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Question Paper Code : 21862

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Sixth Semester

Mechanical Engineering

ME 2354/ME 62/10122 ME 604 — AUTOMOBILE ENGINEERING

(Regulations 2008/2010)

(Common to PTME 2354/10122 ME 604 Automobile Engineering for B.E. (Part-Time) Fifth/Sixth Semester – Mechanical Engineering – Regulations 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the typical specifications of an automobile.

2. Why a gear box is required in an automobile?

3. Mention the principle of operation of a distributor type pump.

4. What do you understand by common rail direct injection system? Give its salient features.

5. Give the function of a clutch? List down the different types of clutches.

6. Mention the purpose of synchromesh mechanism.

7. Mention the function of a steering gear. List down any two types of steering gear.

8. What do you understand by traction control?

9. List down the major constituents of natural gas and LPG.

10. Indicate the difference between an electric vehicle and a hybrid vehicle.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the different types of automobiles. (8)

(ii) Draw the layout of an automobile and indicate its various components. (8)

Or

(b) (i) Discuss the various resistances encountered by an automobile. (8)

(ii) List down any five components of an engine indicating their functions and materials. (8)

12. (a) (i) Explain the function of various components of an electronically controlled gasoline injection system. (8)

(ii) Draw the layout of an electronically controlled ignition system and mention the function of each component. (8)

Or

(b) (i) Discuss the principle of operation of a turbocharger with a neat sketch. (8)

(ii) Draw a sketch of a three way catalytic converter and explain its principle of operation. (8)

13. (a) (i) Explain the principle of operation of a multiplate clutch with a neat sketch. (8)

(ii) With a neat sketch discuss the construction and operation of a constant mesh gear box. (8)

Or

(b) (i) Draw a neat sketch of a differential and explain its operation. (12)

(ii) Distinguish between Hotchkiss drive and torque tube drive. (4)

14. (a) (i) Explain the principle of operation of a power steering system with a neat sketch. (8)

(ii) With a sketch explain the operation of a telescopic type shock absorber. (8)

Or

(b) (i) Discuss the different types of front axles. (8)

(ii) With a neat sketch explain the principle of operation of antilock braking system. (8)

15. (a) (i) Discuss the advantages and disadvantages of using LPG as an alternative fuel in engines. (8)

(ii) Explain the performance and emission characteristics of using biodiesel in a CI engine. (8)

Or

(b) (i) Explain the principle of operation of an electric vehicle with a neat sketch indicating its merits and demerits. (8)

(ii) Discuss the principle of operation of a fuel cell with a neat sketch. (8)

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