USN

10ME844

Eighth Semester B.E. Degree Examination, June/July 2017
Automotive Engineering

Time: 3 hrs. Max. Marks: 100

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

PART – A

1 a. Explain wet and dry liners with the help of diagrams. **(06 Marks)**
b. With a neat sketch, explain pump circulation system of water cooling. **(07 Marks)**
c. Explain single row overhead valve mechanism with a neat sketch. **(07 Marks)**

2 a. Describe fuel mixture requirements of S.I.Engine. **(06 Marks)**
b. Draw a typical diesel engine fuel injector and explain its working. **(08 Marks)**
c. Define the terms cetane number and octane number. How they are related to knocking phenomenon in IC engines? **(06 Marks)**

3 a. Define super charging. Also explain centrifugal type supercharger. **(08 Marks)**
b. Enumerate the advantages of turbocharging in diesel engines. **(06 Marks)**
c. Write a brief note on intercooler. **(06 Marks)**

4 a. With a neat diagram, explain the battery ignition system. **(07 Marks)**
b. Draw and explain a typical electronic ignition system. **(07 Marks)**
c. Explain vaccum advance mechanism with a neat figure. **(06 Marks)**

PART – B

5 a. Explain torque converter with a neat sketch. **(06 Marks)**
b. With a neat diagram, explain synchromesh three speed gear box. **(07 Marks)**
c. The engine of a car employing a single plate friction clutch develops maximum torque of 150 Nm. External diameter of the clutch plate is 1.2 times its internal diameter. Determine the dimensions of the clutch plate and the axial force provided by the springs. The maximum allowable pressure intensity for the clutch facings is 100 KPa. Coefficient of friction = 0.3. Assume uniform wear. **(07 Marks)**

6 a. With a neat sketch, explain the working of Hotchkiss drive. **(06 Marks)**
b. Describe worm and wheel steering gear with a neat sketch. **(06 Marks)**
c. The wheel base of a car is 2.7 m and pivot centres are at 1 metre. The wheel track is 1.2 m. Calculate the correct angle of outside lock and turning circle radius of the outer front and inner rear wheels when the angle of inside lock is 40°. **(08 Marks)**

7 a. With a neat sketch, explain the working of torsion bar. **(06 Marks)**
b. Explain wheel cylinder of hydraulic braking system with a neat sketch. **(08 Marks)**
c. Draw and explain the layout of air braking system. **(06 Marks)**

8 a. Explain Exhaust Gas Recirculation (EGR) with a neat diagram. **(08 Marks)**
b. With a neat sketch, explain the catalytic converter. **(06 Marks)**
c. How the air injection system helps in reducing overall emission effect? **(06 Marks)**

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