



**PILLAI COLLEGE OF ENGINEERING, NEW PANVEL**  
**(Autonomous) (Accredited 'A+' by NAAC)**  
**END SEMESTER EXAMINATION**  
**May 2023**

**SEM IV****BRANCH: Automobile Engg.****Subject:-****Time: 02.00 Hours****Max. Marks: 60****Date: 02/05/2023****N.B 1. Q.1 is compulsory****Subject Code AE208****2. Attempt any two from the remaining three questions****3. Each Question carry 20 marks.**

<b>Q.1.</b>	<b>Attempt All</b>	<b>Marks</b>
a)	Enumerate various components of an electronic injection system and mention their functions.	<b>5</b>
b)	Define ignition in an engine. What are the various types of ignition system?	<b>5</b>
c)	Compare four stroke and two stroke cycle engines.	<b>5</b>
d)	Explain the stages of combustion in SI engines elaborating the flame front propagation.	<b>5</b>
<b>Q.2.</b>	<b>Attempt All</b>	
a)	What are the different air-fuel mixture on which engine can be operated?	<b>5</b>
b)	Outline the major functional requirements of a fuel injection system used in diesel engines.	<b>5</b>
c)	Briefly explain the various methods of supercharging an engine.	<b>5</b>
d)	Why is lubrication required in engine components? How it is accomplished?	<b>5</b>
<b>Q.3.)</b>	<b>Attempt All</b>	
a)	Why the actual cycle efficiency is much lower than the air standard cycle efficiency? List out the major losses.	<b>5</b>
b)	Explain the phenomenon of knock in CI engines and compare it with SI engine knock.	<b>5</b>
c)	With neat sketch explain catalytic convertor and its application.	<b>5</b>
d)	Write a short note :i) HCCI ii) ECM	<b>5</b>
<b>Q.4.)</b>	<b>Attempt All</b>	

a)	<p>A four stroke gas engine has a cylinder diameter of 25 cm and stroke 45 cm. The effective radius of the brake is 0.8 m. The observations made in a test of the engine were as follows:</p> <p><b>Duration of test = 40min</b>  Total no of revolutions =8080  Total no of power explosions=3230  Net load on the brake=90kg  Mean effective pressure=5.8 bar  Volume of gas(fuel) used= 7.15 m<sup>3</sup>  Calorific value of gas =19MJ/m<sup>3</sup>  Rise in temperature of jacket cooling water =45° C  Cooling water supplied =180kg.  Draw up a heat balance sheet for the above conditions.</p>	10
b)	Find the following from the data above : i) indicated power ii) indicated thermal efficiency iii) brake thermal efficiency iv) mechanical efficiency	5
c)	Compare liquid cooling with air cooling system.	5