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# **SCHEME OF EXAMINATION**

## **& SYLLABUS**

**For**

**B.Tech Courses**

**Applied Science and Humanities Department  
(Effective from the session: 2012-2013)**

**G.B. PANT ENGINEERING COLLEGE, PAURI GARHWAL**

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
**I Year (I-SEMESTER) (Common to All B.Tech Courses)**  
**(Effective from session: 2012-13)**  
**Group ECE, EE, CE**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
1.	TCS-111	Basic Computer Engineering	3	1	0	30	20	50	100	150
2.	TME-111	Basic Mechanical Engineering	3	1	0	30	20	50	100	150
3.	TAH-111	Engineering Chemistry	3	1	0	30	20	50	100	150
4.	TAH-112	Environmental Science	3	0	0	30	20	50	100	150
5.	TAH-113	Engineering Mathematics-I	3	1	0	30	20	50	100	150
<b>PRACTICAL</b>										
6.	PCS-111	Basic Computer Engineering Lab	0	0	2	10	15	25	25	50
7.	PME-111	Basic Mechanical Engineering Lab	0	0	2	10	15	25	25	50
8.	PAH-111	Engineering Chemistry Lab	0	0	2	10	15	25	25	50
9.	PME-112	Workshop Practice	1	0	2	10	15	25	25	50
10.	GPP-111	General Proficiency	0	0	0	0	50	50	0	50
<b>SEMESTER TOTAL</b>			<b>16</b>	<b>4</b>	<b>8</b>	<b>190</b>	<b>210</b>	<b>400</b>	<b>600</b>	<b>1000</b>

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
**I Year (II-SEMESTER) (Common to All B.Tech Courses)**  
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 Group ECE, EE, CE

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
1.	TEC-121	Basic Electronics Engineering	3	1	0	30	20	50	100	150
2.	TEE-121	Basic Electrical Engineering	3	1	0	30	20	50	100	150
3.	TAH-124	Engineering Physics	3	1	0	30	20	50	100	150
4.	TAH-125	Professional Communication	3	1	0	30	20	50	100	150
5.	TAH-126	Engineering Mathematics-II	3	1	0	30	20	50	100	150
<b>PRACTICAL</b>										
6.	PEC-121	Basic Electronics Engineering Lab	0	0	2	10	15	25	25	50
7.	PEE-121	Basic Electrical Engineering Lab	0	0	2	10	15	25	25	50
8.	PAH-124	Engineering Physics Lab	0	0	2	10	15	25	25	50
9.	PCE-121	Engineering Graphics	1	0	2	10	15	25	25	50
10.	GPP-121	General Proficiency	0	0	0	0	50	50	0	50
<b>SEMESTER TOTAL</b>			<b>16</b>	<b>5</b>	<b>8</b>	<b>190</b>	<b>210</b>	<b>400</b>	<b>600</b>	<b>1000</b>

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
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						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
1.	TEC-111	Basic Electronics Engineering	3	1	0	30	20	50	100	150
2.	TEE-111	Basic Electrical Engineering	3	1	0	30	20	50	100	150
3.	TAH-114	Engineering Physics	3	1	0	30	20	50	100	150
4.	TAH-115	Professional Communication	3	1	0	30	20	50	100	150
5.	TAH-116	Engineering Mathematics-II	3	1	0	30	20	50	100	150
<b>PRACTICAL</b>										
6.	PEC-111	Basic Electronics Engineering Lab	0	0	2	10	15	25	25	50
7.	PEE-111	Basic Electrical Engineering Lab	0	0	2	10	15	25	25	50
8.	PAH-114	Engineering Physics Lab	0	0	2	10	15	25	25	50
9.	PCE-111	Engineering Graphics	1	0	2	10	15	25	25	50
10.	GPP-111	General Proficiency	0	0	0	0	50	50	0	50
<b>SEMESTER TOTAL</b>			<b>16</b>	<b>5</b>	<b>8</b>	<b>190</b>	<b>210</b>	<b>400</b>	<b>600</b>	<b>1000</b>

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			L	T	P	SESSIONAL EXAM			ESE	Subject Total
						CT	TA	Total		
<b>THEORY</b>										
1.	TCS-121	Basic Computer Engineering	3	1	0	30	20	50	100	150
2.	TME-121	Basic Mechanical Engineering	3	1	0	30	20	50	100	150
3.	TAH-121	Engineering Chemistry	3	1	0	30	20	50	100	150
4.	TAH-122	Environmental Science	3	0	0	30	20	50	100	150
5.	TAH-123	Engineering Mathematics-I	3	1	0	30	20	50	100	150
<b>PRACTICAL</b>										
6.	PCS-121	Basic Computer Engineering Lab	0	0	2	10	15	25	25	50
7.	PME-121	Basic Mechanical Engineering Lab	0	0	2	10	15	25	25	50
8.	PAH-121	Engineering Chemistry Lab	0	0	2	10	15	25	25	50
9.	PME-122	Workshop Practice	1	0	2	10	15	25	25	50
10.	GPP-121	General Proficiency	0	0	0	0	50	50	0	50
<b>SEMESTER TOTAL</b>			<b>16</b>	<b>4</b>	<b>8</b>	<b>190</b>	<b>210</b>	<b>400</b>	<b>600</b>	<b>1000</b>

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
**II Year (III-SEMESTER)**  
**(Effective from session: 2012-13)**  
**Group CSE, EE,CE**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
1.	TAH-232*	Engineering Mathematics-III	3	1	0	30	20	50	100	150
2.	TAH-231#	Industrial Economics and Management	3	1	0	30	20	50	100	150
<b>SEMESTER TOTAL</b>			<b>6</b>	<b>2</b>	<b>0</b>	<b>60</b>	<b>40</b>	<b>100</b>	<b>200</b>	<b>300</b>

\* For Groups CS and EE

# For Group CE

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
**II Year (IV-SEMESTER)**  
**(Effective from session: 2012-13)**  
**Group CE,ME and EC**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
3.	TAH-242*	Engineering Mathematics-III	3	1	0	30	20	50	100	150
4.	TAH-241#	Industrial Economics and Management	3	1	0	30	20	50	100	150
<b>SEMESTER TOTAL</b>			<b>6</b>	<b>2</b>	<b>0</b>	<b>60</b>	<b>40</b>	<b>100</b>	<b>200</b>	<b>300</b>

\* For Groups CE and ME

# For Group EC

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
**III Year (VI-SEMESTER)**  
**(Effective from session: 2012-13)**  
**Group CS**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
5.	TAH-361	Industrial Economics and Management	3	1	0	30	20	50	100	150
<b>SEMESTER TOTAL</b>			<b>3</b>	<b>1</b>	<b>0</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>100</b>	<b>150</b>

**EVALUATION SCHEME**  
**B.Tech Applied Science and Humanities**  
**IV Year (VII-SEMESTER)**  
**(Effective from session: 2012-13)**  
**Group EE**

S. No.	COURSE CODE	SUBJECT	PERIODS			EVALUATION SCHEME				
						SESSIONAL EXAM			ESE	Subject Total
			L	T	P	CT	TA	Total		
<b>THEORY</b>										
6.	TAH-471	Industrial Economics and Management	3	1	0	30	20	50	100	150
<b>SEMESTER TOTAL</b>			<b>3</b>	<b>1</b>	<b>0</b>	<b>30</b>	<b>20</b>	<b>50</b>	<b>100</b>	<b>150</b>

## ENGINEERING MATHEMATICS-I (TAH-113/ TAH-123)

### UNIT-1

#### Matrices

10L

Elementary row and column transformations Rank of matrix, linear dependence, Consistency of linear system of equations, Characteristic equation, Cayley-Hamilton theorem, Eigen values and Eigen vectors, Complex and unitary matrices.

### UNIT-2

#### Differential Calculus-I

9L

Leibnitz theorem, Partial Differentiation, Euler's theorem, Change of variables, Expansion of functions of several variables.

### UNIT-3

#### Differential Calculus-II

9L

Jacobian, Approximations and errors, Extrema of functions of several variables, Lagrange method of undetermined multipliers.

### UNIT-4

#### Multiple Integrals

6L

Double and triple integrals, Change of order, Change of variables, beta and gamma functions, Application to area, volume, Dirichlet integral and applications.

### Unit -5

#### Vector Calculus

6L

Gradient, divergence and curl of a vector and their physical interpretation, Line, surface and volume integrals, Green, Stokes and Gauss divergence theorem.

### References:

- Matrics by V.N. Kala and R.Rana, University Press New Delhi.
- Advanced Engineering Mathematics, Kreyszig, Wiley India
- A Text book of Engineering Mathematics (Vol.1) by Peter V. O' Neil, Cengage Learning
- B. S. Grewal: higher Engineering Mathematics, *Khanna Publications*.
- N. Piskunov: Differential & Integral Calculus, *Moscow Peace Publications*.
- G Shankar Rao, Text book of engineering mathematics,BS Publication, Hyderabad



## ENGINEERING PHYSICS (TAH-114/124)

### UNIT-I

(8L)

#### Relativistic Mechanics:

Inertial and Non-inertial Frames, Postulates of Special Theory of Relativity, Galilean and Lorentz Transformation, Length Contraction and Time Dilation, Addition of Velocities, Mass Energy Equivalence and Variation of Mass with Velocity. **Radiation:** Kirchoff's Law, Stefan's law (only statement), Energy spectrum of Blackbody Radiation, Compton Effect.

### UNIT-II

(8L)

**Interference:** Coherent Sources, Conditions of Interference, Fresnel's Biprism Experiment, Displacement of Fringes, Interference in Thin Films – Wedge Shaped Film, Newton's Rings. **Diffraction:** Single and n-Slit Diffraction, Diffraction Grating, Raleigh's Criterion of Resolution, Resolving Power of Grating.

### UNIT-III

(7L)

**Polarization:** Phenomenon of Double Refraction, Ordinary and Extra-ordinary Rays, Nicol Prism, Production and Analysis of Plane, Circularly and Elliptically Polarized Light, Fresnel Theory, Optical Activity, Specific Rotation, Polarimeter. **Laser:** Principle of Laser Action, Einstein's Coefficients, Construction and Working of He-Ne and Ruby Laser.

### UNIT-IV

(8L)

**Electromagnetic:** Ampere's Law and Displacement Current, Maxwell's Equations in Integral and Differential Forms, Electromagnetic Wave Propagation in Free Space and Conducting Media, Poynting Theorem. **Magnetic Properties of Materials:** Basic Concept of Para-, Dia and Ferro-Magnetism, Langevin's Theory of Diamagnetism, Phenomenon of Hysteresis and Its Applications

### UNIT-V

(9L)

#### Superconductivity:-

Essential properties of superconductors (zero resistivity), London equations, penetration depth and coherence length, Meissner effect, critical field, critical current Isotope effect, heat capacity, Type I and Type II superconductors, Characteristics of superconductors in superconducting state, applications of superconductors. **Wave Mechanics :** Wave Particle Duality, de Broglie Concept of Matter Waves, Heisenberg Uncertainty Principle, Schrödinger Wave Equation and Its Applications: Particle in a Box.

#### Reference Books:

- Introduction to Special theory of Relativity Robert Resnick – Wiley India
- Physics of Atoms, Wehr Richards & Adia
- Fundamentals of Physics, Halliday, Wiley India
- Engineering Electromagnetics, William Hayt, 7th Ed. (TMH)
- Ashutosh Asthana, Engg. Physics, BS Publication, Hyderabad

## ENGINEERING CHEMISTRY (TAH-111/121)

### L T P

#### UNIT – I GENERAL & ORGANIC CHEMISTRY 8 L

Molecular orbital diagram of diatomic molecules, valence bond theory & molecular orbital Theory linear combination of atomic orbitals, hybridization, hydrogen bonding, band theory of solids, liquid crystals with their classification applications, Bragg's Law, Fullerenes & their application, organic name reactions (cannizzaro's reaction, aldol condensation, Pinnacol-pinnacol rearrangement, Beckmann's rearrangement, Hoffmann's rearrangement, Rimmer-Timmer reaction), Optical isomerism & confirmations, E-Z nomenclature, R-S configuration.

#### UNIT – II PHYSICAL & WATER CHEMISTRY 10 L

Rate of reaction, order & molecularity of reaction, Zero order, First Order, Second order reaction, concept of activation energy, energy barrier, conductance & its variation with dilution, Transport no., Kohlraush's Law and its application, pH, buffer solution, calculation of pH of buffer mixture solubility & solubility Product, Nernst distribution law & its application, corrosion, its type, Mechanism & control, Theory of Electrochemical corrosion. Hardness of water, boiler feed water, softening of water (Calgon Process, Zeolite process, Lime Soda process & Ion exchange process), Reverse osmosis, treatment of boiler feed water.

#### UNIT – III CHEMISTRY OF ENGINEERING MATERIALS 5 L

Introduction & classification of polymers, Types of Polymerization, bulk solution, suspension & emulsion, copolymers, vulcanization, PVC, Polyamides, Polyurethane, Polyethylene, Polypropylene, PET, Resins (Phenol Formaldehyde), PMMA, PAN, Rubber, Conducting and Biodegradable polymers, Pyroceramics, Toughened glass, Strengthening of glass, Protective Coatings,

#### UNIT – IV FUELS & COMBUSTION and Environmental Pollution 10 L

Classification of Fuels, calorific value of fuel, gross & net calorific value, determination of calorific value using Bomb calorimeter, Coal, Biomass and Biogas, Bio Fuel, Esterification & Transesterification, Introduction of Lubricants, Mechanism of Lubrication, Classification of Lubricant, Bio Lubricant, Flash and Fire Point, Pour Point, Cloud Point, Aniline point, Viscosity index. **Environmental pollution:** Types of pollution & pollutants, Air Pollution. Formation and depletion of ozone, smog and Acid rain, **Toxic chemicals in Environment:** Basic concepts, Brief idea about the environmental impact of toxic chemicals specially, CO, NxOx, SOx, O<sub>3</sub>, Pesticides, environmental management

#### UNIT – V ANALYTICAL METHODS AND APPLICATIONS 7 L

Titrimetric analysis with reference to acid-base, redox, precipitation and complexometric titrations. Elementary ideas and simple applications of UV, visible, mass and HNMR spectral techniques.

#### REFERENCE BOOKS:

- Text book of Engineering Chemistry by R.N. Goyal and Harmendra Goel, Ane publication Delhi
- Engineering Chemistry by R.P. Mani & K.N. Mishra, Cengage learning India Pvt. Ltd. Delhi
- Engineering Chemistry by Shashi Chawla, Dhanpat Rai & Co., New Delhi.
- Physical Chemistry by Atkin's, Oxford University Press.
- Organic Chemistry by Morrison & Boyd, Pearson Publication.

- Organic Chemistry by Loudon, Oxford University Press.
- Concise Inorganic Chemistry by J.D. Lee, Wiley – India.
- Chemistry concepts and applications by Steven S.Zumdahl from Cengage Learning India Pvt. Ltd., New Delhi.

**PROFESSIONAL COMMUNICATION (TAH-115/125)**

## Environmental Science (TAH112/122)

### UNIT-1 NATURAL RESOURCES:

8 L

#### Renewable and Non-renewable Resources :

Natural resources and associated problems.

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

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

c) **Mineral resources** : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

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

e) **Energy resources** : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.

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

- Role of an individual in conservation of natural resources.

- Equitable use of resources for sustainable lifestyles.

### UNIT- 2 ECOSYSTEMS

6 L

- Concept of an ecosystem.

- Structure and function of an ecosystem.

- Producers, consumers and decomposers.

- Energy flow in the ecosystem.

- Ecological succession.

- Food chains, food webs and ecological pyramids.

- Introduction, types, characteristic features, structure and function of the following ecosystems :-

a. Forest ecosystem; b. Grassland ecosystem ; c. Desert ecosystem

d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

### UNIT- 3 BIODIVERSITY AND ITS CONSERVATION

4 L

- Introduction – Definition : genetic, species and ecosystem diversity.

- Biogeographical classification of India

- Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values

- Biodiversity at global, National and local levels.

- India as a mega-diversity nation

- Hot-spots of biodiversity.

- Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts.

- Endangered and endemic species of India

- Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

### UNIT- 4 ENVIRONMENTAL POLLUTION & SOCIAL ISSUES

7 L

- Definition

- Cause, effects and control measures of :-

a. Air pollution ; b. Water pollution ; c. Soil pollution ; d. Marine pollution ; e. Noise pollution

f. Thermal pollution ; g. Nuclear hazards

- Disaster management : floods, earthquake, cyclone and landslides.

- From Unsustainable to Sustainable development

- Urban problems related to energy

- Water conservation, rain water harvesting, watershed management

- Environmental ethics : Issues and possible solutions.

- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.

Case Studies.

- Wasteland reclamation.

- Consumerism and waste products.

### REFERENCE BOOK

□□ M Ajni Reddy, Text book of environmental Science, BS Publication, Hyderabad

□□ Environmental Studies by Daniel, Wiley India

□□ Environmental Studies by Erach Bharucha, University Press.

□□ Fundamental of Ecology, E.P.Odum, Cengage Learning.

### List of Experiments (Any Ten)

1. To determine the percentage of available chlorine in the supplied sample of Bleaching powder.
2. To determine the Ferrous content in the supplied sample of iron ore by titrimetric analysis against standard  $K_2Cr_2O_7$  solution using  $K_3Fe(CN)_6$  as external indicator.
3. To determine the chlorine content in the supplied water sample using Mohr's method.
4. To determine the constituents and amount of alkalinity of the supplied water sample.
5. To determine the Temporary and Permanent hardness of water sample by Complexometry.
6. To find out the Chemical oxygen demand of a wastewater sample using Potassium dichromate.
7. To determine the iron concentration in the sample of water by Spectro- Photometric method.
8. To find out the velocity constant for the inversion of cane sugar in acidic medium and to show that inversion follows the first order kinetics.
9. To determine the Molecular weight of a Polystyrene sample by using Viscometric Method.
10. To determine the pH of a solution using a pH meter and titration of such a solution pH-metrically.
11. To determine the calorific value of a fuel sample by using a Bomb Calorimeter.
12. Analysis of a coal sample by proximate analysis method.
13. Determination of flash & fire point of lubricating oil.
14. Determination of heat of neutralization of Hydrochloric acid & Sodium hydroxide.

**List of Experiments (At least Ten)**

1. To determine the wavelength of monochromatic light by Newton's ring.
2. To determine the wavelength of monochromatic light with the help of Fresnel's biprism.
3. To determine the focal length of two lenses by nodal slide and locate the position of cardinal points.
4. To determine the specific rotation of cane sugar solution using half shade polarimeter.
5. To determine the wavelength of spectral lines using plane transmission grating.
6. To determine the specific resistance of the material of given wire using Carey Foster's bridge.
7. To determine the variation of magnetic field along the axis of a current carrying coil and then to estimate the radius of the coil.
8. To verify Stefan's Law by electrical method.
9. To calibrate the given ammeter and voltmeter.
10. To study the Hall effect and determine Hall coefficient, carrier density and mobility of a given semiconductor material using Hall-effect set up.
11. To determine energy band gap of a given semiconductor material.
12. To determine E.C.E. of copper using Tangent or Helmholtz galvanometer.
13. To draw hysteresis curve of a given sample of ferromagnetic material and from this to determine magnetic susceptibility and permeability of the given specimen.
14. To determine the ballistic constant of a ballistic galvanometer.
15. To determine the viscosity of a liquid.

***Note : Additional experiments may be added based on contents of syllabus.***

## Engineering Mathematics-II (TAH-126/ TAH-116)

### **Differential Equations** **8**

Ordinary differential equations of first order, Exact differential equations, Linear differential equations of first order, Linear differential equations of nth order with constant coefficients, Complementary functions and particular integrals, Simultaneous linear differential equations,

#### **Unit-2**

### **Laplace Transform** **10**

Laplace transform, Existence theorem, Laplace transform of derivatives and integrals, Inverse Laplace transform, Laplace transform of periodic function, Unit step function, Convolution theorem, Applications to solve simple linear and simultaneous linear differential equations.

#### **Unit-3**

### **Infinite Series** **8**

Introduction, Sequences, Series: Convergence, Series of positive terms, Comparison tests, Integral tests, Comparison of ratios, D'Alembert ratio test, Raabe's test, Cauchy root test, Alternating series: Leibnitz rule.

#### **Unit-4**

### **Fourier Series and Partial Differential Equations** **8**

Periodic functions, Trigonometric series, Fourier series of periodic function, Euler's formula, Even and odd functions, Half range sine and cosine series.

Introduction to partial differential equations, Linear partial differential equations with constant coefficients of second order.

#### **Unit-5**

### **Applications of Partial Differential equations** **8**

Method of separation of variables for solving partial differential equations, One dimensional wave equation, Laplace equation in two dimensions, Heat conduction equations of one dimension and two dimension.

#### **References:**

1. A Text book of Engineering Mathematics (Vol.2) by Peter V. O'Neil, Cengage Learning.
2. B. S. Grewal: Higher Engineering Mathematics, *Khanna Publications*.
3. C. Prasad, Advanced Mathematics for Engineers, Prasad Mudralaya.
4. E. Kreyszig: Advanced Engineering Mathematics, Wiley Eastern.
5. M.D. Raisinghania: Ordinary & Partial Differential Equations, S. Chand Publication.



## Mathematics –III (TAH 232/242)

### Unit –I: Integral Transforms

8

Fourier Integral, Fourier complex transforms,, Fourier sine and cosine transforms and applications to simple heat transfer equations.

Z- transforms and its application to solve difference equations.

### Unit –II : Functions of a Complex Variable –I

9

Analytic functions, C-R equations and harmonic and functions, Line integral in the complex plane, Cauchy's integral theorem, Cauchy's integral formula for derivative of analytic functions Liouville's theorem, Fundamentals theorem of algebra.

### Unit- III: Functions of a Complex Variable

II

8

Representation of a functions by power series, Taylor's and Laurent's series, Singularities, Zeroes and

Poles Residue theorem, evolution of real integrals of type  $\int_0^{2\pi} f(\cos \theta, \sin \theta) d\theta$  and  $\int_{-\infty}^{+\infty} f(x) dx$ , Conformal mapping and bilinear transformation.

### Unit- IV : Statistic and Probability

8

Correlations and Regression,, Binomial distribution, Poisson distribution, Normal distribution. Conditional Probability, expectation theorem. Binomial expansion.

### Unit -V : Curve Fitting and Solution of Equation

5

Method of least squares and curve fitting of straight line and parabola, Solution of cubic and bi-quadratic equations.

## Industrial Economics and Management (TAH 231/241/361/471)

TAH 231/241/361/471

**Unit-1**

**4L**

**Analysis of Public Projects:** Benefit/ Cost analysis, quantification of project, cost and benefits, benefit/ cost applications, Cost –effectiveness analysis

**Unit-2:**

**4L**

**Introduction to Management:** Theories of management: Traditional behavioral, contingency and systems approach, Organization as a system.

**Unit-3:**

**7L**

**Motivation and Productivity:** Theories of motivation, leadership styles and managerial grid. Co-ordination, monitoring and control in organizations, Techniques of control, Japanese management techniques

**Unit-4:**

**8L**

**Micro Economics:** Basic concept of Micro Economics, Concept of demand, supply & price, the law pertaining to demand, supply & price indifference curve analysis, price effect, income effect & substitution effect

**Unit-5:**

**7L**

**Money & Banking:** Balance of payment disequilibrium in balance of payment, Functions of money, Value of money, Functions of bank: commercial banks & central banking in India. Monetary & fiscal policy: a brief introduction case study pertaining to macro economics. A brief description of Indian Financial system.

References:

1. Engineering Economics: White, Wiley India.
2. Engineering Economics: Riggs, J. L. Bedworth D. B., Randhawa, S. U.; McGraw Hill.
3. Introduction to Management: Schemerhorn. John Wiley.
4. Principles of Management: Draft; Cengage Learning Pb.
5. The Practice of Management: Peter Drucker, Harper and Row.
6. Industrial Economics and Organization: Bernadette Andreosso, David Jacobson.
7. Essentials of Macroeconomics: Peter Jochumzen; BookBoon,
8. The Economics of Industries and Firms: Ken Heather.
9. Managerial Economics: Bruce Allen, Neil Doherty, Keith Weigelt; Edwin Mansfield.

