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MECH  
19/11



Reg. No. : 

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**Question Paper Code : 90432**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019  
Fifth Semester

Aeronautical Engineering

OAT551 – AUTOMOTIVE SYSTEMS

(Common to Electrical and Electronics Engineering/Industrial Engineering/  
Industrial Engineering and Management/Materials Science and Engineering/  
Mechanical Engineering/Robotics and Automation Engineering/Food Technology/  
Pharmaceutical Technology/Computer and Communication Engineering/  
Electronics and Instrumentation Engineering/Instrumentation and  
Control Engineering/Manufacturing Engineering/Marine Engineering/  
Mechanical and Automation Engineering/Mechatronics Engineering/  
Production Engineering/Bio Technology)  
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define "Intermittent injection" of petrol engine.
2. Write the need of using I – Cross section in connecting rod.
3. What are the types of cross-sectional frames used in an automobile ?
4. List the forces acting on the running vehicles.
5. Enumerate features of a good quality clutch.
6. Define synchronizer ? Why synchronesh device is usually not employed in the reverse gear ?
7. What is the need of antilock braking system ?
8. List the advantages of independent suspension system.
9. What is the composition of LPG ?
10. Define fuel cell, with an example.



## PART - B

(5×13=65 Marks)

11. a) Explain the working of electronic fuel injection system.

(OR)

b) Explain with a sketch the functioning of a capacitive discharge ignition system and transistorized ignition system.

12. a) Explain with sketches the different types of vehicle chassis and body.

(OR)

b) i) What are the functions of steering system ? (6.5)

ii) Discuss in detail about the working of steering linkage system with suitable sketches. (6.5)

13. a) Enumerate the functions of a Torque Tube drive configuration. Also compare between Hotchkiss Drive and Torque Tube Drive.

(OR)

b) Explain the construction and working of a constant mesh gear box with neat sketch.

14. a) With an aid of neat sketch, explain the working of pneumatic suspension system.

(OR)

b) Explain the construction and working of vacuum servo braking system.

15. a) Explain the necessary engine modifications for a CI engine to be fueled with Bio-ethanol.

(OR)

b) Explain the construction and working of hybrid vehicle with neat sketch.

## PART - C

(1×15=15 Marks)

16. a) Explain about the forces and resistances on the vehicle body.

(OR)

b) Express the technical specifications of any one electric car available in India. Describe the working of it and comment on the suitability to adopt EV's in India.

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