CODE:015

AUTOMOBILE ENGINEERING
DEGREE STANDARD

UNIT I
History of automobiles - Classification of automobiles - Engine and cylinder arrangements - Torgue Distribution and Firing Order - Chasis layout - arrangements.

UNIT II
Engine construction - Cylinder - Cylinder head - Crank shaft - Cam shaft - Cylinder liners - Piston - Piston rings - valves and valve operating mechanism inlet and exhaust manifolds - desingn consideration - materials of construction.

UNIT III
Automotive fuels - calorific value - Octane number, Cetane number - fuel transfer devices - Carburettors - solex - zenith, cartor types - petrol injection system - fuel saving methods, Alternate fuels for Automobiles.

UNIT IV
Diesel injection systems - air, airlese types-fuel injection pumps - inline and rotory pumps-nozzles - different types - diesel filters - diesel pump governors -mechanical and pnuematics types.

UNIT V
Engine cooling - air, water cooling arrangements - water pump - radiator - cooling fan -thermostat- different types - anti freezing compounds.

UNIT VI
Engine lubrication - properties of lubricating oils - lubrication systems-petrol, wet sump, dry sump systems -lub oil pumps - gear and vane types - Lub oil filters.

UNIT VII
Suspension system - front and rear axle suspensions- indiependent suspension - stub axle - rear axle types - springs - coil leaf, plastic springs - torsion bar-shock absorber -hydraulic, gas filled types.

UNIT VIII
Battery - construction, working of lead acid battery - battery charging- maintenance free battery - battery rating - battery testing and maintenance.

UNIT IX
Ignition system - coil, magneto ignition systems - electronic ignition systems - components - spark plugs - heat range -ignition timing.

UNIT X
Trouble shooting and service procedures for engine overhauling and tuneup - serrvicing of suspension, engine cooling and lubrication systems - tools and equipments required for repairs.

PAPER -II
UNIT I
Clutches - types - single and multiple plates - diaphram clutch -centrifugal clutch Elelctromagnetic clutch - ooverrunning clutch - fluid coupling - torgue converters - clutch linkage -mechanical and hydraulic.

UNIT II
Gear box - need, speed nelection - sliding mesh, constant mesh, synchro mesh types - over drives gear shift mechanisms - epicyclic and sutomatic transmission.

UNIT III
Transmission - universal joint - constant velocity joint - propeller shaft - slip joint -hotchkisns drive - torque tube drive - differential non slip limited slip differential.

UNIT IV
Steering system - Principles of steering - Ackeamann steering - steering liakage - steering geometry-toe in, toe out, camber, caster angles -kingpin inclination -wheel alignment - steering gear box-worm and sector, recirculating ball rack and pinion types power steering.

UNIT V
Brakes - need - mechanical, hydraulic vaccum, pnematic brakes - Drum, disc brakes - their relative merits - power brake- Brake components, Master cylinder, wheel cylinder - brake actuating linkages - brake adjustment - common faults and their remedies.

UNIT VI
Wheel and tyres - types -specifications - construction details - materials of construction - tyre wear and causes - wheel types - relative merits - wheel balancing - wheel balancing equipments.

UNIT VII
Generator - types - alternators - relative merits - principles of operation of cutout and regulators-starter motors - Bendix drive-solinoid drive - common faults and their remedies.

UNIT VIII
Lighting and Electrical accessories - automobile lighting circuits -panel board istruments-automobile air conditioning -power windows -central locking systems.

UNIT IX
Trouble shooting and service procedures for clutch,gearbox, crown and brakes - service station equipments -organisatioan and management of service stations.

UNIT X
Auotomobile Law - motor vehicles act - Registration of vehicles-driving licence -control of traffic traffic signs -various insurance policies-pollution and its control, regulations.