

Indus University

Automobile System

Unit-1

- (1) What do you understand by automobile and give its various modes of drive.
- (2) Explain various vehicle layouts according to location of engine & drives with its advantages and disadvantages.
- (3) Define terms:
 - (a) vehicle motion (b) resistance during to moving vehicle
 - (c) acceleration (d) deceleration (e) Power required to Propel a Vehicle
- (4) Define traction effort with neat diagram.
- (5) Give the classification of automobile based on control positioning.
- (6) Distinguish between front wheel drive and rear wheel drive using diagram.
- (7) Classify chassis and lists its all components.
- (8) List various characteristics of a good chassis.
- (9) What are the functions of a frame? Which are types of load acting on it.
- (10) Sketch the car frame and name its different members.
- (11) What is the difference between integral and semi-integral frames?
(Numerical also need to consider for your preparation)

Unit-2

- (1) What are the functions of clutches?
- (2) Classify the types of clutches in detail.
- (3) What the major parts of friction clutch? Describe the function of each part.
- (4) Explain with neat sketch single plate clutch with its advantages and disadvantages.
- (5) Explain working of multi plate clutch with neat sketch.
- (6) Explain centrifugal clutch with neat sketch.
- (7) Define transmission and list types of transmission.
- (8) List various parts of a power transmission system.
- (9) Generalize the meaning of fluid fly wheel?
- (10) Illustrate the difference between torque converter gearbox and fluid flywheel?
- (11) Explain use of Synchronizer in the automotive transmission system?
- (12) Write Difference between Manual and Automatic Power Transmission drives.

Unit-3

- (1) Express the type of loads subjected to axle with justification?
- (2) List out the types of front axles and rear axles with diagram.
- (3) What is the purpose of propeller shaft? List out the functions of a propeller shaft.
- (4) Compare Hotchkiss drive and Torque Tube drive using diagram?
- (5) Summarize the functions of differential unit in automobile vehicles and also explain differential lock application in automobile?
- (6) What do you understand by constant velocity joint in the drive line and axles? Explain.
- (7) Draw figure of rear axle housing and discuss about its construction and working.
- (8) What is dead axle? What are its characteristics and application?
- (9) What are the major three types of rear axles? Draw the sketch and explain in detail.
- (10) What do you mean by steering system? What are its requirements?
- (11) Explain steering troubles and their possible causes.
- (12) Define terms: Toe-in, Toe-out, Caster, Camber, King pin inclination, Understeering and Oversteering, steering ratio.
- (13) Define steering ratio. Draw and list various links assembled in the steering system.
- (14) With diagram explain 1) Worm and Wheel 2) rack and pinion (3) Worm and nut 2) Recirculating ball 3) cam and lever steering gear box.
- (15) Why suspension system is used? List the purpose of using suspension in vehicles. How can you differentiate between front and rear suspension system?
- (16) Which are the types of suspension systems used in automobile vehicles? Explain any one with neat sketch?(Explain: Coil Spring, Leaf Spring, Torsion Bars and Shock Absorbers, Air suspensions)
- (17) Describe rear end suspension system using leaf spring.
- (18) Describe the construction and working of a telescopic shock absorber.
- (19) Describe a rigid axle front suspension using longitudinal leaf springs.
- (20) Justify the use of air suspension system with diagram.

Unit-4

- (1) Why are brakes necessary in automobile? Give detail classification of brakes.
- (2) Analyze the construction and operation of a hydraulic braking system with a sketch.
- (3) Justify why mechanical brakes used in parking and emergency?
- (4) Explain how mechanical brakes are applied.
- (5) Using diagram explain function of master cylinder in brakes.
- (6) Briefly explain with diagram : (1) self-energizing brakes (2) disc brakes (3) electric brakes

- (7) What do you mean by bleeding of brakes? What is the remedy of to overcome it?
- (8) Justify the use of pneumatic brake over the mechanical brake with diagram.
- (9) What are the types of tyres? Write about desirable properties of tyre.
- (10) What are the causes of tyre wear? Explain logical procedure of wheel balancing.
- (11) What do you mean by 'tread'? Draw the sketch of different types of tread patterns. Why is retreading done?
- (12) Draw the various sketches of types of rims and explain it.
- (13) What is mean by hybrid vehicles, Explain with main parts or components of hybrid vehicles.