

Reg. No. : 

--	--	--	--	--	--	--	--	--	--	--

**H 2321**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2009.

Eighth Semester

Mechanical Engineering

ME 437 — AUTOMOBILE ENGINEERING

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State various requirements of engine gaskets.
2. What is piston slap?
3. What is the need of the clutch in automobile?
4. Write the advantages of constant mesh gear box.
5. How is the length of propeller shaft varied automatically?
6. What is critical whirling speed?
7. State the disadvantages of independent suspension system.
8. Name any three types of steering gears.
9. State factors of wheel alignment.
10. What is the purpose of shoe brake adjuster?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain clearly various methods of improving engine performance.
- (ii) State the functions which a piston in a automobile engine cylinder is required to perform. Discuss various methods used to avoid piston slap.

Or

- (b) (i) Give a brief account of air pollution due to engines.
- (ii) How knock emission are caused and what are their effects on environment?
12. (a) (i) Discuss the advantages and disadvantages of electronic ignition system compared to the conventional electrical ignition system.
- (ii) Discuss in detail various tests for ascertaining the fitness of a battery to be used in a vehicle.

Or

- (b) (i) Draw a simplified diagram of Solex carburetor and explain its working discussing clearly, idling , low speed operation, normal running and acceleration.
- (ii) Sketch any fuel injector and explain its working.
13. (a) (i) Discuss in detail different methods of supporting rear axle shafts. Describe also the advantages of each.
- (ii) Explain the necessary of a differential in an automobile. Discuss in detail the construction and operation of the differential.

Or

- (b) (i) What is an epicyclic gear box and explain its working.
- (ii) Where and why do we use multiplate clutches? Explain the constructional details and working of the multiplate dry clutch.
14. (a) (i) Describe the requirements of an automobile wheel? Explain with the help of the suitable sketches the construction of the disc type wheel. Compare the same with the wire type wheel.
- (ii) Explain various design consideration for the design of tyre treads.

Or

- (b) (i) Briefly describe construction and working of disc brakes. Compare them with the conventional drum brakes.
  - (ii) Write notes on :
    - (1) Leaf spring suspension
    - (2) Coil spring suspension.
    - (3) Torsion bar suspension.
15. (a) (i) What is natural gas? What are the advantages and disadvantage of using natural gas as alternate fuels?
- (ii) Compare LPG and petrol as fuel for SI engines.

Or

- (b) (i) What all other possible fuels for engines? Explain.
  - (ii) With a sketch explain LPG (propane) fuel feed system.
-