the wavelength of light by using Newton Rings.
5. To find the thermal conductivity of non metallic solid by Lee's Disc method.
6. To find the wavelength of Sodium light by Michelson's Interferometer.
7. To Convert Galvanometer into an Ammeter.
8. To find frequency of A.C. mains by using Sonometer.
9. To find value of high resistance by Substitution method.
10. To find value of resistance of Galvanometer by P.O. Box.
11. To find resolving power of Telescope.
12. To compare the capacitance of two capacitor by De-Sauty's bridge.

Suggested Books:

1. Engineering Practical Physics, SatyaPrakash, (PragatiPrakashan).

PHYSICS LAB-II
PHY-12P

L T P Cr
0 0 2 1

On Semester Examination : 120 Marks
End Semester Examination: 80 Marks

Note: At least ten experiments are to be performed by the students.

List of Experiments

1. To find a wavelength of Semiconductor laser by Young's double slit method.
2. To measure the wavelength of He-Ne laser using a vernier calliper meter scale.
3. To find the ionization potential of Argon/Mercury using a thyratron tube.
4. To study the variation of magnetic field with distance and to find the radius of coil by Stewart and Gee's apparatus.
5. To study the characteristics of (Cu-Fe, Cu-Constantan) thermo couple.
6. To find the value of Hall Co-efficient of semiconductor.
7. To study V-I characteristics of P-N Diode.
8. To find the energy band gap of intrinsic semiconductor using four probe method.
9. To find the flashing and quenching potential of Argon and to find the capacity of Unknown capacitor.
10. To find temp coefficient of resistance by using Pt resistance thermometer by post office box.
11. To find the value of coefficient of self-inductance by using Rayleigh bridge.
12. To verify Richardson's equation.

Suggested Books:

1. Engineering Practical Physics, SatyaPrakash, (PragatiPrakashan).

**BASICS OF ELECTRONIC & ELECTRICAL TECHNOLOGY LAB
(EC-11P)**

L T P Cr
0 0 2 1

On Semester Examination : 120 Marks
End Semester Examination: 80 Marks

LIST OF EXPERIMENTS:

1. To verify KCL and KVL.
2. To verify Superposition theorems.
3. To perform O.C. and S.C. tests on transformer and determine equivalent circuit parameters as referred to primary.
4. To perform direct load test on a transformer and plot efficiency VS load characteristic.
5. Generalized use of CRO and Multimeter and To perform the V-I characteristics of a p-n junction diode in forward and reverse bias.
6. To study the half wave & full wave rectifier with and without filter and to calculate it's ripple factor, and PIV rating.
7. To study the I/P and O/P characteristics of NPN transistor in common emitter configuration.
8. To determine the A_v , A_i of RC coupled CE transistor amplifier.
9. To perform the experiment using Op-Amp as Inverting & Non Inverting Amplifier and integrator and differentiator.

Software Based Circuit Simulation (for ECE & CSE students)
(EC-12P)

L T P Cr
0 0 3 2

On Semester Examination : 120 Marks
End Semester Examination: 80 Marks

LIST OF EXPERIMENTS:

1. To design and verify NAND gate.
2. To design and verify NOR gate.
3. To design and verify XOR gate.
4. To study PN-junction diode V-I characteristics in forward and reverse bias.
5. To design and simulate half wave and full wave rectifier circuits.
6. To design and simulate voltage regulator circuits.
7. To find resonance frequency, bandwidth, Q-factor of RLC series circuit.
8. To study and plot the transient response of RC circuit.
9. To study and plot the transient response of RL circuit.
10. To study input and output characteristics of BJT.

**LANGUAGE LAB
HUM-11P**

L T P Cr
0 0 2 1

On Semester Examination:120 Marks
End Semester Examination: 80 Marks

Practice Sessions:

1. Vowel and Consonant sounds
2. Phonetic Transcription
3. Word Accent
4. Intonation
5. Weak Forms
6. Vocabulary exercises with the help of (Digital) Oxford Advanced Learners' Dictionary

Educational Software in the Lab:

1. Sky Pronunciation Suite
2. Digital Oxford Advanced Learners' Dictionary

WORKSHOP PRACTICE

ME-11 P

L **T** **P** **Cr**
0 **0** **2** **1**

On Semester Evaluation- 120 Marks
End Semester Evaluation- 80 Marks

List of Practicals

1. To study different types of measuring tools used in metrology and determine the least counts of Vernier Caliper, Micrometer and Vernier height gauges.
2. To study different types of machine tools (lathe, shaper, milling or drilling machines).
3. To prepare a job on a lathe involving facing, outside turning, taper turning, step turning, radius making and parting-off.
4. To study different types of fitting tools and marking tools used in fitting practice.
5. To prepare joints for welding suitable for butt-joint welding and lap-joint welding.
6. To perform pipe welding joints.
7. To study various types of carpentry tools and prepare simple types of at least two wooden joints.
8. To prepare horizontal surface/vertical surface/curved surface/slots or V-grooves on a shaper/planner.
9. To prepare a job involving side and face milling on a milling machine.
10. To practice cutting metal pieces by electric arc welding.
11. To prepare a signal piece wooden pattern.

Text.Books :-

- | | |
|-------------------------------|-------------------|
| 1. Workshop Technology- | B.S.Raghuwanshi. |
| 2. Workshop Technology- | Hazara Choudhary. |
| 3. Workshop Practical Manual- | V.Kapoor. |

COMPUTER AIDED DRAWING LAB(For ME & CE students)

ME-12P

L	T	P	Cr
0	0	3	2

On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks

List of Experiments:-

1. To study about the opening, creating, saving & setting drawing limit of a drawing.
2. To study about the various input& output devices used in CAD system.
3. To study about the various co-ordinate system for making a drawing.
4. To study & exercise on various draw commands like (Line, Polyline, Circle, Arc & rectangle etc.)
5. To make a rectangle of size 20 x 10 using line command in different co-ordinate system different.
6. To make an equilateral triangle of size 20 mm using polar mode.
7. To study & exercise on various modify commands like (Chamfer, Fillet, Rotate, Trim, Move, Offset, array, copy, mirror etc.)
8. To study & exercise on various dimensioning commands.
9. To study about the various modeling used in CAD system.

COMP-I LAB (PROGRAMMING IN C)
CS-11P

L T P Cr
0 0 2 1

On Semester Examination : 120 Marks
End Semester Examination: 80 Marks

Note: Make flow chart & write algorithm and C code for following programs.

List of Experiments:-

1. Write a program to add two numbers.
2. Write a program to calculate simple interest.
3. Write a program to find the largest of three numbers. (Using if-then-else)
4. Write a program to find largest number out of ten numbers.(Using for-loop)
5. Write a program to find second largest number out of ten numbers. (Using arrays).
6. Write a program to find the average male height & average female height in the class. (Using while loop)
7. Write a program to print prime numbers between 2 to 100.
(Using modulus operator “%”).
8. Write a program to convert binary to octal and decimal numbers.
9. Write a program to add two matrices. (Using 2-D arrays)
10. Write a program to multiply two matrices. (Using formatted I/O).
11. Write a program to perform following operation tables using functions only: Addition b)
Subtraction c) Multiplication d) Transpose.
12. Write a program to find roots of quadratic equation. (Using function)
13. Write a program to calculate factorial. (with and without recursion)
14. Write a program to ask user’s choice and print that on output screen. (Using switch-case-default statements)
15. Write a program to read a string and write it in reverse order. (Using only string length function “strlen”)
16. Write a program to concatenate two strings. (Using only string length function “strlen”)
17. Write a program to check that the input string is a palindrome or not.
18. Write a program to implement various operations on string such as length of string, reverse and copy of string to another.
19. Write a program to make a record of students of a class including information Name, Roll No, Marks in Different Subjects and display percentage marks. (Using structures).
20. Write a program to display Floyd’s triangle.
21. Write a program to implement file operations. (e.g. file read and write).

22. Write a program for implementation of a file and performing operations such as insert, delete, update a record in file.
23. Write a program to implement error handling in files.

*** Practice at least 2-5 more programs related to each topic and especially nested loop constructs.**

COMP-II(INTERNET & WEB DESIGN LAB)

CS-12P

L T P Cr
0 0 2 1

On Semester Evaluation : 120 Marks
End Semester Evaluation : 80 Marks

Introductory Exercises: Application of basics of MS Word 2000, MS Power Point

2000, MS Access 2000, HTML.

1. To prepare your Biodata using MS Word
2. To prepare the list of marks obtained by students in different subjects and show with the help of chart/graph the average, min and max marks in each subject.
3. Prepare a presentation explaining the facilities/infrastructure available in your college/institute.
4. Design Web pages containing information of the Deptt.
5. Installing internal & external modems, NIC and assign IP address.
6. Add names (mail-id's) in your address book, compose and search an element

HTML Lists :

1. Create a new document that takes the format of a business letter. Combine <P> and
 tags to properly separate the different parts of the documents. Such as the address, greeting, content and signature. What works best for each.
2. Create a document that uses multiple
 and <P> tags, and put returns between <PRE> tags to add blank lines to your document see if your browser renders them differently.
3. Create a document using the <PRE>tags to work as an invoice or bill of sale, complete with aligned dollar values and a total. Remember not to use the Tab key, and avoid using emphasis tags like or within your list.
4. Create a seven-item ordered list using Roman numerals. After the fifth item, increase the next list value by 5.
5. Beginning with an ordered list, create a list that nests both an unordered list and a definition list.
6. Use the ALIGN attribute of an tags to align another image to the top of the first image.. play with this feature, aligning images to TOP, MIDDLE and BOTTOM.

**CHEMISTRY LAB
CH-11P**

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On Semester Examination : 120 Marks
End Semester Examination: 80 Marks

Note: At least ten experiments are to be performed by the students.

LIST OF EXPERIMENTS:

1. Determination of Temporary and Permanent hardness of water using EDTA solution.
2. Determination of alkalinity of water sample.
3. Determination of dissolved oxygen (DO) in the given water sample.
4. Determination of viscosity of lubricant by Red Wood viscometer (No. 1 & No. 2).
5. To determine flash point & fire point of an oil by Pensky -Marten's flash point apparatus.
6. To prepare Phenol-formaldehyde and Urea formaldehyde resin.
7. To find out saponification No. of an oil.
8. pHmetric titration of different solutions
9. Determination of strength of HCl solution by titrating it against NaOH solution conductometrically.
10. Estimation of total iron in an iron ore solution by using potassium permanganate method.
11. Estimation of total iron in an iron ore solution by external indicator method.

Suggested Books:

1. A Text Book on Experimental and Calculation – Engineering Chemistry, S.S. Dara, S. Chand & Company (Ltd.)
2. Essential of Experimental Engineering Chemistry, ShashiChawla, DhanpatRai Publishing Company.
3. Theory & Practice Applied Chemistry – O.P. Virmani, A.K. Narula (New Age)