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**Question Paper Code : 41411**

03/05/18  
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**B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018**  
**Sixth/Seventh/Eighth/Tenth Semester**  
**Mechanical Engineering**  
**ME 6602 – AUTOMOBILE ENGINEERING**  
(Common to : Mechanical Engineering (Sandwich)/Mechatronics Engineering/  
B.E. Robotics and Automation Engineering)  
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

**PART – A**

**(10×2=20 Marks)**

1. List atleast two IC engine component and material they are made up of.
2. Mention any two moments connected with vehicle aerodynamics.
3. Mention atleast two types of electronic ignition systems.
4. Are Euro and Bharat emission norms the same ? If not then the difference between them.
5. What is a fluid flywheel ? Where is it used ?
6. What is torque tube drive ? Where it is used ?
7. Mention the type of steering gear commonly used in light motor vehicles.
8. What is traction control ? Mention its significance.
9. What is gasohol ?
10. Mention atleast two merits of an hybrid electric vehicle.

**PART – B**

**(5×13=65 Marks)**

11. a) Briefly explain with sketches different types of vehicle chassis and body.

(OR)

- b) List atleast six IC engine components and mention their functioning, material they are made up of and a schematic of the same.



12. a) Explain with a sketch the functioning of a capacitive discharge ignition system. List its merits over a transistorized coil ignition system.

(OR)

- b) With the help of an illustration, explain the working of a port fuel injection system in a SI engine. Mention its merits and demerits with regard to throttle body injection.

13. a) State the need for a clutch in an automobile. Describe the diaphragm operated clutch system with a sketch.

(OR)

- b) What is the function of a rear axle ? Draw a schematic of a rear axle of a bus/truck.

14. a) Describe with an illustration the steering geometry and how it affects motion of an automobile. Mention the difference between manual and power assisted steering.

(OR)

- b) What is the need for a suspension system ? Draw a schematic of a front suspension system, indicate the parts and their function.

15. a) Compare the performance and emission characteristics of a vehicle fuelled with Bio-ethanol with that of a neat gasoline fuelled vehicle.

(OR)

- b) Explain the necessary engine modifications for a CI engine to be fuelled with natural gas. Support your answer with its significance and how it affects the functioning of the engine.

PART – C

(1×15=15 Marks)

16. a) Discuss the working and salient features of the following with a neat sketches.

i) Hotchkiss drive. (7)

ii) Transfer box mechanism. (8)

(OR)

b) i) Explain the working principle, merits and demerits of a fuel cell with schematic diagrams. (10)

ii) Compare the merits of a pure electric vehicle over conventional automotive vehicle. (5)