

2.15 30294 AUTO CHASIS & BODY

UNIT-1 INTRODUCTION:

Classification of Automobiles, Chassis and body, Components of vehicle – basic structure, power unit, transmission system, accessories, superstructure. Layout of conventional type vehicle (front engine rear wheel drive), Basic functions and arrangements of various components, Vehicle dimensions – wheel base, wheel track, front & rear overhang, overall dimensions, ground clearance.

UNIT-2. SUSPENSION SYSTEM:

Basic functions of suspension system, Types - Independent and rigid, coil, leaf, torsion bar, air, rubber suspension (Elementary idea), Conventional leaf spring rigid beam suspension for light vehicle and with helper spring for heavy vehicles. Suspension for Tandem axle, fitting of spring assembly, shackles, Functions and types of shock absorbers, construction and working of hydraulic telescopic type shock absorber, Sprung and un-sprung weight.

UNIT-3. BRAKING SYSTEMS:

Purpose, principle of braking, Stopping distance, layout of braking system components, Braking efficiency., Classification of brakes, requirements of a good braking, Hydraulic brakes, Principle, layout of components, Construction & working of single and tandem master cylinder, wheel cylinder, Brake fluid and its characteristics, Brake drum, types materials, Brakes shoes, types and construction, steady ports, brake shoe adjuster., Brakes lining – material, thickness, area brake pedal travel and clearance, Hand brakes

UNIT-4. WHEELS AND TYRES:

Wheels, Requirements of wheel, Types- pressed steel disc, wire, light alloy cast wheels, , advantages & disadvantages inset, outset, and zero set, reversible and divided wheels, Rim- flat base (two piece and three piece) and well base rims, Tyres, Functions of tyres, Classification – solid, pneumatic, high low and extra low-pressure tyre, tubed and tubeless tyre, cross ply, belted bias and radial ply tyre., Cross section of a pneumatic tyre, Specification of tyres, Desirable tyre properties, Frame and Body: Frame, Function of frame, loads on frame, Frame construction, sub-frame, Defects in frame chassis repair and alignment, Frame less construction, Body, Types and construction (parts of body), Main features – strength, stiffness, space air drag, stream lining, weight, vibration, protection against weather, corrosion, safety and economy considerations., Body alignment, Bumpers – types and functions, Denting and painting, Window regulators, doors, hood, dash board, glass work.,

UNIT-5 CLUTCH:

Purpose and requirements of clutch, Type - Single plate, multi plate, dry, wet, semi centrifugal, centrifugal, Constructional and operation of conventional coil spring type clutch., Construction of clutch plate, living material, Gear Box: Functions and types of gear boxes, Constructional details and working of sliding mesh, constant mesh and synchronous mesh gear boxes, Different gear

selector mechanism – constructions and working, Interlocking methods- constructions and working

UNIT-6 FINAL DRIVE:

Function, types and constructional details of - Propeller shafts, Universal joints, Sliding joint Differential - Principles, function, construction and working of conventional differential Different types of rear axles according to methods of supporting.

UNIT-7 FRONT AXLE AND STEERING SYSTEM:

Front axle - types and construction, front wheel stub axle assembly, Purpose and requirements of steering system, General arrangement of steering systems steering gear ratio, variable steering ratio., Steering system components – steering wheel, steering column, conventional steering linkage, steering and ignition lock, Construction and working details of different types of steering gear boxes

UNIT-8 UPHOLSTERY:

Seats – location, mounting and adjustment, Seat belts – location fitting points and operation, Ceiling, side panels, door channels, beading and furnishing materials

Reference books:

1. Automotive Chassis & Body. P.L.Kohli.
2. Vehicle & Engine Technology Heinz Heisler. (Vol. I & II)
3. Basic Automobile Engineering C.P.Nakra.
4. Automobile Engineering. T.R.Banga&Nathu Singh.
5. Automobile Engineering H.S. Reyat

