



Name :

Roll No. :

Invigilator's Signature :

**CS/B.TECH(AUE)/SEM-8/AUE-821/2010
2010**

ALTERNATIVE FUELS AND ENERGY SYSTEM

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

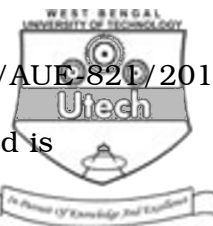
GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

- i) Gasohol is mixture of
 - a) 90% ethanol + 10% gasoline
 - b) 10% ethanol + 90% gasoline
 - c) 40% ethanol + 60% water
 - d) 90% methanol + 10% ethanol.
- ii) Relative density (air = 1) of LPG over CNG is
 - a) higher
 - b) lower
 - c) equal
 - d) difficult to predict.



- ix) For high octane no. of a fuel, flame speed is
- | | |
|-----------|-------------------|
| a) higher | b) lower |
| c) same | d) none of these. |
- x) Steam reformation is a process of making
- | | |
|--------------|---------|
| a) biodiesel | b) CNG |
| c) Hydrogen | d) LPG. |

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Explain the reasons of looking for alternative fuels for IC engines.
3. What are the differences between *P*-type and *N*-type semiconductors ?
4. Compare vegetable oil and biodiesel as a fuel.
5. What are the disadvantages of methanol as an SI engine fuel ?
6. Write the disadvantages of solar energy.

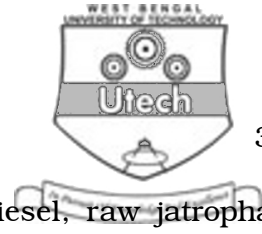
GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) Define the following properties of a fuel :

| | |
|---------------------|---|
| i) Flash point | 8 |
| ii) Calorific Value | |
| iii) Cetane no. | |
| iv) Octane no. | |
| v) Viscosity. | 7 |
- b) Write the values of above mentioned properties of biodiesel, LPG, Ethanol.



8. a) What is Biodiesel ? 3
- b) Compare the various properties of diesel, raw jatropha and biodiesel. 5
- c) What are the advantages and disadvantages of biodiesel ? 7
9. a) Describe how sunlight is converted into electricity in a solar cell. 6
- b) What are the advantages of using solar cell. 3
- c) Discuss the various methods of hydrogen production. 6
10. a) Compare the properties between LPG & petrol. 5
- b) Write the advantages and disadvantages of CNG. 5
- c) Write the basic parts of an LPG kits. 5
11. a) Discuss alcohol as an SI and CI engine fuels. 7
- b) Compare the properties of Gasoline, Methanol and Ethanol. 8
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