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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013

MECHANICAL ENGINEERING

Sixth Semester

ME 501 / ME 9029 AUTOMOBILE ENGINEERING

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What is the necessity for a-chassis?
2. What do you understand by a hybrid vehicle?
3. Expand the terms- i) GDI ii) HCCI
4. List out two major pollutants from a petrol engine.
5. State the need for a clutch in a vehicle.
6. What is the difference between manual and automatic gear box?
7. List two safety systems in an automobile.
8. Name any two functions of a steering system.
9. Why engine tuning is necessary?
10. What do you understand by the word "Dynamometer"?

Part – B (5 x 16 = 80 marks)

11. Describe about the wind tunnel testing of vehicles. (16)

12. a) Explain the construction of a monocoque body structure of a vehicle? (16)

(OR)

b) Draw a schematic of an electric vehicle and explain its operation. How does an electric vehicle differ from a hybrid vehicle? (8+8)

13. a) With a neat schematic explain the operation of a three way catalytic converter. (16)

(OR)

b) Explain the various pollutants from a Diesel engine and methods to control them. (16)

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14. a) How does a four speed synchromesh gear box gearbox function? Support your answer with a schematic. (10+6)

(OR)

- b) Sketch the different types of rear axles and mention their merits & demerits. (16)

15. a) State the functions of a suspension system? Explain at least one front and one rear suspension system. (4+6+6)

(OR)

- b) Define Ackermann's steering principle. Also explain the different types of manual steering mechanisms with a schematic? (4+12)