

1 **BASICS** :- Belt, chain and gear drives, speed ratio, friction clutches, rolling Friction. Vibration – causes & remedies, shock absorber. Torsion in solid & Hollow shafts. Springs (Helical & leaf springs). Pascal's law, Bernoullies theorem, Fluid pumps – Types and working. Basic principles of Thermodynamics concepts. Gas laws, Laws of Thermodynamics and processes. Gas power cycle, Carnot cycle, Otto cycle and Diesel cycle. Air compressors (Single & Multi stage). Supercharger-Types description & working, Air conditioning and related cycles.

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- 2 **INTERNAL COMBUSTION ENGINES** :- Classification, two stroke and four stroke cycles, their relative merits and demerits. Constructional details, working and special features of petrol and diesel Engines and their components. I.C. engine system, components and their working. Air-fuel supply system and fuel used. Cooling systems and coolants. Lubrication systems, lubricant and their properties. Ignition systems and system equipments. MPFI and CRDI system. SI and CI Engine combustion chambers.

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- 3 **I.C. ENGINE TESTING AND PERFORMANCE** :- Performance parameters, finding of I.H.P., BHP, FHP by Morse test, methods of finding BHP by dynamometers. Mechanical, Thermal, Volumetric, Air standard and Relative efficiencies of I.C. engine. Heat balance sheet. Combustion phenomenon in SI and CI engines, pre ignition. Knocking or Detonation phenomenon. Octane & cetane ratings, measurement of Exhaust smoke, Exhaust Emissions and Emission standards of Bharat stage I, II, III, IV.

- 4 **AUTOMOBILE VEHICLES** :- Classification, components and their function, layout of chassis and its alignment, alternative arrangements used in respect of Engine position, front wheel, rear wheel & four wheel drives. Final drives (Differentials)

- 5 **AUTO VEHICLES SYSTEMS** :- Power transmission system, auto electrical equipment and system. Brakes, Braking system and its components, Anti Braking System. Frames and suspension system, Steering and steering geometry. Power steering system and their function.

- 6 **WHEEL AND TYRES** :- Types of wheels, wheel alignment, types of tyres, tyre specification, importance of maintaining tyre pressure, tyre troubles and repair. Tyre retreading (cold and hot).

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- 7 **MISCELLANEOUS** :- Driving inspection and Road testing of Auto vehicles, Roadworthiness requirements of auto vehicles, important provisions of Motor Vehicle Act and Rules.



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