

Name:	
Enrolment No:	

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**  
**Online End Semester Examination, May 2021**

<b>Course: Advanced IC Engines</b>	<b>Semester: VIII</b>
<b>Program: B. Tech. Mechanical Engineering</b>	<b>Time 03 hrs.</b>
<b>Course Code: MEAD4009P</b>	<b>Max. Marks: 100</b>

**SECTION A**

1. Each Question will carry 5 Marks
2. Instruction: Write the statement / answer(s)

S. No.	Question	5 × 6 M= 30 M	CO
Q 1	Write down the range within which the stratified charge engine operates.		CO1
Q2	List down the five alternate fuels used in place of conventional fuel, which have a low pollution emission.		CO2
Q3	A conventional diesel engine is modified to a turbocharged engine. Name three major changes required for running the engine smoothly.		CO1
Q4	Write down the two theories of Knocking.		CO2
Q5	What are the basic required elements of an Electronic Engine Management System?		CO3
Q6	Write down all the major variables that affect the air capacity of an engine.		CO4

**SECTION B**

1. Each Question will carry 10 Marks
2. Instruction: Write short / brief notes 5 × 10 M= 50 M

Q 7	What is supercharging of an engine, discuss type of supercharging processes.		CO1
Q 8	Discuss the methods of providing Swirl and Turbulence in diesel engine with the help of neat sketch of combustion chamber.		CO3
Q 9	What are the three main sources from which pollutants are emitted from the SI engine and discuss the main methods, among various methods, for S.I. engine emission control.		CO3

Q 10	An engine consumes 5kg/hr petrol at A:F of 16:1. The carburetor uses fuel orifice area of 2 mm <sup>2</sup> and lip of nozzle as 5 mm. Calculate depression in the venturi throat to maintain the required fuel flow. Specific gravity of petrol= 0.75, C <sub>df</sub> =0.8. What area of venturi will be required to maintain the required fuel flow. ρ <sub>a</sub> =1.2 kg/m <sup>3</sup> , C <sub>da</sub> =0.8.	<b>CO2</b>
Q 11	Draw and explain the phases of combustion in a diesel engine.	<b>CO2</b>
<b>Section C</b> <b>1. Each Question will carry 20 Marks</b> <b>2. Instruction: Write long answer.</b>		
<p style="text-align: center;">OR</p> <p>Explain the working of Gasoline Direct Injection (GDI) Engine. List down the main components required in making a GDI engine and there application.</p>		<b>CO4</b>

**1 × 20 M= 20 M**