



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY : PUTTUR
(AUTONOMOUS)**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : Automobile Engineering (23ME0330)

Course & Branch: B.Tech - ME

Year & Sem: III-B.Tech& I-Sem

Regulation: R23

UNIT-I Introduction to vehicle structure and engine components

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|----|-----|---|----|-----|------|
| 1 | (a) | Explain why the frame is narrow at the front. | L1 | CO1 | 2M |
| | (b) | Draw the Valve timing diagram of four stroke diesel engine | L4 | CO1 | 2M |
| | (c) | Why air fuel ratios of diesel engines are more than petrol engines? | L1 | CO1 | 2M |
| | (d) | Identify the Functions of piston rings | L2 | CO1 | 2M |
| | (e) | Write the firing order of 4 cylinder and 6 cylinder engine | L1 | CO1 | 2 M |
| 2 | | Discuss the construction and working of various frames in automobile | L2 | CO1 | 10 M |
| 3 | (a) | Mention various functions of chassis | L3 | CO1 | 5 M |
| | (b) | State the merits and demerits of the frame less construction of an automobile | L1 | CO1 | 5 M |
| 4 | (a) | Write a note on the construction of a frame for an automobile chassis | L2 | CO1 | 5 M |
| | (b) | What are the various design parameters to be considered while designing chassis frame | L5 | CO1 | 5 M |
| 5 | (a) | Discuss in detail about crankcase ventilation | L2 | CO1 | 5 M |
| | (b) | What are the functions of Engine Lubrication system? | L1 | CO1 | 5M |
| 6 | (a) | Illustrate various filters used in an Automobile | L2 | CO1 | 5M |
| | (b) | What are the functions of an Oil Pump? | L1 | CO1 | 5M |
| 7 | | Describe how power is transmitted from engine to wheels of a motor vehicle. Explain the function of main units involved | L2 | CO1 | 10 M |
| 8 | (a) | How do you Classify the automobile engines | L2 | CO1 | 5 M |
| | (b) | Differentiate between S I engines and CI engines | L2 | CO1 | 5 M |
| 9 | (a) | List out the components of I.C engine and its function | L1 | CO1 | 5 M |
| | (b) | What is Combustion? Explain the different types of Combustion Process | L2 | CO1 | 5 M |
| 10 | (a) | Explicate front and rear wheel drive layout in detail with relevant sketch | L2 | CO1 | 5 M |
| | (b) | What is the difference between rear wheel drive and front wheel drive? Explain. | L2 | CO1 | 5 M |

- 11 Describe the following indirect injection type combustion chamber in Engine with Neat sketch and also mention merits and demerits
(i) Swirl Chamber (ii) Pre Combustion Chamber

UNIT –II Ignition and fuel supply systems

- 1 (a) What is the need of an Ignition system in an Automobile? L1 CO2 2M
(b) List out different components of a fuel system and mention its function L1 CO2 2M
(c) What is lean mixture and rich mixture? L1 CO2 2M
(d) What distinguishes an Electronic Ignition system from a mechanical one? L1 CO2 2M
(e) What is the primary function of the fuel supply system? L1 CO2 2M
- 2 Discuss briefly about battery coil ignition system with a suitable Sketch and also mention its merits and demerits L2 CO2 10M
- 3 Explain briefly about Magneto coil ignition system with a suitable Sketch and also mention its merits and demerits L2 CO2 10M
- 4 Elucidate the working of Electronic ignition system with neat figure. L2 CO2 10M
- 5 (a) Explain the fuel supply system in diesel engine with line diagram L2 CO2 5 M
(b) State the necessity of Engine cooling system? L1 CO2 5 M
- 6 (a) What are the functions of carburetor? L1 CO2 5M
(b) List out various components of Carburettor and also mention its functions. L1 CO2 5M
- 7 Describe the working of Carburettor with a neat sketch. L2 CO2 10M
- 8 (a) Explain briefly about MPFI fuel injection system used in Automobiles L2 CO2 5 M
(b) Fuel mileage with MPFI engines are more than normal injection systems. Justify. L4 CO2 5 M
- 9 (a) Differentiate between Electronic Fuel Injection and Carbureted fuel system L2 CO2 5M
(b) Discuss in detail about the working of Electronic Fuel Injection system with a neat figure L2 CO2 5 M
- 10 (a) List out various advantages and disadvantages of Electronic Fuel Injection system L1 CO2 5M
(b) Illustrate the working of Gasoline Direct Injection Engine with a neat sketch L1 CO2 5M
- 11 Describe the working of DTSI Engine with a neat sketch and also mention the benefits of that. L2 CO3 10M

UNIT –III Steering and Suspension System

- 1 (a) List out various functions of steering system L1 CO3 2M
(b) Define power steering L1 CO3 2M
(c) What is Toe-in and Toe-out? L1 CO3 2M
(d) List out the benefits of Rigid axle suspension system L1 CO4 2M

(e)	Describe the functions of suspension system?	L1	CO4	2M
2	What are the different types of steering gears used in an automobile and mention the advantages of each gear	L2	CO3	10M
3	What are the functions and components of the steering linkage system	L2	CO3	10M
4	Discuss in detail with a neat sketch the working of an Ackermann steering mechanism	L2	CO3	10M
5	Briefly explain about the Davi's Steering Mechanism with neat sketch?	L2	CO3	10M
6	What is castor, camber and King pin inclination with respect to wheel geometry?	L1	CO3	10M
7	(a) Write the method of wheel balancing	L2	CO5	6M
	(b) Explain the various key functions of the steering gear box.	L2	CO4	5M
8	Explain with the help of a neat layout about Rigid Axle Suspension system	L2	CO4	10M
9	(a) With the help of neat diagram explain the working of Wishbone type independent suspension system	L2	CO4	5M
	(b) Write a brief note on Coil springs, Leaf springs and Air suspension in Automobiles	L1	CO4	5M
10	Illustrate the working of Torsion bar with a neat sketch and also mention its advantages and disadvantages.	L2	CO4	10M
11	With a neat diagram explain the construction and working of a shock absorber	L2	CO4	10M

UNIT –IV Wheels, Tyres and Braking system

1	(a) How radial tyre is different from normal tyre?	L1	CO4	2M
	(b) Why wire wheels are not useful for tubeless tyres?	L1	CO4	2M
	(c) Which type of wheels is preferred for Sports Cars?	L1	CO4	2M
	(d) In the tyre specification, what does the ply rating refers?	L1	CO4	2M
	(e) What is function of retarders?	L1	CO4	2M
2	Define wheel in an Automobile and also mention its classification.	L1	CO4	10M
3	(a) List out various functions of tyres in Automobile.	L1	CO4	5M
	(b) How do you specify tyres in Automobiles?	L1	CO4	5M
4	Illustrate the method of constructing tyres.	L2	CO4	10M
5	(a) Explain about the tyre wear and the reasons behind them	L2	CO4	5M
	(b) How do you diagnosis the tyre wear?	L1	CO4	5M
6	(a) Brakes are essential in an Automobile. Justify	L4	CO4	5M
	(b) Explain the braking principle in automobile.	L2	CO4	5M
7	Discuss the classification of brakes from different considerations and	L2	CO4	10M

explain any one braking system in brief.

8	What are the different components of a hydraulic brake system? Explain	L2	CO4	10M
9	Elucidate the working of a pneumatic braking system with a neat sketch	L2	CO4	10M
10	Illustrate the working of a vacuum braking system with a neat sketch	L2	CO4	10M
11	(a) What are the essential differences between mechanical brakes and hydraulic brakes?	L4	CO5	5M
	(b) What are the essential differences between mechanical brakes and hydraulic brakes?	L4	CO5	5M

UNIT –V **Automobile electrical systems and advances in automobile engineering**

1.	(a) Importance of Lighting system in an automobile	L1	CO5	2M
	(b) Engine Temperature Indicator	L1	CO5	2M
	(c) List the main components of a vehicle's charging system.	L1	CO5	2M
	(d) What are the various electrical or electronic systems available in the Automobile	L1	CO5	2M
	(e) List out various components in Car Air conditioning	L1	CO5	2M
2	(a) State the necessity of Bendix Drive?	L1	CO5	5M
	(b) Explain with neat sketch about Starting System in automobile	L1	CO5	5M
3	Name various types of components used in Lighting System used in automobile with neat sketch	L1	CO5	10M
4	Describe the circuit diagram of a Horn System and also mention the merits and demerits	L2	CO5	10M
5	(a) Illustrate the working of speedometer of an automobile with a neat sketch	L2	CO5	5M
	(b) Describe the working of wiper system in an Automobile	L2	CO5	5M
6	Discuss in detail about following systems used in automobile (i) Fuel gauge (ii) Solenoid switch	L2	CO5	10M
7	Write a brief note on Electronic Brake force Distribution (EBD) and Traction control system (TCS)	L1	CO6	10M
8	Illustrate the working of Active suspension System (ASS) and also mention its benefits and challenges.	L2	CO6	10M
9	(a) Write short notes on Electronic Stability Program (ESP) in Automobile.	L1	CO4	5M
	(b) How Global Positioning system (GPS) works?	L1	CO4	5M
10	Describe the working of Hybrid Vehicle with a neat sketch	L2	CO6	10M
11	Describe the working of Fuel Cell with a neat diagram and also mention its characteristics.	L2	CO6	10M