Mechanical engineering syllabus

Mechanical engineering examinations

Group A - Compulsory examinations (six required, A1-A5 and one of A6 & a7)

16-Mec-A1 Applied Thermodynamics and Heat Transfer

Thermodynamics: Review of the fundamental laws of thermodynamics, introductory psychrometry and analysis of the ideal gas compressor cycle, Rankine cycle, Otto cycle, Diesel cycle, Brayton cycle and the vapour compression refrigeration cycle.

Heat Transfer: Application of the principles of steady and transient conduction heat transfer, natural and forced convection heat transfer and radiation heat transfer. Thermal analysis of heat exchangers.

Textbooks (most recent edition is recommended):

 Moran, M.J., H.N. Shapiro, B.R. Munson and D.P. DeWitt, Introduction to Thermal Systems Engineering: Thermodynamics, Fluid Mechanics, and Heat Transfer. John Wiley and Sons.

16-Mec-A2 Kinematics and Dynamics of Machines

Kinematic and Dynamic Analysis: Graphical and analytical methods for kinematic analysis of planar and spatial mechanisms and elementary body motion in space, static and dynamic force analyses of mechanisms, gyroscopic forces, dynamics of rotating machinery, cam and gear mechanisms and specifications.

Vibration Analysis: Free and forced vibration of undamped and damped lumped single and multi degrees of freedom systems with, analytical and numerical techniques of solution, viscous damping, vibrational isolation, vibration measurement and control.

Textbooks (most recent edition is recommended):

- Inman, D.J., Engineering Vibrations, latest edition, Prentice-Hall.
- Waldron, K.J., and Kinzel, G.L., Kinematics, Dynamics and Design of Machinery, John Wiley & Sons.

16-Mec-A3 System Analysis and Control

Open-loop and feedback control. Laws governing mechanical, electrical, fluid, and thermal control components. Mathematical models of mechanical, hydraulic, pneumatic, electrical and control devices. Block diagrams, transfer functions, response of servomechanisms to typical input signals (step function, impulse, harmonic), frequency response, Bode diagram, stability analysis, and stability criteria.

Improvement of system response by introduction of simple elements in the control circuit. Regulation of physical process: proportional, integral, and derivative control. Theory of linear controller design.

Textbooks (most recent edition is recommended):

- Bissell, C.C., Control Engineering, latest edition, Taylor & Francis.
- Franklin, Feedback Control of Dynamic Systems.

16-Mec-A4 Design and Manufacture of Machine Elements

Theory and methodology related to conceptual design; review of the methods used in stress analysis; simple design factor approach; variable loads; stress concentrations; bolts and bolted joints; welded joints; springs; shaft and bearing design; clutches, brakes, and braking systems.



Mechanical Engineering Diploma Detail Syllabus

LP Steffe

Mechanical Engineering Diploma Detail Syllabus:

This book delves into Mechanical Engineering Diploma Detail Syllabus. Mechanical Engineering Diploma Detail Syllabus is an essential topic that needs to be grasped by everyone, ranging from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Mechanical Engineering Diploma Detail Syllabus, encompassing both the fundamentals and more intricate discussions.

- 1. The book is structured into several chapters, namely:
 - Chapter 1: Introduction to Mechanical Engineering Diploma Detail Syllabus
 - Chapter 2: Essential Elements of Mechanical Engineering Diploma Detail Syllabus
 - o Chapter 3: Mechanical Engineering Diploma Detail Syllabus in Everyday Life
 - Chapter 4: Mechanical Engineering Diploma Detail Syllabus in Specific Contexts
 - ∘ Chapter 5: Conclusion
- 2. In chapter 1, this book will provide an overview of Mechanical Engineering Diploma Detail Syllabus. This chapter will explore what Mechanical Engineering Diploma Detail Syllabus is, why Mechanical Engineering Diploma Detail Syllabus is vital, and how to effectively learn about Mechanical Engineering Diploma Detail Syllabus.
- 3. In chapter 2, this book will delve into the foundational concepts of Mechanical Engineering Diploma Detail Syllabus. The second chapter will elucidate the essential principles that must be understood to grasp Mechanical Engineering Diploma Detail Syllabus in its entirety.
- 4. In chapter 3, this book will examine the practical applications of Mechanical Engineering Diploma Detail Syllabus in daily life. This chapter will showcase real-world examples of how Mechanical Engineering Diploma Detail Syllabus can be effectively utilized in everyday scenarios.
- 5. In chapter 4, this book will scrutinize the relevance of Mechanical Engineering Diploma Detail Syllabus in specific contexts. The fourth chapter will explore how Mechanical Engineering Diploma Detail Syllabus is applied in specialized fields, such as education, business, and technology.
- 6. In chapter 5, this book will draw a conclusion about Mechanical Engineering Diploma Detail Syllabus. This chapter will summarize the key points that have been discussed throughout the book.
 - The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Mechanical Engineering Diploma Detail Syllabus.

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Mechanical Engineering Diploma Detail Syllabus Introduction

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