

17676

21415

3 Hours / 100 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data, if necessary.
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) Attempt any THREE of the following: 12
- (i) Give the principle of solar energy conversion into heat and electricity.
 - (ii) What is the need of alternate energy sources?
 - (iii) Explain the process of Aerobic and Anaerobic conversion.
 - (iv) What is meant by 'energy plantation'? What are the advantages and disadvantages?
- b) Attempt any ONE of the following: 6
- (i) Explain the process of commercial production of ethanol from Biomass.
 - (ii) Explain operational parameters of Biogas plant.

P.T.O.

2. Attempt any FOUR of the following:**16**

- a) What are major sources of energy? Explain any one of them.
- b) Distinguish between renewable and non-renewable energy sources.
- c) Define:
 - (i) Solar Azimuth angle
 - (ii) Zenith angle
 - (iii) Incident angle
 - (iv) Altitude angle
- d) Explain solar drying for foods in agriculture.
- e) Explain photovoltaic electric conversion.
- f) What are the advantages and limitations of solar-energy?

3. Attempt any FOUR of the following:**16**

- a) What are the main advantages and disadvantages of Biomass energy?
- b) Compare conventional fuels with biomass.
- c) Explain the working of gasifier with neat sketch.
- d) What are the advantages and disadvantages of floating drum plant?
- e) State the methods of obtaining energy from biomass. Explain any one.
- f) Write differences between vertical axis and horizontal axis wind mill.

- 4. a) Attempt any THREE of the following:** **12**
- (i) Describe the main considerations in selecting a site for wind mills?
 - (ii) What is the basic principle of wind energy conversion?
 - (iii) State any four advantages of wind energy.
 - (iv) What are the major applications of geothermal energy?
- b) Attempt any ONE of the following:** **6**
- (i) Describe construction and working of horizontal axis wind mill with neat sketch.
 - (ii) Discuss energy scenario with context to prospects of alternate energy sources in India.
- 5. Attempt any FOUR of the following:** **16**
- a) Describe construction and working of flat plate collector with neat diagram.
 - b) What are the merits and demerits of geothermal energy?
 - c) Explain various types of geothermal resources.
 - d) What do you understand by geothermal energy? What are geothermal fields?
 - e) What are the different methods for hydrogen production? Explain in brief.
 - f) What is an electrolysis? Describe the popular method of hydrogen production.

6. Attempt any FOUR of the following:**16**

- a) Describe various methods of hydrogen storage.
 - b) What is fuel cell and what are its main advantages?
 - c) What are the major advantages of mini and micro hydal resources?
 - d) Give status of mini and micro hydral in India.
 - e) State potential of Nuclear-energy in India.
 - f) Explain the term:
 - (i) Solar Radiation
 - (ii) Solar Constant
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