

No. of Printed Pages : 03

Roll No.

BB96

M.Tech. EXAMINATION, May 2019

(Second Semester)

(B. Scheme) (Main & Re-appear)

(ME)

MET524B

ALTERNATIVE FUELS

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Assume suitable values for missing parameters (if any).

(3-30/14)M-BB96

P.T.O.

Unit I

1. Discuss with advantages and limitations of different alternative fuels over petroleum fuels.
2. What is Natural Gas ? Discuss with their types. Explain the sources and applications of all types of natural gas derivatives. How can it be liquefied ?

Unit II

3. Explain the following critically with safety aspects :
 - (a) Mechanical conversion systems
 - (b) Electronic conversion systems.
4. What are advantages of using hybrid mode ? Discuss, how additives are useful in improving the engine performance with alternative fuels ?

Unit III

5. What are the necessary modifications would be required in order to convert a diesel engine in dual fuel mode. Describe with neat diagram. Comments "Gas-engine in dual fuel is more robust and reliable."

6. Describe the Gasifier-Engine System with its principles. Give the national status of the technology with neat sketch.

Unit IV

7. Elaborate the biochemical conversion route for biogas production. Why processing of raw gas is needed prior to utilize in gas-engine ?
8. Describe the commercial gasification process for solid biomass feedstock. Why cooling-cleaning is required for gasifier-engine systems ? Explain the working of cooling cleaning unit with neat diagrams.