Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Examination (Regular and Supplementary), December 2020

Course Code: AU407
Course Name: ADVANCED IC ENGINES

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10 marks. Marks

1	a)	With a neat sketch, explain the working of Stirling engine.	(10)
2	a)	Discuss the working principle of Wangle engine with a suitable sketch.	(6)
	b)	What are the advantages and disadvantages of Rotary Engine compared to Reciprocating IC engine?	(4)
3	a)	Explain the working of free piston with a cross sectional sketch.	(6)
	b)	What are the characteristics of Multi – Fuel Engines?	(4)
4	a)	Describe the components and working of CRDI engine.	(10)

PART B

Answer any three full questions, each carries 10 marks.

5	a)	Define lean combustion. Mention the advantages and disadvantages of lean burn engines.	(10)
6	a)	Explain the Intercooling, Reheating and Regeneration methods used in open cycle gas turbine plant with a suitable sketch.	(10)
7	a)	Explain the process of Auto-ignitive burning.	(5)
	b)	How lean-burn engines achieve the air fuel ratio as lean as 65:1 by mass?	(5)
8	a)	List the advantages of Gas Turbine power plant over Diesel Power Plant.	(5)
	b)	Explain the limitations of gas turbine in automotive application.	(5)

PART C

Answer any four full questions, each carries 10 marks.

9	a)	Explain the advantages of turbocharged gasoline direct injection.	(10)
10	a)	With neat sketch explain constructional features of a direct injection natural gas engine.	(10)
11	a)	Discuss the constructional features and working of a stratified charge engine.	(10)
12	a)	What are the operational limits of an HCCI engines?	(5)

	b)	Discuss about the control strategies in low load and high load operation of a HCCI engine.	(5)
13	a)	Write a note on the fuel requirement of HCCI Engine.	(5)
	b)	What are the characteristics of a two stroke CAI engine?	(5)
14	a)	Explain the homogeneous mixture formation techniques used in a HCCI engine.	(5)
	b)	Explain the NADI concept of HCCI engines.	(5)

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