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Eighth Semester B.E. Degree Examination, July/August 2022
Automotive Engineering

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1
 - a. Explain the various methods of cylinder arrangements in multi cylinder engine. (08 Marks)
 - b. With a neat sketch, explain the Pump circulation system of cooling. (05 Marks)
 - c. What is Air Swirl? What are the methods of Swirl generation in C.I. Engines? Explain briefly. (07 Marks)
- 2
 - a. Explain with neat diagram, Normal and Abnormal Combustion. (06 Marks)
 - b. What are the main functions of Carburetor? Explain C.C Carburetor with sketch. (10 Marks)
 - c. Briefly explain the Alternative Fuels for I.C. Engines. (04 Marks)
- 3
 - a. What are the differences between Supercharging and Turbocharging? (05 Marks)
 - b. With a neat diagram, explain Centrifugal and Root blower type of Superchargers. (10 Marks)
 - c. Sketch and explain working of a Turbo charger. (05 Marks)
- 4
 - a. Name the different types of Ignition system. Explain with a neat diagram of Battery ignition system. (10 Marks)
 - b. What is Ignition Advance? Explain the Centrifugal Ignition Advance. (06 Marks)
 - c. What are the differences between Battery and Magneto Ignition system? (04 Marks)

PART – B

- 5
 - a. What is the function of a Clutch? Explain the working of Single plate clutch. (08 Marks)
 - b. With a neat sketch, explain the working of Constant Mesh gearbox. (06 Marks)
 - c. The clutch plate of an automobile has inside and outside diameters as 150 and 250mm. The total force provided by six springs in the clutch is 4.8kN, when the clutch is new and each spring is compressed 5mm. The maximum torque developed by the engine is 275Nm. Find
 - i) Factor of safety for the new clutch and
 - ii) The amount of wear of the clutch facing that will take place before the clutch starts slipping. Take $\mu = 0.3$. (06 Marks)
- 6
 - a. What are the components of Drive line? Explain function of each of them. (06 Marks)
 - b. With a neat diagram, explain Torque Tube drive. (08 Marks)
 - c. Define the following and explain their effect on steering :
 - i) Camber
 - ii) Kingpin angle
 - iii) Castor
 - iv) Toe in or out. (06 Marks)
- 7
 - a. Explain the principle of Air Suspension System and also draw layout of Air Suspension System. (06 Marks)
 - b. Draw suitable diagram of Drum brakes. Explain briefly. (06 Marks)
 - c. With a neat sketch, explain Hydraulic Braking System. (08 Marks)
- 8
 - a. What are the methods of controlling the Engine Emission? Explain with a neat sketch, the function of E. G. R system. (08 Marks)
 - b. Write short notes on : i) Air Injection system ii) Emission standards. (08 Marks)
 - c. Explain briefly the Catalytic Converter. (04 Marks)