

Alternative Energy Sources for Automobile VTU CBCS Question Paper Set 2018

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Eighth Semester B.E. Degree Examination, June/July 2017
Alternative Energy Sources for Automobile

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. What are the conventional and non – conventional energy sources? Describe briefly. (06 Marks)
b. List some prominent alternative fuels and drive trains. Classify them. (08 Marks)
c. Write short notes on :
i) Energy security ii) Implementation barriers for Alternative fuels. (06 Marks)
- 2 a. Define the terms : i) Altitude angle ii) Declination angle iii) Zenith angle
iv) Solar Azimuth angle v) Hour angle. (10 Marks)
b. What are the main elements of a PV system? Briefly explain the working of solar powered vehicle. (10 Marks)
- 3 a. Describe with neat sketch the working of a Wing Energy System (WECS) with main components. (10 Marks)
b. Discuss the advantages and disadvantages of horizontal and vertical axis windmill. What methods are used to overcome the fluctuating power generation of windmill? (10 Marks)
- 4 a. Write short notes on :
i) Solar energy methods of H₂ production ii) CNG kit and its components
iii) Metal Hydrides iv) Safety precaution in Hydrogen utilization. (12 Marks)
b. What types of fuel delivery systems are used for Hydrogen in SI engines? (08 Marks)

PART - B

- 5 a. What is meant by anaerobic digestion? What are the factors, which affect biodigestion? Explain briefly. (08 Marks)
b. Describe the production of ethanol. (06 Marks)
c. What modification are required for a CI engine to run on SVO (straight vegetable oil)? (06 Marks)
- 6 a. What is HCNG? How is hythane blended? (05 Marks)
b. Differentiate between diesel and DME. (05 Marks)
c. Write short notes on :
i) Emission benefits of BTL ii) Producer gas as an automotive fuel iii) P – series.
iv) Advantages of wood pyrolysis oil v) Magnegas. (10 Marks)
- 7 a. Describe the production of coal water slurry. (05 Marks)
b. What are emulsified fuels? Explain the advantages and limitations of emulsified fuels. (05 Marks)
c. Describe the blending process of Hydrogen with gasoline. (06 Marks)
d. Explain any two components of the air car. (04 Marks)
- 8 a. Describe the components of an Electric vehicle. (10 Marks)
b. Explain the concept of a fuel cell hybrid. (05 Marks)
c. Briefly explain the working of a diesel CNG engine. (05 Marks)
