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

Question Paper Code : 71045

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth/Seventh Semester

Aeronautical Engineering

OAT 551 — AUTOMOTIVE SYSTEMS

(Common to Aerospace Engineering/Computer and Communication Engineering/ Electrical and Electronics Engineering/Electronics and Instrumentation Engineering/Industrial Engineering/Industrial Engineering and Management/ Instrumentation and Control Engineering/Manufacturing Engineering/Marine Engineering/Material Science and Engineering/ Mechanical Engineering/ Mechanical Engineering (Sandwich)/Mechanical and Automation Engineering/ Mechatronics Engineering/Production Engineering/Robotics and Automation/ Bio Technology/Food Technology/Pharmaceutical Technology)

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the requirements of a spark plug?

2. Name any four major parts of an electronic fuel injection system.

3. What is steering ratio?

4. What are the wheel alignment parameters?

5. What is a Hotchkiss drive?

6. Differentiate between a live and dead axle.

7. What are the disadvantages of having rigid axle suspension?

8. What are the compositions of brake lining?

9. What are the advantages of compressed natural gas as a fuel in I.C. engines?

10. What are the advantages and disadvantages of fuel cell vehicle?

PART B — (5 × 13 = 65 marks)

11. (a) Discuss the principle of operation of a four stroke cycle S.I. Engine with a neat sketch. (13)

Or

(b) Describe the construction and working principles of transistorized ignition system. (13)

12. (a) Explain the construction of various frames used in automobiles with neat sketch. (13)

Or

(b) Describe with the help of neat sketches the different type of stub axles. (13)

13. (a) With a neat sketch, explain the working of simple floor mounted gear shift mechanism. (13)

Or

(b) Explain with the help of a neat sketch the construction of a propeller shaft. (13)

14. (a) Explain the working of suspension systems and also list the advantages and disadvantages of independent front and rear suspension. (13)

Or

(b) Explain the construction and operation of hydraulic braking system also mention the function of each component. (13)

15. (a) Explain briefly about the history, current use, and process of utilization and advantages of biomass, as a fuel. (13)

Or

(b) Discuss the principle of operation of a turbocharger with a neat sketch. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the construction details of leaf, coil and torsion bar springs. (15)

Or

(b) Sketch and explain a typical power steering gear box and compare it with ordinary steering system. (15)

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