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GIET UNIVERSITY, GUNUPUR – 765022
M. Tech. (Third Semester) Examinations, December – 2023
MPETE3013 – Theory of Combustion and Emission
(HPTE)

Time: 3 hrs

Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**

Q1. Answer ALL questions

	CO #	Blooms Level
a. Describe cryogenic fuels.	CO3	K1
b. Define circulating fluidized beds.	CO3	K1
c. What are fluidized beds?	CO3	K1
d. How does corrosion and high temperature cause nozzle wear?	CO2	K2
e. What are the problems that can be seen in common rail systems?	CO1	K2
f. Differentiate between a fuel and an oxidizer.	CO2	K1
g. Define Adiabatic Flame Temperature.	CO3	K2
h. What causes delay in ignition?	CO1	K1
i. Write the advantages and disadvantages of liquid propellant rockets.	CO4	K2
j. What is a rich burn engine?	CO4	K1

PART – B**(10 x 5 = 50 Marks)**Answer **ANY FIVE** questionsMarks CO # Blooms
Level

2. a. How are solid propellant rocket designs the simplest? State the advantages and disadvantages of them.	5	CO1	K3
b. What is the multi point fuel injection system and discuss about the three types of it.	5	CO1	K2
3. a. What is cyclone firing? Discuss about cyclone combustors.	5	CO1	K1
b. Discuss the advantages of multi point fuel injection system.	5	CO1	K2
4. a. Differentiate between lean burn and rich burn engines. What is a catalytic converter? Mention the kind of metals used in a catalytic converter.	5	CO2	K2
b. Discuss the different types of combustion equipments?	5	CO2	K3
5. a. Describe the factors that result in nozzle wear.	5	CO3	K2
b. Mention the advantages and disadvantages of cryogenic fuels?	5	CO3	K3
6. a. Differentiate between conventional injectors and common rail injectors?	5	CO3	K2
b. How are cryogenic fuels stored and where are they used? Write the 2 types of cryogenic fuels.	5	CO4	K1
7. a. How does a gas turbine engine work? What role does friction play in the efficiency of a gas turbine engine? Where are gas turbines used?	5	CO4	K2
b. What are liquid propellant rocket engines? Give the three types of liquid propellants used in rocketry.	5	CO4	K1
8. a. What are the main components of a gas turbine engine? What do you understand by compressor efficiency? What is the purpose of a regenerator in a gas turbine setup?	5	CO4	K3
b. What is flame speed and flame propagation? State factors that affect flame propagation.	5	CO4	K3

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