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Eighth Semester B.E. Degree Examination, July/August 2021
Alternative Energy Sources for Automobile

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 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. What are the installments employed for solar radiation measurements? With the help of neat diagram explain working principle of EPPLEY pyranometer? (10 Marks)
- b. Mention the advantages and disadvantages of concentrating collector over flat plate collector. (10 Marks)
- 3 a. Mention the characteristics of good wind power site. (06 Marks)
- b. With the help of neat sketch explain the important parts of a horizontal axial machine for wind energy conversion. (10 Marks)
- c. Define lift and drag with the help of a neat aerofoil structure. (04 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)
- 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 are the advantages claimed for Hythane and HCNG over the fossile fuels in regardance with IC engine explain in brief. (10 Marks)
- b. Write a short note on :
 - i) Syngas
 - ii) Producer gas
 - iii) Wood pyrolysis oil
 - iv) P-series. (10 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 components and working of Hybrid EV. (10 Marks)
- b. List the advantages and disadvantages of Hybrid electric vehicles. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.