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B. M. S. College of Engineering, Bengaluru - 560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: V**
Branch: Mechanical Engineering **Duration: 3 hrs.**
Course Code: 20ME5DEICE **Max Marks: 100**
Course: Internal Combustion Engines **Date: 14.09.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1. a) When the C_v of an Otto cycle having a compression ratio of 8, increases by 1.6%, discuss its effect on efficiency parameter. **08**

   b) Discuss the effect of variable specific heats on the performance of the engine with the help of relevant sketches and relations. **06**

   c) What is dissociation? Discuss the effect of dissociations on power and temperature parameters with the help of sketches. **06**

UNIT - II

2. a) With a neat sketch, discuss the working principle of a simple carburettor. **06**

   b) Discuss the distributer type solid injection system with sketch. **06**

   c) What are DMPFI and LMPFI systems? Explain with neat sketches. **08**

UNIT - III

3. a) Discuss the phenomenon of knocking in SI engines with neat sketches. **08**

   b) With a neat sketch, explain the combustion process in CI engines with the help of p-θ diagram. **08**

   c) How do rate the fuels for SI and CI engines? Explain. **04**

UNIT - IV

4. a) Discuss the chemical structures of fuels and their influence on knocking characteristics. **10**

	b)	Suggest few alternate fuels and discuss their suitability, advantages, disadvantages and design modifications required for its application.	**10**

OR

5.	a)	With neat sketch, discuss the working of air cell combustion chamber used in CI engines.	**06**
	b)	Discuss the working principle of forced circulation water cooling system with a line diagram.	**08**
	c)	Draw and discuss the temperature profile across cylinder barrel wall for water cooled and air cooled engines.	**06**

UNIT - V

6.	a)	Discuss any five effects of engine emission on (i) environment and (ii) public health.	**05**
	b)	Discuss in brief emission norms followed in India and few other countries.	**05**
	c)	Discuss the working principle of Catalytic converter and Thermal reactor package with neat sketches.	**10**

OR

7.	a)	What is super charging? Explain any one method of super charging with a neat sketch.	**08**
	b)	Discuss the working principle of Stratified charge engine with a neat sketch.	**06**
	c)	Discuss the working principle of rotary piston engine with a neat sketch.	**06**

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