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B.E/B TECH. (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2012

EIGHTH SEMESTER

MECHANICAL ENGINEERING

ME 9029 AUTOMOBILE ENGINEERING

(REGULATIONS 2008)

Time : 3 hr

Max Mark : 100

Answer ALL Questions

PART- A (10 x 2 = 20 Marks)

1. What are wind and rolling resistances?
2. List down the different types of chassis.
3. Mention the principle of Wankel's rotary engine.
4. What is a HCCI engine? Give its features.
5. Give the function of a gear box? List down the different types of gear boxes.
6. What are live and dead axles?
7. Define caster and toe-out.
8. What is an antilock brake system?
9. What do you understand by engine tuning? Why engines have to be tuned?
10. List down any four important modern garage equipments.

PART- B (5 x 16 = 80 Marks)

- 11 i). Draw the layout of an automobile with hybrid electric system and indicate its various components. (8)
 - ii). Discuss the various resistances encountered by an automobile. (8)
 - 12 a i). With a sketch explain the working principle of GDI system with sensors. (8)
 - ii). Explain the principle of operation of hybrid electric system with a neat sketch. (8)
- (OR)
- b i). Explain the sources of particulate matter, UBHC and NOx emissions. (10)
 - ii). Describe the features of using LPG in automobiles. (6)
 - 13 a i). Explain the principle of operation of a multiplate clutch with a neat sketch. (8)
 - ii). With a neat sketch discuss the construction and operation of a synchromesh gear box. (8)

(OR)

- b i). Draw a neat sketch of a differential and explain its operation. (12)
ii). Discuss the different types of rear axles. (4)

- 14 a i). With a neat sketch explain the construction and principle of operation of a hydraulic brake system. (8)
ii). Mention the function of various components of a steering system. (8)

(OR)

- b i). Describe with the help of neat sketch the construction and principle of operation of a shock absorber. (8)
ii). Explain with a neat sketch the construction of an alternator. (8)

- 15 a i). What is a chassis dynamometer? Explain its operation with a neat sketch. (8)
ii). Explain the tests that are performed for the determination of pollutants. (8)

(OR)

- b i). What is a wind tunnel? Explain how it can be used for measurements indicating clearly the parameters that can be studied. (8)
ii). Write a note on crash testing. Give the importance of crash testing. (8)

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