

RAJA KISHORE CHANDRA ACADEMY OF TECHNOLOGY

NILGIRI, BALASORE

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

SUBJECT: AUTOMOBILE ENGINEERING

NAME OF THE FACULTY: ER. GAGAN KUMAR SINGH

SEMESTER – 6TH

LECTURE NO.	DATE	MODULE	TOPICS TO BE COVERED
1.		UNIT-1	General introduction to automobile engineering, its definition , need and classification.
2.			Layout of automobile chassis along with its components and functions in brief, line diagram of automobile chassis
3.			Transmission system: major components of transmission system and their function
4.			Clutch system: its definition, need and types of clutch
5.			Working principle of clutch system along with its diagrams
6.			Gearbox: definition and purpose of gearbox with sketch
7.			4 speed gearbox: its principle, construction and working of 4 speed gearbox
8.			Gear mechanism: features of automatic gear & concept of automatic gear changing mechanism
9.			Propeller shaft : necessity and its constructional features
10.			Universal joint: necessity and its constructional features
11.			Differential: its definition, need, types & working principle
12.			Revision of Question and answers related to unit-1
13.		UNIT-2	Braking system in automobile: functions of brake and its types
14.			Mechanical brakes: constructional details and working mechanism along with its diagram

15.			Hydraulic brakes: constructional details and working mechanism along with its diagram, importance of master cylinder and its construction
16.			Air brake and air assisted hydraulic brake: constructional details and working mechanism along with its diagram
17.			Vaccum brake : constructional details and working mechanism along with its diagram, Revision of Question and answers related to unit-2
18.		UNIT-3	Introduction to ignition and suspension system: definition and purpose of ignition and suspension system
19.			Description of battery ignition system along with its major components, schematic diagram
20.			Working principle of battery ignition system,circuit diagram, advantages, disadvantages and applications
21.			Description of magnet ignition system, major components, schematic diagram
22.			Working principle of magneto ignition system,circuit diagram,advantages,disadvantages and applications
23.			Spark plug : description,construction, need importance and specifications of spark plug; List of common ignition troubles and its remedies to reduce troubles
24.			Description of conventional suspension system for both rear as well as front axle
25.			Description of independent suspension system used in cars which includes(coil spring and tension bars)
26.			Constructional features & working of a telescopic shock absorber
27.			Revision of Question and answers related to unit-3
28.			Introduction to cooling system, its need and classification
29.			Air cooling, working principle, constructional features and diagrams
30.			Water cooling, working principle, constructional features and diagrams

31.		UNIT-4	Thermosyphon, pump circulation type of water cooling system, working principle and diagrams
32.			Introduction to lubrication system, its need and classification
33.			Description, importance of lubrication and its advantages
34.			Overview of lubrication system of an IC engine
35.			Revision of Question and answers related to unit-4
36.		UNIT-5	Introduction to fuel system: Description of air-fuel ratio
37.			Detailed study on air-fuel ratio, its principle of operation in carburetor, stoichiometric AFR
38.			Description on carburetion process for petrol engine, types of carburetors and each carburetor's principle of operation with diagrams
39.			Description on multi point fuel injection system in petrol engine, working principle
40.			MPFI : advantages and troubles, remedies, schematic diagram
41.			Multi cylinder engine: description, working principle of fuel injection system, schematic diagram
42.			Filter for diesel engine: basic working principle of diesel fuel filter, its components
43.			Fuel feed pump: description of working principle, construction
44.			Fuel injector for diesel engine: description of working principle, construction
45.			Revision of Question and answers related to unit-5
46.			Introduction to electric and hybrid vehicle
47.			Impact of hybrid cars on the environment, advantages and disadvantages
48.			Description of electric vehicle, operational advantages, present performance
49.			Applications of electric vehicle in aviation, military, public transportation etc.

50.		UNIT-6	Battery for electric vehicle, battery types and their parameters
51.			Fuel cells, Working of fuel cell electric vehicle
52.			Hybrid vehicles, types of electric and hybrid vehicles, key componenets
53.			Energy flow diagram and description : series , parallel, series and parallel configuration
54.			Drivetrain : its importance , series drivetrain, parallel drivetrain, series/parallel drivetrain
55.			Solar powered vehicles : numerous benefits, engineering challenges
56.			Several startup companies in EV
57.			Overall a sustainable , free power transportation, integrated solar technology
58.			Revision of Question and answers related to unit-6
59.			Previous Semester Questions discussion
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SIGNATURE OF FACULTY MEMBER		SIGNATURE OF H.O.D	