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GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (Second Semester) Examinations, April – 2024

PPEME2031 - Internal Combustion Engine Fuels, Emissions and Control (Mechanical)

Time: 3 hrs

Maximum: 70 Marks

The figures in the right-hand margin indicate marks.

Answer ANY FIVE Questions

(14 x 5 = 70 Marks)

	Marks
1.a. What is IC Engine fuel ? Classify fuel and explain any 4 fuels widely used in IC Engines.	8
b. Discuss the various properties of Petrol fuel.	6
2.a. What is meant by bio-diesel? Write its merits and demerits over ordinary diesel fuel.	8
b. What do you mean by Fuel blend? Discuss about necessity of blending for gasoline fuel? Name the various additives are required in fuel ?	6
3.a. What is natural gas? What are the advantages and disadvantages of using natural gas as alternate fuels?	10
b. Explain the need of alternate fuels for IC engines. List out different Alternate fuels.	4
4.a. List out various techniques used for reducing the pollutions in the exhaust gases and explain : i) Air Injection system ii) Pulse air injection reactor system	14
5.a. Name the various methods for controlling the oxides of nitrogen present in an I.C. engine exhaust? Explain any two methods.	8
b. Explain how IC Engine contribute towards pollution of the atmosphere.	6
6.a. Explain briefly about how you treat the engine exhaust gases to convert the pollutions therein into harmless constituents.	7
b. Name the various sources of Air pollution? Give the reasons for excessive smoke occur due to IC Engines.	7
7.a. Explain briefly how IC Engine emissions are reduced by i) Chemical method ii) Modification in cooling system , Fuel system and Ignition System.	8
b. What is EGR? and explain how it reduces the NO _x emission from IC Engines.	6
8.a. List out new technologies for emission control ? Explain any 2 techniques.	7
b. What do you understand by Turbocharging ? Show how it is different from Supercharging .How it is useful in reducing IC Engine emissions?	7

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