

## AUTOMOTIVE ENGINEERING

<b>Subject Code</b>	<b>: 10ME844</b>	<b>IA Marks</b>	<b>: 25</b>
<b>Hours/Week</b>	<b>: 04</b>	<b>Exam Hours</b>	<b>: 03</b>
<b>Total Hours</b>	<b>: 52</b>	<b>Exam Marks</b>	<b>: 100</b>

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### PART – A

#### UNIT - 1

**Engine Components And Cooling & Lubrication Systems:** Spark Ignition (SI) & Compression Ignition (CI) engines, cylinder – arrangements and their relatives merits, Liners, Piston, connecting rod, crankshaft, valves, valve actuating mechanisms, valve and port timing diagrams, Types of combustion chambers for S.I.Engine and C.I.Engines, Compression ratio, methods of a Swirl generation, choice of materials for different engine components, engine positioning, cooling requirements, methods of cooling, thermostat valves, different lubrication arrangements.

**07 Hours**

#### UNIT - 2

**Fuels, Fuel Supply Systems For Si And Ci Engines:** Conventional fuels, alternative fuels, normal and abnormal combustion, cetane and octane numbers, Fuel mixture requirements for SI engines, types of carburetors, C.D.& C.C. carburetors, multi point and single point fuel injection systems, fuel transfer pumps, Fuel filters, fuel injection pumps and injectors.

**07 Hours**

#### UNIT - 3

**Superchargers And Turbochargers:** Naturally aspirated engines, Forced Induction, Types pf superchargers, Turbocharger construction and operation, Intercooler, Turbocharger lag.

**06 Hours**

#### UNIT - 4

**Ignition Systems:** Battery Ignition systems, magneto Ignition system, Transistor assist contacts. Electronic Ignition, Automatic Ignition advance systems.

**06 Hours**

## **PART – B**

### **UNIT - 5**

**Power Trains:** General arrangement of clutch, Principle of friction clutches, Torque transmitted, Constructional details, Fluid flywheel, Single plate, multi-plate and centrifugal clutches.

Gear box: Necessity for gear ratios in transmission, synchromesh gear boxes, 3, 4 and 5 speed gear boxes. Free wheeling mechanism, planetary gears systems, over drives, fluid coupling and torque converters, Epicyclic gear box, principle of automatic transmission, calculation of gear ratios, Numerical calculations for torque transmission by clutches.

**08 Hours**

### **UNIT - 6**

**Drive To Wheels:** Propeller shaft and universal joints, Hotchkiss and torque tube drives, differential, rear axle, different arrangements of fixing the wheels to rear axle, steering geometry, camber, king pin inclination, included angle, castor, toe in & toe out, condition for exact steering, steering gears, power steering, general arrangements of links and stub axle, over steer, under steer and neutral steer, numerical problems, types of chassis frames.

**06 Hours**

### **UNIT - 7**

**Suspension, Springs And Brakes:** Requirements, Torsion bar suspension systems, leaf spring, coil spring, independent suspension for front wheel and rear wheel. Air suspension system.

Types of brakes, mechanical compressed air, vacuum and hydraulic braking systems, construction and working of master and wheel cylinder, brake shoe arrangements, Disk brakes, drum brakes, Antilock –Braking systems, purpose and operation of antilock-braking system, ABS Hydraulic Unit, Rear-wheel antilock & Numerical Problems

**06 Hours**

### **UNIT - 8**

**Automotive Emission Control Systems:** Automotive emission controls, Controlling crankcase emissions, Controlling evaporative emissions, Cleaning the exhaust gas, Controlling the air-fuel mixture, Controlling the combustion process, Exhaust gas recirculation, Treating the exhaust gas, Air-injection system, Air-aspirator system, Catalytic converter, Emission standards- Euro I, II, III and IV norms, Bharat Stage II, III norms.

**6 Hours**

**TEXT BOOKS:**

1. **Automotive mechanics**, William H Crouse & Donald L Anglin, 10<sup>th</sup> Edition Tata McGraw Hill Publishing Company Ltd., 2007
2. **Automotive Mechanics**, S. Srinivasan, 2<sup>nd</sup> Ed., Tata McGraw Hill 2003.

**REFERENCE BOOKS:**

1. **Automotive mechanics: Principles and Practices**, Joseph Heitner, D Van Nostrand Company, Inc
2. **Fundamentals of Automobile Engineering**, K.K.Ramalingam, Scitech Publications (India) Pvt. Ltd.
3. **Automobile Engineering**, R. B. Gupta, Satya Prakashan, 4<sup>th</sup> edn. 1984.
4. **Automobile engineering**, Kirpal Singh. Vol I and II 2002.

**DATABASE MANAGEMETN SYSTEM**

<b>Subject Code</b>	<b>: 10ME845</b>	<b>IA Marks</b>	<b>: 25</b>
<b>Hours/Week</b>	<b>: 04</b>	<b>Exam Hours</b>	<b>: 03</b>
<b>Total Hours</b>	<b>: 52</b>	<b>Exam Marks</b>	<b>: 100</b>

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**PART – A****UNIT - 1**

**Database And Database Users:** Introduction, characteristics of database approach, intended uses of a DBMS, advantages and implementation of database approach.

**06 Hours**

**UNIT - 2**

**Database Systems Concepts And Architecture:** Data models, schemes and instances, DBMS architecture and data independence, database languages and interfaces, database system environment, classification of database management systems.

**06 Hours**