# 22661

# 12425 3 Hours / 70 Marks

- *Instructions*: (1) All Questions are *compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.

Seat No.

- (3) Figures to the right indicate full marks.
- (4) Assume suitable data, if necessary.
- (5) Use of Non-programmable Electronic Pocket Calculator is permissible.

#### 1. Attempt any FIVE of the following :

- (a) Enlist different alternative energy sources.
- (b) Write down advantages of Biogas plant.
- (c) List out various components of offgrid solar PV system.
- (d) Write down advantages of HAWT over VAWT.
- (e) Write down functions of Forebay and Penstock in Micro-hydro Power Plant.
- (f) Define the term Battery rating.
- (g) Explain the need of hybrid system.

#### 2. Attempt any THREE of the following :

- (a) Explain parabolic dish collector with neat sketch.
- (b) Explain stand-alone PV system.
- (c) Explain construction and working of small vertical axis wind turbines.
- (d) Draw the layout of micro hydropower system.



Marks

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12

#### **3.** Attempt any THREE of the following :

- (a) Explain rooftop solar water heater system.
- (b) Define Net metering in solar PV system.
- (c) Define Gasifier. Explain any one type of gasifier.
- (d) Explain smokeless Chulha with neat sketch.

#### 4. Attempt any THREE of the following :

- (a) Explain the maintenance procedure of micro hydropower system in brief.
- (b) List out different types of hybrid system. Write commercial feasibility assessment for any one hybrid system.
- (c) Explain costing of hybrid renewable energy system alongwith applications of hybrid system.
- (d) Compare horizontal axis wind turbine and vertical axis wind turbine.
- (e) List out different components of micro hydropower system and explain operating procedure of micro hydropower system.

#### 5. Attempt any TWO of the following :

- (a) Explain solar dryer with neat sketch.
- (b) Explain maintenance procedure of large horizontal axis wind turbine.
- (c) Write down installation and maintenance procedure of solar rooftop PV system.

### 6. Attempt any TWO of the following :

- (a) Explain installation and maintenance procedure of commercial solar water heating system.
- (b) Explain solar-wind hybrid power system in detail.
- (c) Explain with neat sketch floating drum type biogas plant.

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