Reg. No. | | | | | | | | | | | | |

Question Paper Code :X10817

B.E./B.Tech. DEGREE EXAMINATIONS NOVEMBER / DECEMBER 2020

Fifth / Seventh Semester

Mechanical Engineering

OAT551 AUTOMOTIVE SYSTEMS

(Common to Mechatronics Engineering, Aeronautical Engineering, Computer and communication Engineering, Electrical and Electronics Engineering, Robotics and Automation, Electronics and Instrumentation Engineering, Industrial Engineering & Management, Instrumentation and Control Engineering)

(Regulations 2017)

Time: 3 Hours Answer ALL Questions Max. Marks 100

PART- A (10 x 2 = 20 Marks)

1. List out the various materials used in an IC engine?
2. Mention the function of coil ignition system in a vehicle.
3. Enumerate any two requirements of good frame in vehicle.
4. Why is camber angle provided in steering systems?
5. Mention the phenomenon of torque multiplication.
6. Tabulate the difference between Hotchkiss drive and Torque Tube drive.
7. Define caster and chamber.
8. State king pin inclination and its use.
9. Compare the properties of alcohols and gasoline engine fuels.
10. List the methods for using hydrogen as a fuel.

PART- B (5 x 13 = 65 Marks)

11. a) i) Explain about a transistorized coil ignition system.
ii) With a neat block diagram explain the capacitive discharge ignition system.

OR

b) Explain in detail about variable valve Timing.

12. a) Describe the following terms:
   a) Load distribution in frames. (3)
   b) Frame types with neat sketch (3)
   c) Frame materials. (3)
   d) Frame testing (4)

OR

b) Discuss the frame type construction chassis construction with neat sketch.

13. a) Explain the working of friction clutches and what are the assumptions made in pressure calculation.

OR

b) Describe the construction and working of an over drive with neat sketch and list out its advantages.

14. a) (i) List different types of front axles and explain any two in detail.
(ii) With a neat sketch explain the principle of operation of antilock braking system.

OR

b) Classify the four parameters of wheel alignment with neat sketches. Explain them in details.

15. a) Illustrate the modifications required for converting petrol fuelled vehicles into LPG fuelled vehicles.

OR

b) With a neat sketch explain the engine emission control by three way catalytic converter system.

PART- C (1 x 15 = 15 Marks)

16. a) Explain the Operational features of electronics engine management system with neat sketch.

OR

b) Classify fuel cells based on the type of electrolyte and explain in detail.