

M.E. AUTOMOBILE ENGINEERING FIRST YEAR SECOND SEMESTER EXAM 2018**ALTERNATIVE FUELS AND ENERGY SYSTEMS**

Time: Three hours

(Answer any *FIVE* questions)

Marks: 100

*Different parts of the same question should be answered together.
All symbols carry their usual meanings unless otherwise mentioned.
Assume any relevant data if necessary.*

1. a) Why alternative fuels will play an important role in automobile sectors in near future? 6
b) What are the different alternative fuels used in petrol engines? 6
c) What are the advantages and dis-advantages of biogas as alternative fuels? 8
2. a) How methanol is produced? Explain with a neat schematic layout. 8
b) What the difficulties encountered when alcohols used in C.I. Engines? 6
c) Write a short note on alcohol fumigation. 6
3. a) What is Biodiesel? Explain biodiesel production process. 10
b) What are the challenges and issues of biodiesel as alternative fuel? 10
4. a) What is biogas? How biogas can be used in SI and CI Engines? 6
b) Discuss about the different types of digester used for biogas production. 7
c) Explain the performance and emission characteristics of S.I. Engine using biogas. 7
5. a) What are the advantages and disadvantages of hydrogen as alternative fuels? 7
b) How hydrogen can be stored in efficient manner? 7
c) Briefly explain how hydrogen can be produced for bio-resources. 6
6. a) What are the advantages and disadvantages of LFG as alternative fuels? 10
b) Discuss the performance and emission characteristics of a C. I. engine using CNG. 10
7. Write short notes on: 4 X 5 20
a) Hybrid vehicle
b) Stirling engine
c) Ethanol as fuel
d) Electric vehicle
e) Sources of hydrogen