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Question Paper Code : X10684

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2021
Sixth/Eighth Semester
Mechanical Engineering
ME 8091 – AUTOMOBILE ENGINEERING
(Common to Mechatronics Engineering/Robotics and Automation/Mechanical
Engineering (SW))
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. How automobile is classified on the basis of type of wheel drive ?
2. What is Yawing moment ?
3. Define common rail direct injection system.
4. State the advantages of electronic ignition system using contact breaker.
5. State the requirements of an automotive clutch.
6. What will happen if differential is not used ?
7. Write about the function of a braking system.
8. What are the functions of the shock absorber ?
9. List out the various forms of natural gas.
10. Define octane number.

PART – B

(5×13=65 Marks)

11. a) Draw the layout of four-wheel drive and list its advantages and disadvantages.

(OR)

- b) Draw schematic diagrams showing the layout of the transmission system of a rear wheel driven car and also of a four wheel drive vehicle.



12. a) Describe in detail the working of rotary distribution type fuel injection system.

(OR)

b) Explain with a suitable sketch the working of a Transistorized Coil Ignition (TCI) system. What are the advantages and disadvantages of the TCI system ?

13. a) With the help of a neat sketch, explain the construction and operation of a sliding mesh gearbox.

(OR)

b) Illustrate the construction and working of a differential with a neat sketch.

14. a) Explain the construction and working of mechanical brakes with a neat sketch.

(OR)

b) Sketch and explain the working of telescopic hydraulic shock absorber. What effect does their action have on the working of springs ?

15. a) Explain the construction of LPG system in petrol engine and describe the salient features of using LPG as alternate fuel.

(OR)

b) Write short notes about Hybrid vehicle and write its principle and mention the main components of a hybrid transmission.

PART – C

(1×15=15 Marks)

16. a) Compare electric vehicle to a conventional vehicle powered by a petrol engine. State salient features of an electric vehicle.

(OR)

b) A sliding mesh type of gear box with forward speeds only is to be designed. The gear box should have the following gear ratios available approximately : 1.0, 1.5, 2.5 and 3.9, the center distance between the lay shaft and the main shaft is 78 mm and the smallest gear is to have at least 16 teeth with a diametral pitch of 3.25 mm. Calculate the number of teeth of the various gears and the exact gear ratios thus available.
