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10ME844

Eighth Semester B.E. Degree Examination, Aug./Sept.2020
Automotive Engineering

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain with sketch various methods of cylinder arrangements used in multicylinder engines. **(08 Marks)**

b. What are the various methods of engine cooling? Explain with sketch the thermosyphon system of cooling. **(06 Marks)**

c. What are the functions of piston rings? Explain briefly. **(06 Marks)**

2 a. What is meant by carburetion? What are the functions of carburetor? **(06 Marks)**

b. What are the main components of a Fuel Supply System? Explain any two in both SI and CI engines. **(08 Marks)**

c. Draw a neat sketch of mechanical fuel pump and explain its working. **(06 Marks)**

3 a. What is the necessity of super-charging? Explain briefly. **(06 Marks)**

b. Explain the different types of super-chargers. **(08 Marks)**

c. Compare Mechanical Super Charging and Turbo-Charging. **(06 Marks)**

4 a. Explain with a neat sketch, working of a battery ignition system. **(08 Marks)**

b. What are the advantages of using an electronic ignition system? **(06 Marks)**

c. Compare battery and magneto ignition system. **(06 Marks)**

PART – B

5 a. Explain principles of automotive transmission. **(06 Marks)**

b. Explain the working principle of clutch and with neat sketch, explain centrifugal clutch. **(08 Marks)**

c. Determine the dimensions of a clutch plate developing 40 K Watts at 4000 rpm. The inner diameter of the clutch plate is 0.6 times its outer diameter and it is to be ensured that even after a loss of 30% of the engine torque developed due to clutch facing wear, it should not slip. The pressure intensity should not exceed 75 kPa. Take $\mu = 0.3$. **(06 Marks)**

6 a. Explain with neat sketch: (i) Hotchkiss drive (ii) Torque tube drive **(08 Marks)**

b. Explain the working of power steering with a sketch. What are the advantages and disadvantages over manual steering? **(06 Marks)**

c. Write a short note on different types of Chasis Frame. **(06 Marks)**

7 a. What are the requirements of good suspension system? **(06 Marks)**

b. What are the merits and demerits of hydraulic brakes over mechanical brakes? **(06 Marks)**

c. Sketch and explain the two types of dual braking system. **(08 Marks)**

8 a. By what methods the emissions of pollutants in automotives can be reduced? Explain briefly. **(06 Marks)**

b. Write a note on alternative fuels for automotive engines. **(04 Marks)**

c. Explain emissions standard which are followed in India. **(05 Marks)**

d. Explain the working of Automotive Exhaust Gas Recirculation System EGR). **(05 Marks)**

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