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Question Paper Code : 50861

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Sixth/Eighth Semester

Mechanical Engineering

ME 8091 – AUTOMOBILE ENGINEERING

(Common to : Mechanical Engineering(Sandwich)/Mechatronics
Engineering/Robotics and Automation)

(Regulations – 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the main systems of an automobile?
2. Name the various aerodynamic forces and moments acting on a vehicle in motion.
3. Write the significance of WGT type turbocharger.
4. Distinguish between Bharat stage III and Bharat stage IV emission norms.
5. What are the types of automobile clutches?
6. State the importance of slip joints in the driveline of a vehicle.
7. Mention the advantages of steering geometry.
8. List the components of traction control system.
9. Differentiate between bio-fuel and bio-diesel.
10. What are the types of fuel cell?

PART B — (5 × 13 = 65 marks)

11. (a) Draw the layouts of automobile chassis used in front engine front drive vehicles.

Or

- (b) Explain with a neat sketch the construction and working of a variable valve timing mechanism used in automobiles.

12. (a) Draw the layout of Electronic ignition system and mention the functions of each component.

Or

- (b) Explain with a neat sketch in the working of distributor type fuel pump.

13. (a) Discuss the working method of fluid flywheel.

Or

- (b) Describe the torque tube drive with suitable sketch.

14. (a) Explain with a neat diagram front independent suspension system.

Or

- (b) Draw the schematic diagram of hydraulic braking system and explain.

15. (a) What are the merits and demerits of LPG, LNG and Hydrogen fuel?

Or

- (b) Discuss with a neat sketch the construction and working principle of Hybrid vehicles.

PART C — (1 × 15 = 15 marks)

16. (a) Analyze the working of four channels four sensor types ABS system used in passenger cars with suitable diagram.

Or

- (b) Describe briefly about the modifications required for using Alcohol as an alternate fuel in S.I engine.