J S UNIVERSITY

ASSIGNMENT FOR B.TECH IN MECHANICAL 5nd SEM.

The Assignment will consist of two parts, A and B. Part A will have 5 short answer questions(40-60words) of 4 marks each. Part B will have 4 long answer questions of 5 marks each.

All questions are compulsory.

These Assignments should be completed and submitted in written form by the studentto his/her respective Faculty/ Examiners. Assignment Submission Dates are:Dec-2023

List Of Suggested Questions

The list of suggested questions is for students to practice. Although optional, we recommend that students solve these questions, as they will help them in preparing for exams as well as in clearing the important concepts of the subject.

List of Practical and suggested practical's

The list of practical's should be done by the students in their Lab Sessions. These are the basic practical's, which each student should be able to do himself independently. While the list of suggested practicals are optional, but it is recommended that students should perform those practical so as to have a thorough knowledge of the subject

Education Delivery Schedule (EDS)

As per University Semester scheme, the minimum contact hours of each paper has been Divided into two hours theory and practical class.
The faculty will maintain this attendance paper wise for his/her batch.

JS UNIVERSITY

V- SEMESTER

MECHANICAL ENGINEERING ASSINSGMENT

BTME-51	Manufacturing Science & Technology-I
BTME52	Heat & Mass Transfer
BTME-53	I.C. Engine & Compressor
BTME-54	Kinematics of Machines
BTME-55	Machine Design-I
BTMB-51	Engineering Economics

MANUFACTURING SCIENCE & TECHNOLOGY-I

PART A

1. Describe the Mechanics of metal cutting. Geometry of tool and nomenclature?

2. Heat generation and cutting tool temperature, Cutting fluids/lubricants?

3. Lathe: Principle, construction, types, operations, Turret/capstan, semi/Automatic, Tool Layout ?

4. Grinding: Grinding wheels, abrasive & bonds, cutting action?

5. Gas welding and cutting, process and equipment. Arc welding: Power sources and consumables ?

PART B

1. Need & benefits, application and working principle of EDM?

2. Plasma-arc welding, Diffusion welding, Explosive welding/cladding. Introduction to Hybrid machining processes ?

HEAT & MASS TRANSFER

PART A

1. Introduction to combined heat transfer mechanism?

2. Define Thermodynamics and Heat Transfer?

3. Define Initial and boundary conditions?

4. Heat transfer from extended surfaces, Fins of uniform cross-sectional area?

5. Basic concepts; Hydrodynamic boundary layer; Thermal boundary layer?

PART B

1. Describe the Radiation properties of surfaces; Black body radiation Planck's law, Wien's displacement law, Stefan Boltzmann law, Kirchhoff's law?

2. Define Logarithmic mean temperature difference (LMTD) method; Effectiveness-NTU method;Compact heat exchangers?

I.C. ENGINE & COMPRESSOR

PART A

1. Introduction to I.C Engines: Engine classification and basic terminology?

2. Comparison of Otto, Diesel and Dual cycles Fuel air cycle, factors affecting the fuel air cycle, Actualcycle?

3. SI Engines: Combustion in SI engine, Flame speed, Ignition delay, Abnormal combustion and it'scontrol, combustion chamber design for SI engines?

4. CI Engine: Combustion in CI engines, Ignition delay, Knock and it's control, Combustion chamberdesign of CI engines?

5. Type of lubrication, Lubrication oils, Crankcase ventilation. Fuels: Fuels for SI and CI engine?

PARTB

1. Classification, Reciprocating compressors, Single and Multi stage compressors, Intercooling,Volumetric efficiency?

2. Classification, Centrifugal compressor , Axial compressors, Surging and stalling?

KINEMATICS OF MACHINES

PART A

1. Introduction, mechanisms and machines, kinematics and kinetics, types of links, kinematic pairs andtheir classification?
2. Introduction, velocity of point in mechanism, relative velocity method, velocities in four barmechanism, slider crank mechanism and quick return motion mechanism?
3. Introduction, acceleration of a point on a link, acceleration diagram, Corelli's component ofæcceleration, crank and slotted lever mechanism?
4. Classification of cams and followers, cam profiles for knife edge, roller and flat faced followers foruniform velocity, uniform acceleration, simple harmonic and Cycloidal motions of follower?
5. Classification of gears, law of gearing, tooth forms and their comparisons, systems of gear teeth?

PART B

1. Introduction, belt and rope drives, open and crossed belt drives, velocity ratio, slip, power transmission?
2. Maximum power transmission, initial tension and maximum tension, pivots and collars, uniformpressure and uniform wear, clutches?

MACHINE DESIGN-I

PART A

1. Definition, Design requirements of machine elements, Design procedure **?**
2. Selection of materials for static and fatigue loads **?**
3. Design for Fluctuating Loads Cyclic stresses, Fatigue and endurance limit, Stress concentration factor, Stress concentration factor for various machine parts **?**
4. Types of rivet heads, Types of riveted joints, Caulking and Fullering , Failure of riveted joint **?**
5. Cause of failure in shafts, Materials for shaft, Stresses in shafts, Design of shafts subjected to twisting moment **?**

PART B

1. Types, Material for helical springs, End connections for compression and tension helical springs?
2. Efficiency of square threads, Trapezoidal threads, Stresses in screws, Design of screw jack **?**

ENGINEERING ECONOMICS

PART A

1. Theory of Demand , Elasticity of Demand, Supply and Law of Supply indifference Curves, BudgetLine?

2. What is Market Structure Perfect Competitions Imperfect- Monopolistic, Oligopoly, duopoly sorbentfeatures of price**?**

3. Characteristics of Forecasts, Forecasting Horizons, Steps to Forecasting, Forecasting Methods?

4. Computation of Material Variances Break-Even Analysis?

5. What is Techniques and Applications of Managerial Economics?

PART B

1. Describe the Project Management, Value Engineering, Project Evaluation?

2. What is Welfare Analysis, Scope of Managerial Economics, Techniques and Applications ofManagerial Economics?