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M.E. / M.TECH. DEGREE EXAMINATIONS, MAY/JUNE 2017

FIRST SEMESTER

INTERNAL COMBUSTION ENGINEERING

IC16103 – ALTERNATIVE FUELS FOR IC ENGINES

(Regulation 2016)

Q. Code: 561885

Time: Three Hours

Maximum : 100 Marks

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

1. Briefly discuss the need for alternative fuels.
2. List the properties of Hydrogen.
3. What is meant by gasohol?
4. Define “Steam Reforming”.
5. What are bio-diesel?
6. Define “Transesterfication”.
7. State the disadvantages of CNG fuel.
8. What are the constituents of bio-gas?
9. Give the methods of hydrogen production.
10. What’s the difference between CNG and LNG?

PART B - (5 X16 = 80 Marks)

11. (a) Write short notes about LPG, CNG & bio gas with their merits and demerits. **(16)**

(OR)

- (b) Discuss the production, uses and environmental impacts of Ethanol and Methanol. **(16)**

12. (a) (i) Discuss the scenario on “availability of ethanol” in India. **(8)**
(ii) Write a short note on the material compatibility of ethanol. **(8)**

(OR)

- (b) Explain the Performance and Emission Characteristics of Spark Ignition Engine Fuelled with Methanol - Gasoline Blends. **(16)**
13. (a) (i) Describe the process of Biodiesel production. **(8)**
(ii) Discuss the performance characteristics of engine fuelled with biodiesel. **(8)**
- (OR)**
- (b) Explain in detail the different methods for using alcohol fuels in diesel engine. **(16)**
14. (a) Discuss the performance and emission characteristics of S.I engine fuelled with hydrogen. **(16)**
- (OR)**
- (b) Explain with neat sketch the conversion kit used for the natural gas in S.I. engines. Also discuss the performance characteristics of natural gas fuelled S.I. engine. **(16)**
15. (a) Explain how Biogas is used in diesel engine. Discuss the performance characteristics of Biogas fuelled C.I engine. **(16)**
- (OR)**
- (b) Write short notes on the use of following fuels in C.I. Engine:
- (i) Hydrogen **(8)**
(ii) CNG **(8)**