

17611

16117

3 Hours / 100 Marks

Seat No.

--	--	--	--	--	--	--	--	--	--

- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answers with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(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) Classify solar and non-solar energy sources. Give its examples.
- (ii) Define following terms:
- 1) Declination angle
 - 2) Solar azimuth angle
 - 3) Solar altitude
 - 4) Day length
- (iii) List the four parameters considered during site selection for wind mill.
- (iv) State the uses of following instruments:
- 1) Lux meter
 - 2) Pitot tube
 - 3) Pyrhelio meter
 - 4) Fyrite

P.T.O.

- b) **Attempt any ONE of the following:** **6**
- (i) Describe need of orientation of concentrating type collectors. List different methods of sun tracking.
 - (ii) What is gasification? Explain down-drought gasifier with neat sketch.
- 2. Attempt any TWO of the following:** **16**
- a) Explain with neat sketch working of natural circulation flat plate solar water heater. Give its two advantages.
 - b)
 - (i) List main considerations in selection of site for hydro-electric power plant.
 - (ii) Draw schematic diagram showing basic components of wind-electric system.
 - c)
 - (i) What is energy plantation? Give its four advantages.
 - (ii) Classify the ways to recover energy from biomass.
- 3. Attempt any FOUR of the following:** **16**
- a) State the principle of photovoltaic power generation. List the main elements of SPV system.
 - b) Draw neat sketch of solar refrigeration system.
 - c) What is microhydal plant? Which turbine best suited for it?
 - d) What is anaerobic digestion? State factors affecting bio digestion.
 - e) List advantages of renewable energy sources.
 - f) Distinguish between concentrating and non-concentrating solar collectors.

- 4. a) Attempt any THREE of the following:** **12**
- (i) Explain Yaw mechanism in wind mill. State its importance.
 - (ii) Define:
 - 1) Pyrolysis
 - 2) Fermentation
 - (iii) What is global warming?
 - (iv) Draw neat sketch:
 - 1) Solar space heating
 - 2) Solar food dryer
- b) Attempt any ONE of the following:** **6**
- (i) What is energy conservation? List the ways to improve boiler efficiency.
 - (ii) Explain co-generation in sugar factory with neat sketch.
- 5. Attempt any TWO of the following:** **16**
- a) (i) Explain the process of photo-synthesis.
 - (ii) What is non-solar renewable energy sources? Give its examples.
 - b) (i) Explain need of renewable energy sources.
 - (ii) Classify wind turbines. Draw the neat sketch of horizontal axis wind turbine.
 - c) (i) Explain the process of production of biodiesel.
 - (ii) Write down detailed energy audit methodology.

17611

[4]

Marks

6. Attempt any FOUR of the following:

16

- a) List the instruments used to recover waste heat. Explain any one in detail.
 - b) Classify hydro-electric power plants.
 - c) Explain the concept of solar distillation with neat sketch.
 - d) Explain with help of sketch working of evacuated heat pipe.
 - e) Explain the concept of energy saving potential.
 - f) Distinguish between biomass and biogas.
-