

Discipline : MECHANICAL ENGG	Semester : 6TH	Name of the Teaching Faculty: SHUBHAJIT BISWAL
Subject: AUTOMOBILE ENGINEERING AND HYBRID VEHICLES	No. of days/per week class allotted: 04	Semester From date : 14.02.2023 To Date: 23.05.2023 No. of Weeks: 15
Week	Class Day	Theory / Practical Topics
1 ST	1 ST	1.0 Automobiles: Definition, need and classification
	2 ND	Layout of automobile chassis with major components (Line diagram)
	3 RD	Manufacturer's specification of auto engines of motorcycle, scooter, car & bus one from each.
	4 TH	State the classification of engines basing on working principle, fuel used position of cylinder, arrangement of cylinder.
2 ND	1 ST	Continued
	2 ND	2.0 Clutch System: Need, Types and Working principle with neat sketch of single clutch system
	3 RD	Need, Types and Working principle with neat sketch of double clutch system
	4 TH	Continued
3 RD	1 ST	Gear Box: Purpose of gear box
	2 ND	Continued
	3 RD	Construction and working of a 4 speed gear box
	4 TH	Concept of automatic gear changing mechanisms
4 TH	1 ST	Propeller shaft: Constructional features
	2 ND	Differential: Need, Types and Working principle
	3 RD	Continued
	4 TH	3.0 Braking systems in automobiles: Need
5 TH	1 ST	Braking systems in automobiles: Types
	2 ND	Discussed about Mechanical Brake
	3 RD	Discussed about Hydraulic brake
	4 TH	Discussed about Air brake
6 TH	1 ST	Discussed about Air assisted hydraulic brake
	2 ND	Discussed about Vacuum Brake
	3 RD	Define Auto electric system
	4 TH	Wiring diagram of Horn circuit (Sketch and description)
7 TH	1 ST	Lighting circuit, Cut-out circuit (Sketch and description)

	2 ND	Voltage current regulator circuit and Flasher circuit (Sketch and description)
	3 RD	Continued
	4 TH	State the common ignition troubles and its remedies.
8 TH	1 ST	Spark plugs: Purpose, construction and specifications
	2 ND	Continued
	3 RD	5.0 Description of the conventional suspension system for Rear and Front axle.
	4 TH	Description of independent suspension system used in cars (coil spring and tension bars)
9 TH	1 ST	Constructional features and working of a telescopic shock absorber.
	2 ND	State tyre specifications.
	3 RD	Explain the causes and remedies of tyre wear.
	4 TH	Describe necessity of engine cooling.
10 TH	1 ST	Continued
	2 ND	Describe defects of cooling and their remedial measures.
	3 RD	Describe the Function of lubrication.
	4 TH	Continued
	5 TH	Describe the lubrication System of I.C. engine.
11 TH	1 ST	Continued
	2 ND	Define Fuel and Ignition system
	3 RD	Discussed For petrol Engine: Fuel and Ignition system
	4 TH	For petrol Engine: Describe carburetion and Air fuel ratio.
12 TH	1 ST	Continued
	2 ND	For petrol Engine: Describe the Battery ignition and Magnet ignition system.
	3 RD	Continued
	4 TH	For petrol Engine: Describe Multipoint fuel injection system.
13 TH	1 ST	For Diesel engine: Describe the working principle of Fuel feed pump.
	2 ND	For Diesel engine: Describe the working principle of Injector and Fuel filter.
	3 RD	For Diesel engine: Describe the working principle fuel injection system for multi cylinder engine.

	4 TH	Introduction, Social and Environmental importance of Hybrid and Electric Vehicles
14 TH	1 ST	Description of Electric Vehicles, operational advantages, present performance and applications of Electric Vehicles
	2 ND	Continued
	3 RD	Continued
	4 TH	Battery for Electric Vehicles, Battery types and fuel cells
15 TH	1 ST	Hybrid vehicles, Types of Hybrid and Electric Vehicles: Parallel, Series, Parallel and Series configurations;
	2 ND	Solar powered vehicles
	3 RD	Previous year questions discussion
	4 TH	Previous year questions discussion

Learning Resources:

Sl.	Name of Authors	Title of the Book	Name of the Publisher
1	R.B.Gupta	Automobile Engineering	Satya Prakashan
2	Dr Kirpal Singh	Automobile Engineering Vol- I & II	Standard Publishers
3	C.P.Nakra	Automobile Engineering	Dhanpat Rai Publication

