

PAU4I101 AUTOMOTIVE ENGINES (3/0)

Module I(10 Lectures)

Introduction to automotive engine:-

About engines, Engine systems, Basic engine terminology, Types of engine, Classification of I.C Engines, Engine cycles, Construction Working and port timing diagrams of two stroke petrol and diesel engines, Construction Working and valve timing diagrams of four stroke petrol and diesel engines, comparison of two stroke and four stroke engines, differences between petrol and diesel engines, firing order.

Module II(10 Lectures)

Fuel supply systems and performance: -

Fuel supply system for SI engines, Carburetors (simple and solex), fuel supply system for CI engines, Fuel injection system, classification of different parts of fuel supply system for both SI and CI engines, calculation of air fuel ratio for petrol and diesel.

Losses in the engine, Mean effective pressure, Fuel consumption, volumetric efficiency, Performance tests in IC engines and heat balance, performance curve.

Module III(08 Lectures)

Lubrication and cooling systems:-

Function of lubrication systems, types of lubrication systems- mist, wet and dry sump lubrication systems, properties and designation of lubricants.

Methods of cooling systems- Air and water cooling systems, properties of coolants, cooling agents.

Module IV(12 Lectures)

Combustion and Power boosters: -

Phenomenon of combustion in SI engines, stages of combustion, flame propagation, rate of pressure rise, abnormal combustion, effect of engine variables on knocking, fuel quality for SI engines, octane rating, combustion chambers for SI engines.

Phenomenon of combustion in CI engines, stages of combustion, ignition delay, factors affecting delay period, knock in CI engines, comparison of knock in SI and CI engines, direct and indirect injection diesel engines, combustion chambers, supercharging and turbo-charging methods.

Text Books:

1. Ganesan. V, "Internal Combustion Engines", Tata-Mc Graw Hill Publishing Co., New Delhi, 1994.
2. Ramalingam .K. K, "Automobile Engineering", Sci-tech publication Pvt. Ltd, 2005.

Reference books:

1. Sing Kirpal, "Automobile Engineering" vol. II, Standard Publishers Distributors, 1971
2. Heywood, Internal Combustion Engines
3. Obert E .F, Internal Combustion Engine Analysis and Practice, International Text Book Co., Scranton, Pennsylvania , 1988.
4. Heldt P.M, High Speed Combustion Engines, Oxford IBH Publishing Co, 1964.
5. Dicksee. C.B, Diesel Engines, Blackie and Son Ltd, London, 1964.
6. Malvee V.M, Diesel Engine Operation and Maintenance, McGraw Hill, 19