

III B. Tech II Semester Supplementary Examinations, February- 2022
ALTERNATIVE ENERGY SOURCES FOR AUTOMOBILES

(Automobile Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **FOUR** Questions from **Part-B**
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PART –A**(14 Marks)**

1. a) What do you mean by thermo-chemical production process? [2M]
- b) What are the properties of hydrogen energy? [2M]
- c) What are the disadvantages of solar energy? [2M]
- d) Explain different types of bio-fuels. [3M]
- e) Describe turbocharger. [3M]
- f) Explain dead weight referred to traction. [2M]

PART –B**(56 Marks)**

2. a) Describe the flat plate collector with the help of a suitable diagram. [7M]
- b) What is the principle of solar photovoltaic power generation? Explain about Solar cell with neat diagram. [7M]
3. a) With the help of neat diagram explain the working of a gasifier using woodchip biomass. What further processing is required to use the gas produced in a diesel engine? [7M]
- b) What are different biomass energy resources and what is the energy yield from each of them? [7M]
4. a) Discuss various conversion technologies of hydrogen to useful applications. [7M]
- b) Describe various methods of storage of hydrogen. [7M]
5. a) Outline the advantages and disadvantages of electric vehicles for (i)the user; (ii) the public [7M]
- b) What factors limit the lifetime; and the mass of lead-acid batteries? [7M]
6. a) What are the major parts of electric car and explain its battery charging process? [7M]
- b) Discuss about the material requirement for Traction motors. [7M]
7. a) Explain the impact of a turbocharger on the performance of automobiles. [7M]
- b) Explain the different types of Hybrid Electric Vehicles. [7M]

