



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Automobile Engineering

Semester End Examination; May / June - 2019

Alternative Energy Sources for Automobiles

Time: 3 hrs

Max. Marks: 100

Note: Answer *FIVE* full questions, selecting *ONE* full question from each unit.

UNIT - I

- | | | |
|------|---|----|
| 1 a. | Discuss the salient features and availability of following commercial sources of energy : | |
| | i) Coal ii) Gas | 8 |
| | iii) Oil iv) Waste | |
| | b. How do you classify the alternative fuels and drive trains? | 6 |
| | c. Classify the methods of solar energy storage. | 6 |
| 2 a. | Briefly explain the applications of solar energy for Automobile. | 4 |
| | b. What is the basic principle of wind energy for conversion? | 6 |
| | c. Describe with neat sketch, the working of a wind energy system with main components. | 10 |

UNIT - II

- | | | |
|------|--|----|
| 3 a. | What are the properties hydrogen fuels? | 5 |
| | b. With suitable diagram, explain the production of liquid hydrogen. | 8 |
| | c. Explain the different methods of hydrogen storage. | 7 |
| 4. | Write a shorts on : | 20 |
| | i) CNG ii) LNG iii) LPG iv) LFG | |

UNIT - III

- | | | |
|------|---|----|
| 5 a. | What is Biomass? How Biomass conversion takes place? | 6 |
| | b. Clasification of biogas plants? With neat sketch, explain any one of them. | 8 |
| | c. What are methods for obtaining energy from biomass? Explain few briefly. | 6 |
| 6 a. | Briefly explain the production of Methanol and Ethanol from plants. | 10 |
| | b. How are gasifier classified? Explain any one with neat sketch. | 10 |

UNIT - IV

- | | | |
|------|---|----|
| 7 a. | What is Pyrolysis? Discuss the use of plastic oil for the IC engines. | 5 |
| | b. Describe the production of Hythane and HCNG with block diagram. | 10 |
| | c. Describe some importance properties of GTL (Gas To Liquid). | 5 |
| 8 a. | Write a short note on production of DEE and Biomass To Liquid (BTL). | 8 |
| | b. Discuss the advantages and disadvantages of; | |
| | i) Coal To Liquid (CTL) | 12 |
| | ii) ECO friendly Plastic Fuel (EPF) | |
| | iii) Wood Pyrolysis Oil (WPO) | |

UNIT - V

- 9 a. Describe the production of coal slurry and also write its suitability as fuel for IC engine. 10
- b. Write a short notes on Reformulated gasoline (RFG) and hydrogen enriched gasoline. 10
- 10 a. Write a short note on EV charger and EV batteries. 8
- b. Discuss the advantages and disadvantages of electric vehicle and dual fuel technology and also list the applications of the same. 12

* * * *