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

(An Autonomous Institution affiliated to VTU, Belagavi)

**Fifth Semester, B.E. - Automobile Engineering**  
**Semester End Examination; Dec - 2017/Jan - 2018**  
**Auxiliary Systems and Automotive Engineering**

Time: 3 hrs

Max. Marks: 100

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

### UNIT - I

- 1 a. Discuss mixture requirement for steady and transient condition. 5  
 b. Sketch and explain the working of carter carburetor. 10  
 c. Explain the following with neat sketch : 5  
 i) Emulsion tube                      ii) Idling system.
- 2 a. Discuss the limitations of petrol injection. 5  
 b. With neat sketch, explain working of warm up regulator. 8  
 c. Differentiate between direct injection and indirect injection, continuous and intermittent injection. 7

### UNIT - II

- 3 a. Discuss the requirement of ideal diesel injection system. 5  
 b. Sketch and explain distributor type of fuel injection pump. 8  
 c. Sketch and explain the principle of operation of single acting fuel supply pump. 7
- 4 a. Differentiate between diesel injection in conventional injection and CRDI injection. 5  
 b. With schematic diagram, explain the working of common rail fuel injection system. 7  
 c. Sketch and explain the injection used in CRDI system. 8

### UNIT - III

- 5 a. Explain with graph variation of gas temperature in the SI and CI engine during a cycle. 4  
 b. Explain with sketch temperature distribution in piston and cylinder wall. 7  
 c. Explain the working and necessity of thermostat in cooling system. 9
- 6 a. Sketch and explain the forced circulation cooling system. What are its merits and demerits? 7  
 b. Discuss pressure cooling system and its advantages. 7  
 c. Discuss the advantages and disadvantages of air and water cooling system. 6

### UNIT - IV

- 7 a. Differentiate between wet sump and dry sump lubrication system. 8  
 b. Discuss the various desired properties of lubricants. 8  
 c. Discuss regarding rating of coils. 4

- 8 a. Discuss the necessary and different type of governor. 4
- b. Sketch and explain the working of pneumatic governor. 8
- c. Differentiate between max-min speed governor and variable speed governor. 8

**UNIT - V**

- 9 a. What are the supercharging limits for SI and CI engines? 7
- b. Sketch and explain centrifugal type and vane type superchargers. 8
- c. Differentiate between supercharging and turbo charging with sketch. 5
- 10 a. Sketch and explain two stage turbo charging and its advantages. 7
- b. Differentiate between constant pressure and pulse turbocharging. 6
- c. Discuss the different methods of turbo charging. 7

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