

CBCS SCHEME

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18AU641

Sixth Semester B.E. Degree Examination, June/July 2023 Alternative Energy Sources for Automobile

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Discuss the types of energy sources and write down the need of alternative energy sources. (10 Marks)
- b. What are the technological upgradation required for an I.C engine by using an alternative fuel? Write the advantages by adopting technologies. (10 Marks)

OR

- 2 a. Draw a neat solar radiation geometry and explain the following terms :
 - i) Incident angle (θ)
 - ii) Altitude angle (α)
 - iii) Slope (β)
 - iv) Latitude angle (ϕ)
 - v) Hour angle (ω).(10 Marks)
- b. With neat sketch explain the solar water heater. (10 Marks)

Module-2

- 3 a. How biogas is produced? Explain the factors which affect the generation of Biogas. (10 Marks)
- b. Sketch and explain KVIC Biogas plant. (10 Marks)

OR

- 4 a. List out the properties of the following :
 - i) Ethanol
 - ii) Straight vegetable oil.(10 Marks)
- b. What are the advantages and disadvantages of biogas? (06 Marks)
- c. Write down the methanol applications. (04 Marks)

Module-3

- 5 a. Describe any two methods of hydrogen production in detail. (10 Marks)
- b. Discuss various safety systems used to handle hydrogen. (10 Marks)

OR

- 6 a. List out the advantages and disadvantages of LPG. (08 Marks)
- b. Discuss the production of CNG, LNG, and ANG. (12 Marks)

Module-4

- 7 a. Explain the production of coal water slurry with diagram and list out advantage of CWS fuel. (12 Marks)
- b. Mention the benefits of Emulsified fuel V/S Diesel fuel. (08 Marks)

OR

- 8 a. List out the advantages and disadvantages of Ammonia. (08 Marks)
b. Write short notes on "Water as fuel for internal IC engine". (08 Marks)
c. Write down the properties of Boron. (04 Marks)

Module-5

- 9 a. With a neat sketch describe the major electrical components of an EV system. (10 Marks)
b. Discuss the criteria for choosing the battery of electric vehicle. (10 Marks)

OR

- 10 a. Write short notes on hybrid electric vehicle. (08 Marks)
b. List out the advantages and disadvantages HEV (hybrid electric vehicle). (08 Marks)
c. Write the application at DFT. (04 Marks)

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