KUMARAGURU
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Register Number: …….

B.E DEGREE EXAMINATIONS: APRIL/ MAY 2016

(Regulation 2013)

Sixth Semester

AUTOMOBILE ENGINEERING

U13AUTE17 : Alternate Fuels and Energy Systems

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Octane rating of LPG is _____

   a) 81 a) 107
   c) 97 c) 110

2. The Self Ignition Temperature of Petrol is ----------

3. The substrates used for Ethanol production are

   a) Starch Containing Substrate b) Sugar cane Molasses
   c) Waste product from Wood d) All

4. The stoichiometric Air Fuel Ratio of Methanol is ----------

5. If a fuel has high aniline point then which of the statement is true?

   a) Fuel has low paraffin b) Fuel has high aromatics
   c) Fuel has low diesel index d) Fuel has high diesel index

6. The calorific value of Hydrogen fuel is ----------

7. LNG is maintained at

   a) -50 ^{o}C b) -150^{o} C
   c) -163^{o} C d) -273 ^{o}C

8. DME is expanded as ----------

9. Dual fuel Engines needs what type of Engine modifications?

   a) Variable compression Ratio b) Pilot injection
   c) Pre combustion chamber d) All

10. The gum content is removed in a bio fuel by ----------process

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. List few advantages of CNG
12. Can LPG be used as neat fuel in Diesel engine?
13. What is the percentage of ethanol blended with petrol in India?

14. What are the problems in blending ethanol with petrol?
15. What is the calorific value of biodiesel and compare it with other fuels.
16. List down the emissions from bio gas as fuel in IC engine.
17. Why DEE or DME are added to fuels?
18. What are the advantage and disadvantage of hydrogen with CNG?
19. What are ignition improvers?
20. Describe Dual Fuel Technology.

PART C (5 x 14 = 70 Marks)
(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Explain how can you modify the engine for Multi Fuel operation.

22. (a) Compare CNG and LPG usage as fuel in India for commercial vehicles.

(OR)

(b) What are the advantages and disadvantages of a gaseous fuel for Automotive applications?

23. (a) Show and Compare graphically the effect of speed on power output, BHFC, torque and thermal efficiency of an engine using ethanol and gasoline.

(OR)

(b) Explain how ethanol is manufactured and what are the modifications required in engine to use ethanol as fuel?

24. (a) How the Hydrogen gas is produced? Explain the methods of storing and handling Hydrogen.

(OR)

(b) Explain the production process of Biodiesel. Also discuss its emission characteristics.

25. (a) Mention any three vegetable oil that can substitute diesel in future and discuss their relative performance & emission characteristics.

(OR)

(b) What is Producer Gas? Explain the production process of Producer gas.

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