

10 ME 32B INTERNAL COMBUSTION ENGINES

III B.Tech II Semester

(with effect from the academic year 2012-2013)

Lectures/week: 4 Hrs.
University Exam: 3 Hrs

Credits: 4
Sessional Marks: 40
End Examination Marks: 60

UNIT-I

Introduction : Historical development of internal combustion engines – basic engine types and their operation – comparison of S.I and C.I engines.

Fuels and Combustion: Requirements of I.C. engine fuels – Hydrocarbon fuels their nature and properties – calorific value – volatility and vapour lock – fuel ratings for S.I engines and C.I. engines – additives – non –petroleum fuels.

UNIT-II

Normal combustion in S.I. engines, abnormal combustion – detonation or knocking, its causes- effects and remedies – flame propagation –effect of engine variables on flame propagation – basic requirements of S.I. engine combustion chambers.

Combustion in C.I. engines – Knocking, its causes, effects and remedies – importance of proper air movements – practical combustion chambers in use.

UNIT-III

Supercharging and Scavenging : Objectives of supercharging – supercharged S.I. engines – supercharges C.I. engines – effects of supercharging on engine performance – methods of supercharging –superchargers – turbocharging – method of turbocharging – limitations of turbocharging.

Scavenging of two stroke engines – scavenging systems – comparison of different scavenging systems.

UNIT-IV

Pollution from gasoline engines – gasoline engine emission control – diesel emissions- control of diesel engine emissions comparison of diesel and gasoline emissions.

Wankel rotary combustion engine – principles of operation and advantages over reciprocating engines.

UNIT-V

Developments in I.C. engines : Stratified charge engine – methods of charge stratification.

Dual-fuel and multi-fuel engines and their working principles – comparison of dual-fuel and multi fuel engines, alternative fuels- vegetable oils, Bio diesel, Alcohols.

TEXT BOOKS:

1. A course in Internal Combustion Engines : Mathur, M.L.& Sharma, R.P.
2. Internal Combustion Engines Fundamentals : Heywood, J.V

REFERENCES:

1. Internal Combustion Engines : Maleev, V.L
2. Internal Combustion Engines& Air Pollution: Obert,E.F, Harper & Row,N.Y
3. Internal Combustion Engines : Lichty