



**Module-4**

- 7 a. Write the advantages and limitations of turbocharging. (04 Marks)  
b. What is supercharging? Write the objectives and effects of supercharging. (08 Marks)  
c. Briefly explain centrifugal type of vane type of superchargers. (08 Marks)

**OR**

- 8 a. With the help of a neat sketch, explain the working principle of simple carburetor. (08 Marks)  
b. Briefly describe the throttle body injection type MPFI system. (04 Marks)  
c. With a neat sketch, explain electronic injection system. (08 Marks)

**Module-5**

- 9 a. Briefly explain the mechanism of photochemical smog formation. (06 Marks)  
b. Write notes on:  
(i) Thermal reactor package (06 Marks)  
(ii) Catalytic converter package (08 Marks)  
c. Describe the EGR device for the control of oxides of Nitrogen. (08 Marks)

**OR**

- 10 a. Describe with sketches the following methods of petrol exhaust emission control:  
(i) After-burner  
(ii) Exhaust manifold reactor  
(iii) Catalytic converter system (10 Marks)  
b. Write note on:  
(i) Motor vehicle act  
(ii) Euro and Bharath stage norms (10 Marks)

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