

SVM Institute of Technology, Bharuch

Department of Mechanical Engineering

Syllabus: Mid Semester examination (evensem 2018-19)

BE – II (3rd Sem) Mechanical

Name of Faculty: Nirmal Kumar

Subject Code:2131905 **Subject Name:**Engineering Thermodynamics

| Sr. No. | Unit | Topics |
|---------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Unit 1 | Basic Concepts: Microscopic & macroscopic point of view, thermodynamic system and control volume, thermodynamic properties, processes and cycles, Thermodynamic equilibrium, Quasi-static process |
| 2 | Unit 2 | First law of Thermodynamics: First law for a closed system undergoing a cycle and change of state, energy, PMM1, first law of thermodynamics for steady flow process, steady flow energy equation applied to nozzle, diffuser, boiler, turbine, compressor, pump, heat exchanger and throttling process, filling and emptying process |
| 3 | Unit 3 | Second law of thermodynamics: Limitations of first law of thermodynamics, Kelvin-Planck and Clausius statements and their equivalence, PMM2, causes of irreversibility, Carnot theorem, corollary of Carnot theorem, thermodynamic temperature scale |
| 4 | Unit 6 | Vapor Power cycles: Carnot vapor cycle, Rankine cycle, comparison of Carnot and Rankine cycle, calculation of cycle efficiencies, variables affecting efficiency of Rankine cycle, reheat cycle, regenerative cycle, reheat-regenerative cycle, feedwater heaters, |
| 5 | Unit 7 | Gas Power cycles: Recapitulation of Carnot, Otto and Diesel cycle, Dual cycle, Comparison of Otto, Diesel and Dual cycles, air standard efficiency, mean effective pressure, brake thermal efficiency, relative efficiency, Brayton cycle, effect of reheat, regeneration, intercooling and turbine and compressor efficiency on Brayton cycle |
| 6 | Unit 8 | Properties of gases and gas mixtures: Avogadro's law, equation of state, ideal gas equation, Vander Waal's equation, reduced properties, law of corresponding states, compressibility chart, Gibbs-Dalton law, internal energy; enthalpy and specific heat of a gas mixtures |

Text Book:

Engineering Thermodynamics by P.K. Nag, McGraw-Hill Education

Engineering Thermodynamics, books India publication

SVM Institute of Technology, Bharuch
Department of Mechanical Engineering

Syllabus: BACKLOG Mid Semester Examination (Even semester 2018-19)

BE – II (3rd Semester) MED

Name of Faculty: Mr.Amit shah

Subject Code: 2131906

Subject Name: KOM

| SN | Unit | Topics |
|----|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | CH-1 | <p>Introduction of Mechanisms and Machines: Concepts of Kinematics and Dynamics, Mechanisms and Machines, Planar and Spatial Mechanisms, Kinematic Pairs, Kinematic Chains, Kinematic Diagrams, Kinematic Inversion, Four bar chain and Slider Crank Mechanisms and their Inversions, Degrees of Freedom, Mobility and range of movement - Kutzbach and Grubler's criterion, Number Synthesis, Grashof's criterion</p> |
| 2 | CH-3 | <p>Gears and Gear Trains: Gears: Terminology, Law of Gearing, Characteristics of involute and cycloidal action, Interference and undercutting, center distance variation, minimum number of teeth, contact ratio, spur, helical, spiral bevel and worm gears, problems. Gear Trains: Synthesis of Simple, compound & reverted gear trains, Analysis of epicyclic gear trains.</p> |
| 3 | CH-4 | <p>Cams and Followers: Introduction: Classification of cams and followers, nomenclature, displacement diagrams of follower motion, kinematic coefficients of follower motion. Synthesis and Analysis: Determine of basic dimensions and synthesis of cam profiles using graphical methods, cams with specified contours.</p> |

SHRI S'AD VIDYA MANDAL INSTITUTE OF TECHNOLOGY
COLLAGE CAMPUS, OLD N.H.-8, BHARUCH.
BACKLOG EXAMINATION - MARCH- 2019
B.E. SECOND YEAR (THIRD SEMESTER)
BRANCH: ALL

SUBJECT: ADVANCED ENGINEERING MATHEMATICS
(2130002), (130002)

SYLLABUS FOR BACKLOG EXAMINATION

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| 1 | CHAPTER | Fourier Series and Fourier integral: Periodic function, Trigonometric series, Fourier series, Functions of any period, Even and odd functions, Half-range Expansion, Forced oscillations, Fourier integral |
| 2 | CHAPTER | Laplace Transforms and Applications: Definition of the Laplace transform, Inverse Laplace transform, Linearity, Shifting theorem, Transforms of derivatives and integrals Differential equations, Unit step function Second shifting theorem, Dirac's delta function, Differentiation and integration of transforms, Convolution and integral equations, Partial fraction differential equations, Systems of differential equations |

Reference Books:

1. Advanced engineering mathematics by Michael D. Greenberg
2. Elementary Differential Equation and Boundary value problems by William E. Boyce, Richard C. Diprima
3. Mathematical modeling by Frank R. Giordano, Maurice D. Weir, William P. Fox
4. Advanced engineering mathematics by Erwin Kreyszig

Dr. Rajesh A. Jadav
HOD,
Engineering Mathematics Department

SVM Institute of Technology, Bharuch
Department of Mechanical Engineering & Chemical Engineering

Syllabus: Backlog examination (EVEN sem 2018-19)

BE – II (3rdSem) Mechanical & Chemical

Name of Faculty: Mayur Kevadiya

Subject Code: 2130003

Subject Name: Mechanics of solids

| Sr. No. | Unit | Topics |
|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Unit 1 | Definition of space, time, particle, rigid body, deformable body. Force, types of forces, Characteristics of a force, System of forces, Composition and resolution of forces. Fundamental Principles of mechanics: Principle of transmissibility, Principle of superposition, Law of gravitation, Law of parallelogram of forces. |
| 2 | Unit 2 | Fundamentals of Statics Coplanar concurrent and non-concurrent force system: Resultant, Equilibrant, Free body diagrams. Coplanar concurrent forces: Resultant of coplanar concurrent force system by analytical and graphical method, Law of triangle of forces, Law of polygon of forces, Equilibrium conditions for coplanar concurrent forces, Lami's theorem. Application of statically determinate pin – jointed structures. Coplanar non-concurrent forces: Moments & couples, Characteristics of moment and couple, Equivalent couples, Force couple system, Varignon's theorem, Resultant of non-concurrent forces by analytical method, Equilibrium conditions of coplanar non-concurrent force system, Application of these principles. |
| 3 | Unit 3 | Applications of fundamentals of statics Statically determinate beams: Types of loads, Types of supports, Types of beams; Determination of support reactions, Relationship between loading, shear force & bending moment, Bending moment and shear force diagrams for beams subjected to only three types of loads :i) concentrated loads ii) uniformly distributed loads iii) couples and their combinations; Point of contraflexure, point & magnitude of maximum bending moment, maximum shear force. |
| 4 | Unit 6 | Simple stresses & strains Basics of stress and strain: 3-D state of stress (Concept only) Normal/axial stresses: Tensile & compressive Stresses: Shear and complementary shear. Strains: Linear, shear, lateral, thermal and volumetric. Hooke's law, Elastic Constants: Modulus of elasticity, Poisson's ratio, Modulus of rigidity and bulk modulus and relations between them with derivation. Application of normal stress & strains: Homogeneous and composite bars having uniform & stepped sections subjected to axial loads and thermal loads, analysis of homogeneous prismatic bars under multidirectional stresses. |

Text Book:

- 1) Engineering Mechanics by M. N. Patel, C. S. Sanghvi, J.S. Thakur ,Mahajan publication
- 2) Mechanics of Solids by H. J. Sawant, Technical Publication
- 3) Mechanics of solids by R. P. Rethaliya , AtulPrakashan
- 4) Mechanics of solids by Sanjuunadkat, Indrajeetjain , Tech Max Publication

- 5) SVM Institute of Technology, Bharuch
 6) Department of Mechanical Engineering
 7) Syllabus: Backlog Mid Semester Examination (Even semester 2018-19)
 8) BE – II (3rd Semester)
 9)

10) **Name of Faculty:**H.G.Shah

11) **Subject Code:** 2131903

Subject Name: Manufacturing Process I

12)

| Sr. No. | Unit | Topics |
|---------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Unit 1 | Machine tools classification, working and auxiliary motions in machine tools, Primary cutting motions in machines tools, Cutting tool geometry and tool signature, cutting forces and power requirement in machining |
| 2 | Unit 2 | Engine Lathes, construction all arrangement and principal units of engine lathes, type and size range of engine lathes, Operations carried on engine lathe , attachment extending the processing capacities of engine lathes, Types of lathe machines, Capstan and Turret lathes, Taper turning on lathe, Thread cutting on lathe using gear train and chasing dial, Alignment tests of lathes. |
| 3 | Unit 3 | Purpose and field of application of drilling machines, Types of drilling machines, Drilling and allied operation: drilling, boring, reaming, tapping, counter sinking, counter boring, spot facing; deep hole drilling, alignment tests of drilling machine. |
| 4 | Unit 4 | Classification of milling machine, Attachments extending the processing capacities of milling machine, machine and tooling requirements |

SVM Institute of Technology, Bharuch
 Department of Mechanical Engineering
 Syllabus: Backlog Semester examination (Evensem2019)
 BE – II (3rd Sem)

Name of Faculty: - Tejas B Mehta

Subject Code:2131904 **Subject Name:** Material Science & Metallurgy

| Sr.No | Unit No. | Topics |
|-------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Unit 1 | Introduction to Material Science Metallurgy: Classification of Engineering Materials, Engineering requirements of materials, , Criterion for selection of materials for engineering applications through Structure-Properties-Performance co relationship; Introduction to levels of internal structure like macro, micro, crystal and atomic and their correlated properties; Methods/Tools to reveal the different levels of structure. |
| 2. | Unit 2 | Crystal geometry and Crystal Imperfections: Unit Cell, Crystal structure, Bravise lattice, atomic packing, coordination number, crystal structures of metallic elements, crystal directions and planes, Miller indices, Polymorphism or Allotropy. Crystal structure and correlated properties. diffusion processes; Crystallization: Mechanism of crystallization – nucleation and growth, factors influencing nucleation and growth |
| 3. | Unit 7 | Allotropy of Iron, Iron-Iron-Carbide equilibrium system-phases and their properties of the Iron-Iron Carbide equilibrium diagram, different reactions of the Iron-Iron Carbide equilibrium system |
| 4. | Unit 13 | Powder Metallurgy: Application and advantages, Production of powder, Compacting, Sintering, Equipment and process capability. |
| 5. | Unit 14 | Non Destructive testing of materials such as Radiography Testing, Dye Penetration Testing, Magnetic Particle Testing |

Reference Books: -

1. Callister's Material Science and Engineering, 2/e R. Balasubramaniam, Wiley India.
2. Physical Metallurgy, Sydney H. Avner, Tata McGraw-Hill.
3. Principles of Materials Science and Engineering, W F Smith, McGraw Hill.
4. Material Science & Metallurgy by O.P.Khanna, DhanpatRai publications
5. Material Science & Metallurgy by K.D.Bhatt .Books India Publication.