MGT 201B ENGINEERING ECONOMICS							
B. Tech. Semester – III (Common for all Branches Except BT& BME)							
L	**T**	**P**	**Credits**		**Class Work**	**:**	**25 Marks**
4	**-**	**--**	**4**		**Examination**	**:**	**75Marks**
					Total	**:**	**100 Marks**
					Duration of Examination	**:**	**3 Hours**

____COURSE OBJECTIVE: The aims of this course are to:

Acquaint the student with the basic economic concepts and their operational significance
Stimulate him to think systematically and objectively about cotemporary economic problems.

UNIT-I

D efinition of economics- variou s d efinitions, natu re of Econom ic p roblem , Micro and m acro econom ics- their featu re and scop e, p rod u ction p ossibility cu rve, Econom ic law s and their natu re. Relation betw een Science, Engineering Technology and Economics. Concept and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility – its practical application and importance**.**

UNIT-II

Meaning of Dem and , Ind ivid u al and Market d emand sched u le, Law of d em and , shap e of d em and cu rve. Elasticity of d emand , m easu rem ent of elasticity of d emand , factors effecting elasticity of d emand , p ractical im p ortance & ap p lication of the concep t of elasticity of d em and . Variou s concep ts of cost-Fixed cost, variable cost, average cost, m arginal cost, m oney cost, real cost, op p ortu nity cost. Shap e of average cost, m arginal cost, total cost etc. in short run and long run.

UNIT III

Meaning of prod u ction and factors of prod u ction; Law of variable p rop ortions, Law of Retu rn to Scale, Internet and External econom ics and d iseconomies of scale. Meaning of Market, Typ e of Marker– p erfect Com p etition, Monopoly, Oligopoly, Monopolistic competition (Main features of these markers).

UNIT-IV

Su p p ly and Law of Su p p ly, Role of Demand & Su p p ly in Price Determ ination and effect of changes in d em and and su p p ly on p rices . N atu re and characteristics of Ind ian economy, p rivatization – m eaning, m erits and d em erits. Globalisation of Ind ia econom y – m erits and d em erits. Elem entary Concep t of WTO & TRIPS agreem ent, Monitory Policy & Fiscal Policy

TEXT BOOKS:

Ahuja H.L"Micro Ecomomic Theory" S. Chand Publication, New Delhi
Dewett K.K "Modern Ecomomic Theory" S. Chand Publication, New Delhi
Jain T.R, Grover M.L, Ohri V.K Khanna O.P,"Economics for engineers" V.K .Publication ,New Delhi

SUGGESTED BOOKS:

Jhingan M.L"Micro Ecomomic Theory" S.Chand Publication ,New Delhi
Chopra P.N "Principle of Economics" Kalyani Publishers, Delhi
Mishra S.K "Modern Micro Economics" Pragati Publication Mumbai.

Dwivedi D.N ”Micro Economics ” Pearson Education, New Delhi.

Note:

In the sem ester exam ination, the exam iner w ill set tw o qu estions from each u nit (total 08 qu estions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

The u se of scientific calcu lator w ill be allow ed in the exam ination . H ow ever, p rogram m able calcu lator and cellu lar phone will not be allowed

GES 201B ENVIRONMENTAL STUDIES							
B. Tech. Semester – III/IV (Common for all Branches)							
L	**T**	**P**	**Credit**		**Examination**	**:**	**75Marks**
3	**--**	**--**	**0**		**Total**	**:**	**75 Marks**
					Duration of Examination	**:**	**3 Hours**

UNIT – I The Multidisciplinary nature of environmental studies, Definition, scope and importance.

Need for Public awareness

UNIT – II **NATURAL RESOURCES:**

Renewable and non-renewable resources:

Natural resources and associated problems.

Forest resou rces: Use and over-exp loitation: d eforestation, case stu d ies, Tim ber exp loitation, m ining, d am s and their effects and forests tribal people.

Water resou rces: Use and over-u tilization of su rface and grou nd w ater, flood s, d rou ght, conflicts over water, dams-benefits and problems.

Mineral resou rces: Use and exp loitation, environm ental effects of extracting and u sing m ineral resou rces, case studies.

Food resou rces: World food p roblem s, changes, cau sed by agricu ltu re and overgrazing, effects of m od ern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

Energy resou rces: Grow ing energy need s, renew able and non -renew able energy sou rces, u se of alternate energy sources; case studies.

Land resou rces: Land as a resou rce, land d egrad ation, man ind u ced land slid es, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

UNIT- III **ECOSYSTEMS:**

- Concep t of an ecosystem , Structure and fu nction of an ecosystem , Prod u cers, consu m ers and decomposers, Energy flow in the ecosystem , Ecological su ccession, Food chains, food w ebs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the following eco-system:
  Forest ecosystem, Grassland ecosystem, Desert ecosystem.
  Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

UNIT- IV **BIODIVERSITY AND ITS CONSERVATIONS**:

- Introduction – Definition: Genetic, species and ecosystem diversity.
- Biogeographically classification of India.
- Valu e of biod iversity: consu m p tive u se, p rod u ctive u se, 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.

UNIT – V ENVIRONMENTAL POLLUTION:

Definition, causes, effects and control, measures of:

Air p ollu tion, Water p ollu tion, Soil p ollu tion, Marine p ollu tion, N oise p ollu tion, Therm al Pollu tion, Nuclear hazards

- Solid waste management: Causes effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management: Floods, earthquake, cyclone and landslides.

UNIT – VI SOCIAL ISSUES AND THE ENVIRONMENT:

From unsustainable to sustainable development
Urban problems related to energy
Water conservation, rain water harvesting, watershed management
Resettlement and rehabilitation of people; its problems and concerns, case studies
Environmental ethics: Issues and possible solutions
Climate change, global w arm ing, acid rain, ozone layer d ep letion, nu clear accid ents and holocaust, Case studies
Wasteland reclamation, Consumerism and waste products
Environm ent Protection Act, Air (Prevention and Control of Pollu tion) Act, Water (Prevention and Control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act
Issues involved in enforcement of environmental legislation, Public awareness

UNIT – VII Human population and the Environment., Population growth, variation among nations.
Population exp losion – Fam ility Welfare Programm e, Environm ent and hu m an health, Human Rights, Value Education, HIV/ AIDS, Woman and Child Welfare. Role of Information Technology in Environment and human health.
Case Studies.

REFERENCES:

Agarwal, K.C. 2001, Environmental Biology, Nidi Pub. Ltd. Bikaner.
Bharucha, Franch, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380013, India .
Brunner R.C. 1989, Hazardous Waste Incineration, Mc. Graw Hill Inc. 480p.
Clark R.S., Marine Pllution, Slanderson Press Oxford (TB).
Cu nningham , W.P. Coop er, T.H . Gorhani, E & H ep w orth, M.T. 2001, Environm ental Encyclop ed ia, Jaico Pu b. H ou se, Mumbai. 1195p.
De A.K., Environmenal Chemistry, Wiley Eastern Ltd.
Down to Earth, Centre for Science and Environment ®.
Gleick, H .P., 1993. Water in Crisis, Pacific Institu te for Stu d ies in Dev., Environm ent & Secu rity, Stockholm Env. Institu te, Oxford Univ., Press 473p.
Hawkins R.E. Encyclopedia of Indian Natural History, Bomaby Natural History Scociety, Bombay (R).
Heywood, V.H. & Watson, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
Jadhav, H & Bhosale, V.M. 1995, Environmental Protection and Laws, Himalaya Pub. House, Helhi 284p.
Mckinney, M.L. & Schoch, RM 1996, Environmental Sciences Systems & Solutions, Web enhanced Edition 639p.
Mhaskar A.K., Mater Hazardous, Tekchno-Sciences Publications (TB).

Miller T.G. Jr. Environmental Science, Wadsoworth Publishing Co. (TB).
Odum, E.P. 1971, Fundamentals of Ecology, W.B. Saunders Co. USA, 574p.
Rao M.N. & Dutta, A.K. 1987, Waste Water Treatment. Oxford & IBH Publ. Co. Pvt. Ltd., 345p
Sharma, B.K., 2001, Environmental Chemistry, Goel Publ. House, Meerut.
Survey of the Environment, The Hindu (M).
Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Sciences (TB).
Trivedi, R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II Enviro Mdiea (R).
Trivid i R.K., H and book of Environm ental Law s, Ru les, Gu id elines, Com p liances and Stand ard s, Vol I and II Enviro Med ia (R).
Trividi R.K. and P.K. Goel, Introduction to air pollution, Techno Sciences Pub. (TB).
Wagner K.D., 1998, Environmental Management, W.B. Saunders Co. Philadelophia, USA 499p.
A text bok environmental education G.V.S. Publishers by Dr. J.P. Yadav.

(M) Magazine (R) Reference (TB) Textbook

Note: 1. Examiner will set eight questions. Students will be required to attempt five Questions.
The awards of this paper shall not be counted in the award of the Degree/DMC.

ME 201BTHERMODYNAMICS

B. Tech. Semester – III (Mechanical & Aeronautical Engineering)

L	T	P	Credits		Class Work	:	25 Marks
3	1	--	4		Examination	:	75Marks
					Total	:	100 Marks
					Duration of Examination	:	3 Hours

UNIT I

BASIC CON CEPTS: Macroscop ic and m icroscop ic ap p roaches, d efinition of system and su rrou nd ing, concep t of control volu m e, therm od ynamic state, concep ts of sim p le com p ressible su bstances, p rocess and cycle, therm od ynam ic p rocesses and thermod ynamic equ ilibriu m ; Zeroth law ; therm od ynamic p rop erties and u se of tables of thermodynamic properties; Thermodynamic concept of energy; Modes of work and heat transfer.

FIRST LAW OF THERMOD YN AMICS: The first law referred to cyclic and non -cyclic p rocesses, Concep t of internal energy of a system , Conservation of energy for sim p le com p ressible closed system s; Definitions of enthalp y and sp ecific heats; free exp ansion p rocess, Conservation of energy for an op en system , Stead y and transient processes. Problems

UNIT II

SECON D LAW OF THERMOD YN AMICS: The d irectional constraints on natu ral p rocesses; Kelvin - Planck and Clau siu s Statem ents and their Equ ivalence; Concep t of reversibility; Carnot p rinciple; Absolu te therm od ynamic tem p eratu re scale; Clau siu s Inequ ality, entrop y, change in entrop y in variou s therm od ynam ic p rocesses, T-dS relations, entrop y balance for closed and op en system s, Principle of increase-in-Entrop y, entrop y generation, Third Law of Thermodynamics. Problems

Exergy: Concept of reversible work and irreversibility; Second law efficiency; Exergy change of a system: closed and op en systems, exergy transfer by heat, w ork and m ass, exergy d estru ction, exergy balance in closed and op en systems. Problems

UNIT III

PURE SUBSTAN CE AN D PHASE: Phase Transform ation, Solid -Liquid-Vap ou r Equ ilibriu m , Throttling and Measu rem ent of Dryness Fraction of Steam , , Id ea of a generalized chart and the law of corresp ond ing states; Concept of ideal gases and their equations of state. Problems

INTRODUCTION TO PROPERTIES OF MIXTURES AND PHASES: Dalton's model, Equation of state, properties of id eal gas m ixtu res, Change in entrop y on m ixing; Law of corresp ond ing states and introd u ction to real-gas mixtures; Gibbs phase rule; Air/Water Mixtures, Psychrometrics. Problems

UNIT IV

THERMOD YN AMIC PROPERTY RELATION S: Maxw ell relations; Clausius-Clap eyron equ ation; Difference in heat capacities; Ratio of heat capacities; Joule-Thompson coefficient and inversion curve.

THERMOD YN AMICS OF REACTIVE SYSTEMS: First law analysis; Internal energy and enthalp y of reaction; Enthalp y of form ation; Second law analysis; chem ical equ ilibriu m ; equ ilibriu m constant for id eal-gas mixtu res and its variation with temperature. Problems

Text Books:

Engineering Thermodynamics – P K Nag, Tata McGraw Hill
Engineering Thermodynamics – Jones and Dugan, PHI, New Delhi.
Sonntag, Borgnakke and Van Wylen, Fundamentals of Thermodynamics, 5th Ed., JW Sons, Singapore.

Reference Books :

Dhar, P.L., Engineering Thermodynamics - a generalized approach Elsevier, New Delhi.
Moran M.J. and Shapiro H.N., Engineering Thermodynamics, IV Edition, John Wiley & Sons, Singapore.
Çengel Y.A. and Boles, M.A., Thermodynamics: An Engineering Approach, 4th Ed., TMG Hill, New Delhi

Note:

In the sem ester exam ination, the exam iner w ill set tw o qu estions from each u nit (total 08 qu estions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.

The u se of scientific calcu lator w ill be allow ed in the exam ination . H ow ever, p rogram m able calcu lator and cellu lar phone will not be allowed

ME 203B STRENGTH OF MATERIALS –I							
B. Tech. Semester – III (Mechanical & Aeronautical Engineering)							
L	**T**	**P**	**Credits**		**Class Work**	**:**	**25 Marks**
3	**1**	**--**	**4**		**Examination**	**:**	**75Marks**
					Total	**:**	**100 Marks**
					Duration of Examination	**:**	**3 Hours**

UNIT I

SIMPLE STRESSES & STRAINS: Concept & types of Stresses and strains, Poison's ratio, stresses and strain in simple and compound bars under axial loading, stress strain diagrams, Hooks law, elastic constants & their relationships, temperature stress & strain in simple & compound bars under axial loading, Numerical.

COMPOUN D STRESSES & STRAIN S: Concep t of su rface and volu m etric strains, tw o d im ensional stress system , conju gate shear stress at a p oint on a p lane, p rincip al stresses & strains and p rincip al- p lanes, Mohr's circle of stresses, Numerical.

UNIT II

SHEAR FORCE & BEN D IN G MOMEN TS: Definitions, SF & BM d iagram s for cantilevers, sim ply su p p orted beam s w ith or w ithou t over-hang and calcu lation of m aximu m BM & SF and the p oint of contra-flexu re u nd er (i) concentrated loads, (ii) uniformly distributed loads over whole span or a part of it, (iii) combination of concentrated load s and u niformly d istribu ted load s, (iv) u niform ly varying load s and (v) ap p lication of m om ents, relation between the rate of loading, the shear force and the bending moments, Problems.

FIXED BEAMS: Deflections, reactions and fixing mom ents w ith SF & BM calcu lations & d iagram s for fixed beams u nd er (i) concentrated load s, (ii) u niform ly d istribu ted load and (iii) a combination of concentrated load s & uniformly distributed load.

UNIT III

TORSION OF CIRCULAR MEMBERS: Torsion of thin circu lar tu be, Solid and hollow circu lar shafts, tap ered shaft, step p ed shaft & com p osite circu lar shafts, com bined bend ing and torsion, equ ivalent torqu e, effect of end thrust. Numericals.

COLUMNS & STRUTS: Column under axial load, concept of instability and buckling, slenderness ratio, derivation of Eu ler's form u lae for the elastic bu ckling load , Eu lers, Rankine, Gord on's form u lae Johnson's em p irical form u la for axial load ing colu m ns and their ap p lications, eccentric com p ression of a short stru t of rectangu lar & circu lar sections, Numericals.

UNIT IV

BENDING & SHEAR STRESSES IN BEAMS: Bending stresses in beams with derivation & application to beam s of circu lar, rectangu lar, I,T and channel sections, com p osite beam s, shear stresses in beam s w ith com bined bend ing, torsion & axial loading of beams. Numericals.

SLOPE & D EFLECTION : Relationship betw een bend ing m om ent, slop e & d eflection, Mohr's theorem , m om ent area m ethod , m ethod of integration, Macau lay's m ethod , calcu lations for slop e and d eflection of (i) cantilevers and sim p ly su p p orted beam s w ith or w ithou t overhang u nd er concentrated load , Uniformly d istribu ted load s or combination of concentrated and uniformly distributed loads, Numericals.

TEXT BOOKS:

Strength of Materials – G. H. Ryder - Macmillan, India
Strength of Materials– Andrew Pytel and Fredinand L. Singer, Addison – Wesley

REFERENCE BOOKS:

Strength of Materials – Popov, PHI, New Delhi.
Strength of Materials - A Rudimentary Approach – M.A. Jayaram, Sapna Book House, Bangalore

Note:

0 In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
1 The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

ME 205B ENGINEERING MECHANICS							
B. Tech. Semester – III (Mechanical, Automobile & Aeronautical Engineering)							
L	**T**	**P**	**Credits**		**Class Work**	**:**	**25 Marks**
3	**1**	**--**	**4**		**Examination**	**:**	**75Marks**
					Total	**:**	**100 Marks**

					Duration of Examination	**:**	**3 Hours**

UNIT- I

REVIEW OF BASIC FORCE SYSTEMS: Dim ensions and u nits m of m echanics, id ealization of echanics, law s of m echanics, vector algebra review , m om ent of a the cou p force abou t a p oint and axis, m le and cou p le m om ent, ad d ition and su btraction of cou p les, line, om ent of a cou p le abou t a translation of a force to a parallel position, resultant of a force system, Problems.

EQUILIBRIUM: Introd u ction, free bod y d iagram , control volu m es, general equ ations of equ ilibriu m , tw o p oint equ ivalent load ing, static in-determinancy, sim p le tru ss, m ethod of joints, method of sections, Problems.

UNIT-II

PROPERTIES OF SURFACES, MOMEN TS AN D PROD UCTS OF IN ERTIA : First m om ent of an area and the centroid , p rincipal axes, form al d efinition of inertia qu antities, relation betw een mass-inertia term sand area-inertia term s, translation of coord inate axes, transp ortation p rop erties of the inertia term s, a brief introd u ction to tensors, the inertia of ellip soid and p rincipal moments of inertia, Problems.

UNIT-III

KINEMATICS OF PARTICLES AND RIGID BODIES: Velocity and acceleration in path and cylind rical coord inates, m otion of a particle relative to a pair of translating axes, translation and rotation of rigid bod ies, Chasles theorem , m oving references, velocity and acceleration for different references, inertia and coriolis forces. Problems.

UNIT-IV

PARTICLE D YN AMICS, EN ERGY & MOMEN TUM METHOD S: N ew ton's law for rectangu lar coord inates & cylind rical coord inates, rectifier translation, central force m otion, N ew ton's law for path variables, work energy equations, work energy equations for a systems of particles, linear and angular momentum equations for a systems of particles. Problems

TEXT BOOK:

Engineering Mechanics - Statics & Dynamics by I.H. Shames, PHI, New Delhi.
Engineering Mechanics – Timoschenko.

REFERENCE BOOKS:

Statics & Dynamics by J.L. Meriam, JohnWiley & Sons (P) Ltd. New York.
Statics & Dynamics by Beer & Johnson, MGH, New Delhi.

Note:

In the semester examination, the examiner will set two questions from each part (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each part.

The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.

ME – 207B FLUID MECHANICS

B. Tech. Semester – III (Mechanical & Aeronautical Engineering)							
L	**T**	**P**	**Credits**		**Class Work**	**:**	**25 Marks**
3	**1**	**--**	**4**		**Examination**	**:**	**75Marks**
					Total	**:**	**100 Marks**
					Duration of Examination	**:**	**3 Hours**

UNIT- I

FLUID PROPERTIES AN D FLUID STATICS: Concep t of flu id and flow , id eal and real flu id s, p rop erties of flu id s, N ew tonian and non -N ew tonian flu id s. Pascal's law , hyd rostatic equ ation, hyd rostatic forces on submerged plane and curved surfaces, stability of floating and submerged bodies, metacentric height, relative equilibrium.

MANOMETERS: Simple & differential manometers;

VORTEX MOTION: Free vortex flow, Forced vortex flow

UNIT II

FLUID KIN EMATICS: Eu lerian and Lagrangian d escrip tion of flu id flow ; stream , streak and p ath lines; typ es of flow s, flow rate and continu ity equ ation, d ifferential equ ation of continu ity in cylind rical and p olar coord inates, rotation, vorticity and circulation, stream and potential functions, flow net.

FLUID D YN AMICS: Concep t of system and control volu m e, Eu ler's equ ation, Bernou lli's equ ation, ventu rim eter, orifices, orificem eter, m ou thp ieces, N otches and w eirs, kinetic and m om entu m correction factors, Im p u lse momentum relationship and its applications.

UNIT III

VISCOUS FLOW: Flow regim es and Reynold 's number, Navier-Stokes equ ation of m otion, Relationship betw een shear stress and p ressu re grad ient, u ni-d irectional flow betw een stationary p arallel p lates, p arallel p lates having relative motion, movement of piston in a dashpot, power absorbed in bearings.

FLOW THROUGH PIPES: Major and m inor losses in p ip es, H agen-Poiseuille law , hyd rau lic grad ient and total energy lines, series and parallel connection of p ip es, branched p ipes; equ ivalent p ip e, p ow er transm ission throu gh pipes.

UNIT IV

BOUN D ARY LAYER FLOW: Bou nd ary layer concep t, d isp lacem ent, m om entu m and energy thickness, von - Karm an m om entu m integral equ ation, lam inar and tu rbu lent bou nd ary layer flow s: Bou nd ary layer thickness, skin friction coefficient, drag on a flat plate, boundary layer separation

FLOW AROUN D IMMERSED BOD IES: Drag force, Lift & d rag coefficient, stream lined and blu ff bod ies, lift and drag on a cylinder and an airfoil.

TEXT BOOKS:

Fluid Mechanics and Machinery– CSP Ojha, R Berndthsson and P N Chandramouli, Oxford University Press
Mechanics of Fluids – I H Shames, Mc Graw Hill

REFERENCES BOOKS:

Introduction to Fluid Mechanics and Fluid Machines – S.K. Som and G. Biswas, TMH

Fluid Mechanics and Fluid Power Engineering – D.S. Kumar, S.K. Kataria and Sons
Fluid Mechanics– John F Douglas, Janusz M. Gasiorek, John A, Swaffield, Peason Education

Note:

0 In the sem ester examination, the exam iner w ill set tw o qu estions from each u nit (total 08 qu estions in all), covering the entire syllabu s. The stu d ents w ill be requ ired to attem p t only 5 qu estions selecting at least one question from each unit.

1 The u se of scientific calcu lator w ill be allow ed in the exam ination . H ow ever, p rogram mable calcu lator and cellular phone will not be allowed.

ME 209B MACHINE DRAWING							
B. Tech. Semester – III (Mechanical Engineering)							
L	**T**	**P**	**Credits**		**Class Work**	**:**	**40 Marks**
1	**-**	**4**	**3**		**Examination**	**:**	**60Marks**
					Total	**:**	**100 Marks**
					Duration of Examination	**:**	**3 Hours**

UNIT I

Introduction to BIS Specification SP : 46 – 1988 Code of Engineering drawing – Machining symbols and surface Texture, Theory of conventional Tolerancing, Geometric Dimensioning and Tolerancing.

Toothed Gear: Gear terminology, I.S. convention representation of assembly of spur gears, helical gears, bevel gears, worm and worm wheel.

Orthograp hic view s from isom etric view s of machine p arts / com p onents. Dim ensioning, Sectioning. Exercises on Keys, Cotter and Joints; Shaft Cou p lings; Pip e Joint and Fittings; Pu lleys; Bearings, H angers and Brackets; Valve and Cocks; Automotive Parts.

UNIT II

Assembly d raw ing w ith sectioning and bill of m aterials from given d etailed d raw ings of assem blies of m iscellaneou s Machine Parts; Lathe Tail Stock; Fou r Jaw Chu ck; Tool Post; Tool H old er; Screw Jack; Machine Vice; Pipe Vice; Pedestal Bearing , Steam Stop Valve , Drilling Jigs; Milling Fixture and Hand Drill.

NOTE: For class work, the students shall be assigned to prepare at least ten drawing sheets covering all units and each topic of the syllabus.

For theory exam ination, the exam iner w ill set a qu estion p ap er containing total fou r qu estions, tw o qu estions from each u nit covering each top ic of the syllabu s; stu d ents are requ ired to attem p t tw o qu estions at least one from each u nit. The qu estion from u nit I w ill carry 20 m arks each . Qu estion from unit II will carry 40 marks.

Text Books:

A Text Book of Machine Drawing : P S Gill , S K Kataria & Sons
Machine Drawing - N D Bhatt , Charotar Publishing House.

Reference Books:

Machine drawing : N Sidheshwar, Kannaieh, V S Sastry, TMH., New Delhi.
Machine drawing : R K Dhawan, S Chand.

ME 211B STRENGTH OF MATERIALS –I LAB							
B. Tech. Semester – III (Mechanical & Aeronautical Engineering)							
L	**T**	**P**	**Credit**		**Class Work**	**:**	**20 Marks**
--	**--**	**2**	**1**		**Examination**	**:**	**30Marks**
					Total	**:**	**50 Marks**
					Duration of Examination	**:**	**3 Hours**

LIST OF EXPERIMENTS:

To study the Brinell hardness testing machine & perform the Brinell hardness test.

To study the Rockwell hardness testing machine & perform the Rockwell hardness test.

To study the Vickers hardness testing machine & perform the Vickers hardness test.

To study the Erichsen sheet metal testing machine & perform the Erichsen sheet metal test.

To study the Impact testing machine and perform the Impact tests (Izod & Charpy).

To study the Universal testing machine and perform the tensile test.

To perform compression & bending tests on UTM.

To perform the shear test on UTM.

To study the torsion testing machine and perform the torsion test.

To d raw shear Force, Bend ing Moment Diagrams for a sim p ly Su p p orted Beam u nd er Point and Distribu ted Loads.

Note:

At least ten experiments are to be performed in the semester.

At least eight experiments should be performed from the above list. Remaining tw o experiments may either be performed from the above list or designed & set by the department as per the scope of the syllabus.

ME 213B COMPUTER AIDED DRAFTING LAB							
B. Tech. Semester – III (Mechanical Engineering)							
L	**T**	**P**	**Credit**		**Class Work**	**:**	**40 Marks**
--	**--**	**2**	**1**		**Examination**	**:**	**60 Marks**
					Total	**:**	**100 Marks**
					Duration of Examination	**:**	**3 Hours**

The stu d ents w ill be requ ired to carry ou t the follow ing exercises u sing any one of the ed u cational CAD softw ares like Latest version of AutoCAD, I-DEAS, CATIA, SOLID EDGE, Pro-Engineer etc).

List of Experiments/Exercises

UNIT I

Start a N ew Draw ing, N am e the Draw ing Sheet, Set the Draw ing Units, Draw ing Precision, Draw ing Lim its, Grid, Snap and Draw the Margin and Title Block as given in Exercise Problems Sheet.

Red raw the 2D Figu res inclu d ing d im ensions as given in Exercise Problem s Sheet u sing variou s Fundamental of 2D commands in Draw and Modify Toolbars

Red raw the 2D Figu res inclu d ing d im ensions as given in Exercise Problems Sheet u sing variou s Ad vance commands in Osnap, Grip, Block, Layers, Attributes, Edit Toolbars

UNIT II

Draw Front, Top , and Right Sid e Orthogonal view of each of the objects in given Exercise Problems Sheet using View Port commands

Draw 3D Su rface Mod els of the Objects as given in Exercise Problem s Sheet, u sing fu nd am ental of 3D Drawing and Surface commands

Draw 3D Solid Mod els of the Objects as given in Exercise Problems Sheet, u sing fu nd am ental of 3D Draw ing and Solid commands

UNIT III

Draw 3D Models of different types of Bolts and Nuts with Washers as given in Exercise Problems Sheet.

Draw 3D Models of different types of Keys, Cotters and Joints as given in Exercise Problems Sheet.

Draw 3D Models of Simple Machine and Automobile Components as given in Exercise Problems Sheet.

Books:

Engineering Graphics with auto CAD, Latest edition, James D Bethune PHI

Machine Drawing- P S Gill, Katson

Machine Drawing includes Auto CAD –Ajeet Singh, Tata Mc Graw Hill

Note: For class w ork, the stu d ents shou ld be assigned to prep are at least ten d raw ing sheets covering all u nits and each topic/ experiment/exercise of the syllabus.

For p ractical exam ination, the exam iner shou ld set a qu estion p aper containing total three qu estions, one qu estions from each u nit covering all u nits and each top ic/ exp erim ent/ exercise of the syllabu s; stu d ents are required to attempt all the three questions.

ME 215B FLUID MECHANICS LAB

B. Tech. Semester – III (Mechanical & Aeronautical Engineering)

L	T	P	Credit		Class Work	:	20 Marks
--	--	2	1		Examination	:	30Marks
					Total	:	50 Marks
					Duration of Examination	:	3 Hours

LIST OF EXPERIMENTS:

1. To determine coefficient of discharge of an orifice meter.

To determine the coefficient of discharge of Notch (V / Rectangular types).

To determine the friction factor for the pipes.

To determine the coefficient of discharge of venturimeter.

To determine the coefficient of discharge, contraction & velocity of an orifice.

To verify the Bernoullis Theorem.

To find critical Reynolds number for a pipe flow.

To determine the meta-centric height of a floating body.

To determine the minor losses due to sudden enlargement, sudden contraction.

To determine loss coefficient for valves and bends.

To show the velocity and pressure variation with radius in a forced vertex flow.

To determine the coefficient of discharge of mouthpiece.

Flow visualization demonstration.

Note:

At least ten experiments are to be performed in the semester.

At least eight experiments should be performed from the above list. Remaining tw o experiments may either be performed from the above list or designed & set by the department as per the scope of the syllabus (ME207B).

GES 203B ENVIRONMENTAL STUDIES FIELD WORK
B. Tech. Semester –III/IV (Common for all Branches)

L	T	P	Credit		Field Work	:	25Marks
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FIELD WORK:

- Visit to a local area to document environmental assets – river/ forest/ grassland/ hill/ mountain.
- Visit to a local polluted site-Urban/ Rural/ Industrial/ Agricultural.
- Study of common plants, insects, birds.
- Study of simple ecosystems – pond, river, hill slopes, etc. (Field work equal to 5 lectures hours).

Note: The awards of this paper shall not be counted in the award of the Degree/DMC.

ME 217 B WORKSHOP

B. Tech. Semester – III (Common for all branches Except Automobile & Bio Technology Engineering)

L	T	P	Credits		Class Work	:	50 Marks
-	-	2	2		Total	:	50 Marks

Each student has to undergo a w orkshop atleast 4 w eeks (80-100 hours) at the end of II semester during summer vacations. Out of the fou r w eeks, tw o w eeks w ou ld be d ed icated to general skills and tw o w eeks training for specialized discipline/ department**. The evaluation of this training shall be carried out in the III semester**

LIST OF JOBS TO BE CARRIED OUT DURING THIS PERIOD

To stu d y and p rep are d ifferent typ es of jobs on machine tools (lathe, shap er, planer, slotter, m illing, d rilling machines).

To p rep are lay ou t on a m etal sheet by m aking and p rep are rectangu lar tray, p ip e shap ed com p onents e.g. funnel.

To prepare joints for welding suitable for butt welding and lap welding.

To study various types of carpentry tools and prepare simple types of wooden joints.

To prepare simple engineering components/ shapes by forging.

To prepare mold and core assembly, to put metal in the mold and fettle the casting.

To study of CNC lathe, CNC Milling and EDM Machines.

Any w ork assigned in electrical w orkshop , com p u ter hard w are/ langu age lab, electronics w orkshop , biom ed ical hardware, automobile workshop etc.

This student will prepare job(s)/project as an individual or in a group using workshop in house infrastructure.

The student shall submit a typed report.

Training will be evaluated on the spot out of 20 marks.

The report will be evaluated in the III Semester by a Committee consisting of two teachers.

The stu d ent w ill interact w ith the com m ittee throu gh p resentation to d em onstrate his/ her learning. The basis of evalu ation w ill p rimarily be the know led ge and exp osu re of stu d ents on d ifferent kind s of Machines/instruments/tools/ skills etc. The committee will evaluate out of 30 marks.

The committee shall submit the awards out of 50 marks.