

SVM Institute of Technology, Bharuch
Department of Mechanical Engineering
Syllabus: Midsem examination (Evensem 2018-19)

BE – VI(6thSem) Mechanical

Name of Faculty: K C PANCHAL , VIJAY PAREKH

Subject Code: 2161903

Subject Name: COMPUTER AIDED DESIGN

Sr. No.	Unit	Topics
1	Unit 1	<p>Introduction: A typical product cycle, CAD tools for the design process of product cycle, CAD / CAM system evaluation criteria, Input / Output devices; Graphics Displays: Refresh display, DVST, Raster display, pixel value and lookup table, estimation of graphical memory, LCD, LED fundamentals. Concept of Coordinate Systems: Working Coordinate System, Model Coordinate System, Screen Coordinate System. Line and Curve generation algorithm: DDA, Bresenham's algorithms. Graphics exchange standards and Database management systems.</p>
2	Unit 2	<p>Curves and Surfaces: Parametric representation of lines: Locating a point on a line, parallel lines, perpendicular lines, distance of a point, Intersection of lines. Parametric representation of circle, Ellipse, parabola and hyperbola. Synthetic curves: Concept of continuity, Cubic spline: equation, properties and blending.</p>
3	Unit 4	<p>Geometric Transformations: Homogeneous representation; Translation, Scaling, Reflection, Rotation, Shearing in 2D and 3D; Orthographic and perspective projections. Window to View-port transformation</p>
4	Unit 5	<p>Finite Element Analysis: 1-D Analysis: Concept of Shape function and natural coordinates, strain-displacement matrix, derivation of stiffness matrix for structural problems, properties of stiffness matrix. 1-D structural problems with the elimination and penalty approaches</p>

REFERENCE BOOKS:

1. Ibrahim Zied, CAD/CAM: Theory and Practice, McGraw-Hill
2. Hearn EJ and Baker M P, Computer Graphics, Pearson.
3. Chandrupatla TA and Belegundu A D, Introduction to Finite Elements in Engineering, PHI.

SUBJECT CO-ORDINATOR
(K . C. PANCHAL)

SUBJECT TEACHER
(VIJAY PAREKH)

SHRI SAD VIDYA MANDAL INSTITUTE OF TECHNOLOGY, BHARUCH

B. E. MECHANICAL 6TH SEMESTER

SYLLABUS OF MID-SEM EXAM MAR-2019

SUBJECT: DYNAMICS OF MACHINERY (2161901)

Sr. No.	Topics
1.	Introduction to Mechanical Vibrations: Elements of simple harmonic motion, concept of natural frequency, types of vibrations, Basic elements and lumping parameters of a vibratory system, lumping of physical systems, Concept of Degrees of Freedom (DOF)
2.	Balancing of Rotating Masses: Concept of static and dynamic balancing, Analysis of effect of unbalanced masses in single and multiple planes in rotating elements, Bearing reactions. Approaches and equipment for measurement of unbalanced masses.
3.	Single Degrees of Freedom System (Linear and Torsional): Undamped free vibrations, equivalent stiffness, equivalent systems, determination of natural frequency; Coulomb and Viscous damping, Types of dampers, Damping coefficient, damping effects: under, over and critically damped system, Damping factor, damped natural frequency and logarithmic decay.

SUBJECT CO-
ORDINATOR

(C. S. Jadav)

Reference Books:

1. S.S.Ratan, Theory of

Machines

2. R L Norton, Kinematics and Dynamics of Machinery, McGraw-Hill.

3. FarazdakHaideri, Dynamics of Machinery.

4. G. K. Grover , Mechanical Vibration.

5. V. P. Singh, Mechanical Vibrations

6. S SRao, Mechanical Vibrations, Pearson.

7. R.S.Khurmi, Theory of Machines

SVM Institute of Technology, Bharuch Department of Mechanical Engineering
 Syllabus: Mid Semester Examination (Even semester 2018-19) BE – III (6th
 Semester) MED

Name of Faculty: Dr. D.C.Gosai& Mr. Amit shah

Subject Code: 2161902

Subject Name: Internal Combustion Engine

SN	Unit	Topics
1	CH-1	Introduction: Basic components and terminology of IC engines, working of four stroke/two stroke - petrol/diesel engine, classification and application of IC engines, engine performance and emission parameters
2	CH-2	Fuel Air Cycles and Actual Cycles: Assumptions for fuel–air cycles, Reasons for variation of specific heats of gases, change of internal energy and enthalpy during a process with variable specific heats, isentropic expansion with variable specific heats, effect of variable specific heats on Otto, Diesel and Dual cycle, dissociation, comparison of air standard and fuel air cycles, effect of operating variables, comparison of air standard and actual cycles, effect of time loss, heat loss and exhaust loss in Petrol and Diesel engines, valve and port timing diagrams
3	CH-3	Combustion: Combustion equations, stoichiometric air fuel ratio, enthalpy of formation, adiabatic flame temperature, determination of calorific values of fuels – calorimeter*- Bomb and Junkers gas calorimeter
4	CH-4	Fuels and its supply system for SI and CI engine: Important qualities of IC engine fuels, rating of fuels, Carburation, mixture requirement for different loads and speeds, simple carburetor and its working, types of carburetors, MPFI, types of injection systems in CI engine, fuel pumps and injectors, types of nozzles, spray formation
5	CH-5	Ignition and Governing System: Battery and magneto ignition system, spark plug, firing order, quality, quantity & hit and miss governing
6	CH-6	Supercharging: Need for supercharging, Effect of supercharging, types of supercharger, methods of supercharging, thermodynamic analysis of supercharged engine cycle, limitations of supercharging, turbocharging
7	CH-7	Combustion in SI and CI Engines: Stages of combustion in SI engines, abnormal combustion and knocking in SI engines, factors affecting knocking, effects of knocking, control of knocking, combustion chambers for SI engines, Stages of combustion in CI engines, detonation in C.I. engines, factors affecting detonation, controlling detonation, combustion chamber for SI and CI engine

SVM Institute of Technology, Bharuch
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 Syllabus: Mid semester examination (Even sem 2019)
 BE – III (6thSem) Mechanical

Name of Faculty:Krunal T. Tandel, Hitesh G. Shah

Subject Code:2161907

Subject Name:INDUSTRIAL ENGINEERING

Sr No.	UNIT	TOPIC
1	Unit 1	Location Selection and Plant Layout: Nature of Location Decision, Importance of Plant Location, Dynamic Nature of Plant Location, Choice of site for selection, Comparison of location, Principles of Plant layout and Types, factors affecting layout, methods, factors governing flow pattern, travel chart, analytical tools of plant layout, layout of manufacturing shop floor, repair shop, services sectors and process plant.
2	Unit 2	Production Planning and Control: Types of Production systems and their Characteristics, functions and objectives of Production Planning and Control, Sales forecasting: Techniques and Applications, Scheduling
3	Unit 3	Productivity and Work Study: Definition of productivity, application and advantages of productivity improvement tools, reasons for increase and decreases in productivity. Areas of application of work study in industry. Method Study: Objectives and procedure for methods analysis, Recording techniques, Operations Process Chart, Flow Process Chart, Man-Machine , Multiple Activity Chart, Travel Chart, and Two Handed process chart, String Diagram, Micro motion and macro-motion study: Principles of motion economy, Normal work areas and work place design. Work Measurement: Objectives, Work measurement techniques – time study, work sampling, pre-determined motion time standards (PMTS) Determination of time standards. Observed time, basic time, normal time, allowances, and standard time.
4	Unit 6	Statistical Quality Control: SQC Concept, variable and attributes, normal distribution curves and its property charts for variable and attributes and their applications and interpretation (analysis) process capability. Acceptance sampling, sampling plans, OC curves and AOQ curves

Text Book:

1. Production and Operations Management – By R. Panneerselvam, PHI Private Ltd.,
2. Industrial Engineering and Production Management MartandTelsang S Chand & company.
3. Industrial Engineering and Production Management by Banga and Sharma, Khanna Publishers.
4. Industrial Engineering and Management by Dr. B. Kumar Khanna Publishers
5. Work study by International Labour Organisation, ILO

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Name of Faculty: - Tejas B Mehta

Subject Code:2161909 **Subject Name:** Production Technology

Sr.No	Unit No.	Topics
1.	Unit 1	Metal Cutting: Principles of metal cutting, classification of Metal cutting/machining processes: Orthogonal and oblique cutting, Effect of tool geometry and other cutting parameters, Mechanisms of formation of chips, types of chips formed, chip Breakers, concept of specific cutting pressure, The forces acting on the cutting tool and their measurement, Merchant's circle diagram, force dynamometer, force and velocity relationship, Tool wear, Factors causing wear, tool life, variables affecting tool life, economical cutting speed, machinability of metals.
2.	Unit 5	Press Tool: Classification of presses, Classification of dies, cutting actions in dies, clearance, cutting forces, Methods of reducing cutting forces, Minimum Diameter of Piercing Center of Pressure, Blanking, Piercing, Drawing, Bending and Progressive Die design, scrap reduction, strip layout.
3.	Unit 6	Non-conventional Machining: EDM, IBM, ECM, ECG, CM, AJM, Wire cut EDM, USM, LBM process principle, process parameters and their applications. Process capabilities and their applications.

Reference Books: -

1. Production Technology by R.K. Jain, Khanna Publication
2. Production Engineering by P.C Sharma, s. Chand
3. Workshop Technology Vol. II by Raghuvanshi, Dhanpatrai Pub

SVM Institute of Technology, Bharuch
 Department of Mechanical Engineering
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 BE – III (6th Semester)

Name of Faculty:H M PATEL, H A PIPWALA

Subject Code:2161908**Subject Name:**REFRIGERATION AND AIRCONDITIONING

Sr. No.	Unit	Topics
1	Unit 1	Introduction: Brief history and need of refrigeration and air conditioning, methods of producing cooling, ton of refrigeration, coefficient of performance, types and application of refrigeration and air condensing systems.
2	Unit 2	Refrigerants: Classification, nomenclature, desirable properties, secondary refrigerants, future industrial refrigerants
3	Unit 3	Vapour Compression system: Simple system on P-h and T-s diagrams, analysis of the simple cycle, factors affecting the performance of the cycle, actual cycle Compound Compression System: Compound compression with intercooler, flash gas removal and flash intercooler, multiple evaporators with back pressure valves and with multiple expansion valves without flash inter cooling, analysis of two evaporators with flash intercooler and individual expansion valve and multiple expansion valve, cascade refrigeration system
4	Unit 4	Psychrometry: Dalton's law of partial pressure, Properties of moist air, temperature and humidity measuring instruments, psychrometric chart, psychrometric processes such as sensible heating and cooling, heating and humidification cooling and dehumidification, chemical dehumidification, adiabatic saturation

Reference Book(s):

1. Refrigeration and Air Conditioning by C P Arora, McGraw-Hill India Publishing Ltd.
2. Refrigeration and Air-conditioning by Ramesh Arora, Prentice Hall of India
3. Refrigeration and Air Conditioning by Manohar Prasad, New Age International Pub