

22661

23124

3 Hours / 70 Marks

Seat No.

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- 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) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following :

10

- (a) Give classification of solar thermal collectors.
- (b) State different types of batteries used in solar PV cells.
- (c) Write specifications of VAWT.
- (d) List main components of micro hydro power system.
- (e) List various sources of Bio Fuel.
- (f) State different types of hybrid systems.
- (g) State the benefits of micro hydro power system.

2. Attempt any THREE of the following :

12

- (a) Explain working of liquid flat plate collector with neat sketch.
- (b) Explain with neat sketch, working principle of solar photovoltaic cell.
- (c) Give detailed classification of wind mills.
- (d) Describe various Biomass conversion processes.

3. Attempt any THREE of the following :

12

- (a) Explain domestic water heating system with neat sketch.
- (b) Describe central tower receiving system with neat sketch.



- (c) Explain in detail various factors considered for site selection in wind mill power plant.
- (d) Write short note on 'Anaerobic Digestion'.

4. Attempt any THREE of the following : 12

- (a) With the help of neat sketch, explain electricity generation by horizontal axis wind machine.
- (b) State various promotional schemes offered by Central and State Governments for solar PV systems.
- (c) Draw the layout of Micro Hydro Power Plant. State functions of penstock and forebay.
- (d) Draw a labelled sketch of 'Smokeless Chulha' and explain its working principle.
- (e) Give advantages and disadvantages of WECS.

5. Attempt any TWO of the following : 12

- (a) Give classification of Bio-gas plants. Explain installation procedure for Bio-gas plant.
- (b) Draw layout of wind solar PV hybrid system. Describe its construction and working.
- (c) Discuss working of a cabinet dryer with the help of neat sketch. How it will be used for large scale drying of food products ? Justify your answer.

6. Attempt any TWO of the following : 12

- (a) Define 'Net Metering' and 'Battery Rating' in solar PV system. State the benefits of Net Metering.
 - (b) Write short notes on :
 - (i) Solar Industrial Process Heating
 - (ii) Natural circulation Solar Water Heating Systems. (SWHS)
 - (c) State different materials used as raw materials for producing Bio-diesel. Justify your answer.
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