

For Syllabus, Question Papers, Notes & many More

AT6601 AUTOMOTIVE ENGINE COMPONENTS DESIGN

DETAILED SYLLABUS

UNIT I INTRODUCTION

Engineering materials - Introduction endurance limit, notch sensitivity. Tolerances, types of tolerances and fits, design considerations for interference fits, surface finish, surface roughness, Rankine's formula - Tetmajer's formula - Johnson formula- design of pushrods.

UNIT II DESIGN OF CYLINDER, PISTON AND CONNECTING ROD

Choice of material for cylinder and piston, design of cylinder, piston, piston pin, piston rings, piston failures, lubrication of piston assembly. Material for connecting rod, determining minimum length of connecting rod, small end design, shank design, design of big end cap bolts.

UNIT III DESIGN OF CRANKSHAFT

Balancing of I.C. engines, significance of firing order. Material for crankshaft, design of crankshaft under bending and twisting, balancing weight calculations, development of short and long crankarms. Front and rear-end details.

UNIT IV DESIGN OF FLYWHEELS

Determination of the mass of a flywheel for a given co- efficient of speed fluctuation. Engine flywheel - stresses on the rim of the flywheels. Design of hubs and arms of the flywheel, turning moment diagram.

UNIT V DESIGN OF VALVES AND VALVE TRAIN

Design aspects of intake & exhaust manifolds, inlet & exhaust valves, valve springs, tappets and valve train. Design of cam & camshaft. Design of rocker arm. Cam profile generation.

TEXT BOOK

1. Khurmi. R.S. & Gupta. J.K., "A text book of Machine Design", Eurasia Publishing House (Pvt) Ltd, 2001.

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REFERENCES

1. Jain.R.K, "Machine Design", Khanna Publishers, New Delhi, 2005.
2. Giri.N.K, "Automobile Mechanics", Khanna Publishers, New Delhi, 2007.

OBJECTIVES

To make the students understand the design concept and principles of various engine components. These concepts and principles are familiarized for design of components.