

22514

23124

3 Hours / 70 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. Attempt any FIVE :

10

- (a) Give the concept of wind energy.
- (b) Define survival and threshold wind speed.
- (c) Give any two applications of solar energy.
- (d) State any two applications of bio-energy from solid biomass.
- (e) Define the term bio-energy.
- (f) Name the different gases present in biogas.
- (g) State the principle of micro-hydro power plant.

2. Attempt any THREE :

12

- (a) List the types of wind turbines (any four).
- (b) Explain the drag and lift principle of wind turbine.
- (c) List the different parts of wind turbines and explain the function of any three of them.
- (d) Draw and explain wind power curve.



- 3. Attempt any THREE :** **12**
- (a) Explain the construction and working of solar water heating system.
 - (b) Explain the term solar distillation with a neat sketch.
 - (c) Describe the features of hybrid wind solar system.
 - (d) Describe the concept of photo-voltaic (PV) cell.
- 4. Attempt any THREE :** **12**
- (a) Explain the concept of bio-energy from solid biomass with suitable example.
 - (b) List the merits and demerits of bio-energy from solid biomass (any 2 points each)
 - (c) Explain the construction and working of generation of bio-energy from animal excreta.
 - (d) Describe the formation of energy from Kitchen biomass.
 - (e) Differentiate between the bio-energy power plants from agri-based biomaterial and municipal waste.
- 5. Attempt any TWO :** **12**
- (a) Explain the concept and principle used for preparation of bio-energy from liquid biomass.
 - (b) Describe the manufacturing of bio-diesel from Jatropha plant with the chemical reaction involved.
 - (c) List the merits and demerits of bio-energy from liquid biomass.
- 6. Attempt any TWO :** **12**
- (a) Explain the construction and working of high head micro-hydro power plant.
 - (b) Describe the site selection criteria for micro-hydro power plant.
 - (c) Explain the routine maintenance procedure of micro-hydro power plant.
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