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15ME655

Sixth Semester B.E. Degree Examination, Feb./Mar. 2022 Automobile Engineering

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What are the different types of engine cylinder arrangements? With a neat sketch, explain Opposed cylinder. (06 Marks)
b. With a neat sketch, explain I.C Engine Piston. (06 Marks)
c. Explain the following : i) HCCI ii) Hybrid Engine. (04 Marks)

OR

- 2 a. With a neat sketch, explain Valve timing diagram of 4 – S Diesel Engine. (08 Marks)
b. What are the different methods of lubrication system? With a neat sketch, explain Pressurised lubrication. (08 Marks)

Module-2

- 3 a. What is the use of Clutch? What are the different types of Clutches? (06 Marks)
b. The clutch plate of an automobile has inside and outside diameters as 150mm and 250mm. The total force provided by six springs in the clutch is 4.8 KN, when the clutch is new and each spring is compressed 5mm. The maximum torque developed by the engine is 275 N-m. Find i) Factor of safety for the new clutch.
ii) The amount of wear of clutch face before it starts stepping. Take $\mu = 0.3$. (10 Marks)

OR

- 4 a. With a neat sketch, explain Planetary Gear System. (06 Marks)
b. Differentiate between Disc and Drum type of brakes. (06 Marks)
c. What do you mean by ABS? What are its advantages? (04 Marks)

Module-3

- 5 a. What do you mean by camber and castor? What are its effect? (06 Marks)
b. A motor vehicle has a wheel base of 2.75m and pivot centres are at a distance of 1.05m apart. The wheel track is 1.25m. Determine an outside angle lock and turning circle radius of outer front and inner rear wheels. When the angle of inside lock is 40° . (10 Marks)

OR

- 6 a. With a neat sketch, explain Air Suspension System. (08 Marks)
b. With a neat sketch, explain Magneto Ignition System. (08 Marks)

Module-4

- 7 a. What do you mean by Super Charging? What are its advantages and disadvantages? (08 Marks)
b. What are the limitations of Turbo Charging? (03 Marks)
c. With a neat sketch, explain Normal and Abnormal Combustion in SI Engine. (05 Marks)

OR

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 8 a. With a neat sketch, explain Carter Carburetor. (08 Marks)
b. What do you mean by CRDI? With a neat sketch, explain Mechanical Fuel Pump. (08 Marks)

Module-5

- 9 a. What are the different ways to reduce the Emission of an Automobiles? With a neat sketch, explain Evaporative Control System. (08 Marks)
b. Explain the different ways of treating the Exhaust Gas. (08 Marks)

OR

- 10 a. When the Bharat Stage IV came into Act? Explain different Emission standards for different vehicles. (10 Marks)
b. Explain the function of Catalytic Converter. (06 Marks)
