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10AU834

Eighth Semester B.E. Degree Examination, June/July 2018
Alternative Energy Sources for Automobiles

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. Briefly discuss : i) The importance of non – conventional energy sources in the present context ii) The environmental aspects of energy. **(10 Marks)**

b. Explain the following in brief, implementation barrier for alternative fuels :
i) Codes, standard and regulation ii) Safety. **(10 Marks)**

2 a. With the help of a neat diagram, explain the working principle of Angstrom compensation pyranometer. **(10 Marks)**

b. Explain in detail, the Flat plat solar collector and mention the advantages of flat plate collector. **(10 Marks)**

3 a. With a block diagram, explain the basic components of wind energy conversion system. **(10 Marks)**

b. Explain with a neat sketch, with respect to wind mill machine blade :
i) Drag ii) Lift. **(05 Marks)**

c. Explain in brief any two operating characteristics of wind wills. **(05 Marks)**

4 a. Explain the safety measures that are to be taken when using hydrogen as engine fuel and also briefly explain the emission characteristics of the engine for hydrogen as fuel. **(10 Marks)**

b. Write short note on :
i) CNG combustion ii) Storage of LNG. **(10 Marks)**

PART – B

5 a. Explain the difference between fixed dome type and floating dome type Biogas plant. **(05 Marks)**

b. How efficient would a vehicle running on bio – ethanol be compared to a vehicle with a conventional petrol engine? **(05 Marks)**

c. Explain in brief what modification is required for engine to run on Bio diesel as alternative fuel. **(05 Marks)**

d. Write a short note on degumming of Straight Vegetable Oil (SVO). **(05 Marks)**

6 a. What is Hythane and HCNG? Write down the important requirement to support deployment of HCNG in Automobile as a alternative fuel. **(08 Marks)**

b. Discuss the importance of emission benefits of synthetic fuel for improving the air quality. **(06 Marks)**

c. Explain any two applications of :
i) P – Series ii) Eco – friendly plastic fuel (EPF) iii) Producer gas (or) Wood gas. **(06 Marks)**

7 a. Explain with a neat sketch, development of the BOESE Liquid Nitrogen engine. **(06 Marks)**

b. Explain in brief, design modification of the Compressed Air Vehicle :
i) Compressed air engine ii) Gear box **(08 Marks)**

c. What are emulsified fuels? What are the advantages of using emulsified when compared with diesel fuel? **(06 Marks)**

8 a. With a neat block diagram, explain the major electrical components of an EV system. **(08 Marks)**

b. Briefly discuss about the dual fuel engine operation and mention the important application of Dual fuel technology. **(08 Marks)**

c. Write a short note on EV performance characteristics. **(04 Marks)**

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