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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Seventh Semester, B.E. - Automobile Engineering

Semester End Examination; Dec. - 2019

Automotive Mechanics - I

Time: 3 hrs *Max. Marks: 100*

Note: *Answer **FIVE** full questions, selecting **ONE** full question from each unit.*

UNIT - I

1 a. How internal combustion engines are classified? 5

b. List and explain the important reciprocating engine parts and their materials. 7

c. Describe with a neat sketches, the sequence of events in the working of a four-stroke petrol engine. 8

2 a. Describe with suitable sketches, the combustion phenomenon in SI engines, and explain the two phases of combustion. 7

b. Explain the stages of combustion in CI engine. 7

c. Explain the phenomenon of diesel knock. Compare it with the phenomenon of detonation in SI engines. 6

UNIT - II

3 a. What is the function of carburetor in SI engine? Explain the working principle of a SOLEX carburetor with a neat sketch. 10

b. What is petrol injection? Explain the petrol injection system and highlight their merits and demerits. 10

4 a. Discuss the requirements of an ideal injection system. List the functional elements required in a fuel injection system to accomplish the objectives of the injection system. 10

b. With the help of neat sketch, explain the common rail diesel injection system. 10

UNIT - III

5 a. Enumerate the various requirements of a good ignition system. 6

b. Give a neat sketch of battery ignition system for a four-cylinder engine and explain how it operates? 8

c. State the basic difference between the electronic ignition system and the conventional ignition system. 6

6 a. What is supercharging? Explain any two methods of supercharging with neat figures. 10

b. Explain the following with neat sketch: 10

(i) Constant pressure turbocharging

(ii) Pulse turbocharging

Contd…2

UNIT - IV

7 a.	State the necessity of cooling of an IC engine.	5
b.	Explain the two main types of cooling systems and compare them.	10
c.	What are the advantages and limitations of liquid cooling system?	5
8 a.	State the objectives of lubrication system in an IC engine and explain in detail the mechanism of lubrication.	8
b.	Explain with the help of a neat sketch, the Dry Sump Lubrication system.	8
c.	Discuss the various properties of lubricant.	4

UNIT - V

9 a.	Make a list and explain the important quantities to be measured during the testing of an engine.	10
b.	Discuss the basic performance parameters of an IC engine.	10
10a.	Describe with sketches how the brake power can be measured by the following methods: (i) Prony brake (ii) Rope brake Compare their merits and demerits.	10
b.	Describe with sketches, the principle of a hydraulic dynamometer.	6
c.	Describe the 'Morse Test'. What is the assumption made in this test?	4

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