

Department : Mechanical Engineering

Year & Semester : III&V

Sub Code & Sub Name : AE

Unit-I

S.No	Part-A Questions
1.	What is the function of a chassis in a vehicle?
2.	What are the different types of engine constructions?
3.	What is the purpose of cylinder liners?
4.	What is the function of piston rings?
5.	What is crankshaft?
6.	What are the types of lubrication systems?
7.	What is the purpose of oil filters?
8.	What is crankcase ventilation?
9.	What are the types of valves used in engines?
10.	What is the difference between cylinder block and cylinder head?

S.No	Part-B Questions
1.	Describe the construction and function of a vehicle chassis. Explain its importance in vehicle stability and safety.
2.	Explain the different types of engine constructions, including inline, V-type, and opposed engines. Discuss their advantages and disadvantages
3.	Describe the construction and function of a piston and piston rings. Explain their importance in engine performance and efficiency.
4.	Explain the working of a crankshaft and its importance in engine operation. Discuss its construction and materials.
5.	Describe the different types of lubrication systems used in engines, including splash, pressure, and dry sump systems. Explain their advantages and disadvantages.
6.	Explain the importance of cylinder head design and construction. Discuss the different components of a cylinder head and their functions.
7.	Describe the construction and function of connecting rods. Explain their importance in engine operation and performance.
8.	Explain the working of valves in an engine. Discuss the different types of valves and their applications.
9.	Describe the importance of crankcase ventilation in engines. Explain the different types of crankcase ventilation systems and their working.
10.	Discuss the importance of engine component design and materials in achieving optimal engine performance, efficiency, and durability.

Unit-II

S.No	Part-A Questions
1.	What is the function of an ignition coil in a vehicle?
2.	What is the difference between a magneto and a coil ignition system?
3.	What is the purpose of a spark plug in an engine?
4.	What is the function of a distributor in a conventional ignition system?
5.	What are the advantages of electronic ignition systems over conventional systems?
6.	What is the function of a carburetor in a fuel system?
7.	What are the different types of fuel injection systems?
8.	What is the difference between mono-point and multi-point fuel injection systems?
9.	What is the function of a unit injector in a diesel engine?
10.	What is GDI, and how does it differ from MPFI?

S.No	Part-B Questions
1.	1. Describe the construction and working of a coil ignition system. Explain its advantages and disadvantages.
2.	Explain the working of an electronic ignition system. Discuss its advantages over conventional ignition systems.
3.	Describe the construction and working of a carburetor. Explain its advantages and disadvantages.
4.	Explain the working of a multi-point fuel injection system. Discuss its advantages over carburetor.
5.	Describe the construction and working of a unit injector. Explain its advantages and applications.
6.	Compare and contrast the different types of fuel injection systems, including mono-point, multi-point, and direct injection systems
7.	Explain the working of an Electronic Fuel Injection (EFI) system. Discuss its advantages and applications in modern vehicles.
8.	Describe the advantages and disadvantages of Gasoline Direct Injection (GDI) systems. Explain their working and applications.
9.	Compare and contrast the MPFI and DTSI fuel injection systems. Discuss their advantages and applications.
10.	Discuss the importance of ignition and fuel supply systems in vehicle performance and emissions. Explain how these systems can be optimized for better performance and lower emissions.

Unit-III

S.No	Part-A Questions
1.	What is the principle of steering in vehicles?
2.	What is steering geometry, and why is it important?
3.	What are the different types of steering linkages?
4.	What is the function of a steering gearbox?
5.	What are the advantages of power steering?
6.	What is the difference between independent and solid axle suspension?
7.	What are the types of springs used in suspension systems?
8.	What is the function of shock absorbers?
9.	What is the purpose of wheel alignment?
10.	What are the benefits of proper steering and suspension system maintenance?

S.No	Part-B Questions
1.	Describe the principle of steering in vehicles. Explain the different types of steering geometry and their importance.
2.	Explain the construction and working of a steering gearbox. Discuss its importance in vehicle steering.
3.	Describe the different types of steering linkages used in vehicles. Explain their advantages and disadvantages.
4.	Discuss the advantages and disadvantages of power steering systems. Explain their working and applications.
5.	Describe the construction and function of independent suspension systems. Explain their advantages over solid axle suspension.
6.	Explain the working of coil springs and leaf springs in suspension systems. Discuss their advantages and disadvantages.
7.	Describe the construction and function of shock absorbers. Explain their importance in vehicle stability and ride comfort.
8.	. Discuss the importance of wheel alignment in vehicle maintenance. Explain the different types of wheel alignment and their effects on vehicle performance.
9.	Compare and contrast the different types of suspension systems, including independent and solid axle suspension.
10.	Explain the role of steering and suspension systems in vehicle safety and stability. Discuss the importance of regular maintenance and inspection of these systems.

Unit-IV

S.No	Part-A Questions
1.	What is the function of a wheel in a vehicle?
2.	What are the different types of tyres used in vehicles?
3.	What are the common causes of tyre wear?
4.	What is the purpose of brakes in a vehicle?
5.	What are the different types of braking systems?
6.	How does a drum brake work?
7.	What is the advantage of disc brakes over drum brakes?
8.	What is the function of ABS in a vehicle?
9.	What are retarders, and how do they work?
10.	What is vacuum assist in braking systems?

S.No	Part-B Questions
1.	Describe the construction and types of wheels used in vehicles. Explain their importance in vehicle performance and safety.
2.	Explain the different types of tyres used in vehicles, including their construction and applications.
3.	Discuss the causes of tyre wear and explain how to maintain tyres for longer life.
4.	Describe the working of drum brakes and disc brakes. Compare their advantages and disadvantages.
5.	Explain the working of hydraulic and pneumatic braking systems. Discuss their applications and advantages
6.	Describe the working of Anti-lock Braking System (ABS). Explain its importance in vehicle safety.
7.	Discuss the importance of brake maintenance and inspection. Explain the common problems that can occur in braking systems.
8.	Explain the working of retarders in vehicles. Discuss their advantages and applications.
9.	Describe the construction and working of vacuum assist braking systems. Explain their importance in vehicle safety.
10.	Compare and contrast the different types of braking systems, including mechanical, hydraulic, and pneumatic systems.

Unit-V

S.No	Part-A Questions
1.	What is the function of a battery in an automobile?
2.	What is an Active Suspension System (ASS), and how does it work?
3.	What is Electronic Brake Distribution (EBD), and how does it improve vehicle safety?
4.	What is the purpose of Traction Control System (TCS) in vehicles?
5.	How does Global Positioning System (GPS) work in navigation systems?
6.	What are hybrid vehicles, and how do they work?
7.	What is a fuel cell, and how does it work in vehicles?
8.	What are the advantages of electronic stability programs (ESP) in vehicles?
9.	How does a general electrical circuit work in an automobile?
10.	What are the benefits of using advanced automotive technologies?

S.No	Part-B Questions
1.	Describe the construction and working of a lead-acid battery. Explain its applications in automobiles.
2.	Explain the working of Active Suspension System (ASS). Discuss its advantages and applications in vehicles.
3.	Describe the working of Electronic Stability Program (ESP). Explain its importance in vehicle safety and stability.
4.	Discuss the working of Traction Control System (TCS). Explain its importance in vehicle traction and stability.
5.	Explain the working of Global Positioning System (GPS) in navigation systems. Discuss its applications and advantages.
6.	Describe the working of hybrid vehicles. Discuss their advantages and disadvantages.
7.	Explain the working of fuel cells in vehicles. Discuss their advantages and challenges.
8.	Compare and contrast the different types of advanced automotive technologies, including ASS, ESP, and TCS.
9.	Discuss the importance of electronic systems in modern vehicles. Explain their impact on vehicle safety, performance, and efficiency.
10.	Describe the future trends and advancements in automobile engineering, including electrification, autonomous vehicles, and connectivity.