

- 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.

1. Attempt any **FIVE** of the following : [20]
 - (a) Classify solar and non-solar energy sources. Give its examples.
 - (b) State the uses of following instruments :
 - (i) Lux meter
 - (ii) Pitot tube
 - (iii) Pyrhelio meter
 - (iv) Fyrite
 - (c) With the help of a neat diagram explain the layout of a typical small Hydro-Electric plant.
 - (d) State the objectives and need of Energy Audit.
 - (e) Define following terms :
 - (i) Solar altitude
 - (ii) Solar Azimuth angle
 - (iii) Day length
 - (iv) Local solar time
 - (f) Give classification of Solar Energy Storage System. List two applications of thermal storage.

2. Attempt any **FOUR** of the following : [16]
 - (a) List main considerations in selection of site for hydro-electric power plant.
 - (b) Describe the principle of solar photovoltaic energy conversion.
 - (c) Describe a passive solar space heating system.
 - (d) Explain in brief with neat sketch the working of Kaplan turbine.
 - (e) What is energy plantation? Give its four advantages.
 - (f) Explain how Green House gases and Global Warming is affecting the climate change.

3. Attempt any **FOUR** of the following : [16]
 - (a) Draw neat sketch of solar refrigeration system.
 - (b) Distinguish between concentrating and non-concentrating solar collectors.
 - (c) Describe the solar evacuated flat plate collector. State two advantages of its over simple solar flat plate collector.
 - (d) Describe the layout and working of a stand alone Solar Photovoltaic Power Plant.
 - (e) Draw neat sketch of solar pump system. State functions of each components.
 - (f) Distinguished between biomass and biogas.

4. Attempt any **FOUR** of the following : [16]
 - (a) Explain Yaw mechanism in wind mill. State its importance.
 - (b) What is global warming?
 - (c) What is energy conservation? List the ways to improve boiler efficiency.
 - (d) Sketch the diagram of a Horizontal Axis Wind turbine and explain the functions of its main components.
 - (e) Define : (i) Pyrolysis (ii) Fermentation
 - (f) Explain co-generation in sugar factory with neat sketch.

5. Attempt any **FOUR** of the following : [16]
 - (a) Explain the process of production of biodiesel.
 - (b) Write down detailed energy audit methodology.

- (c) Describe the construction and principle of operation of a sunshine recorder.
- (d) Compare small & mini hydroelectric plant.
- (e) Draw flow diagram of production of ethanol from sugar cane.
- (f) Write down detailed energy audit methodology.

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

[16]

- (a) List the instruments used to recover waste heat. Explain any one in detail.
- (b) Describe the working principle of infrared thermometer.
- (c) State concept of waste heat recovery system. Draw a labelled schematic of any waste heat recovery system.
- (d) Draw the sketch of solar space heating and hot water system.
- (e) Explain with help of sketch working of Pyrheliometer.
- (f) Describe the SPV solar street light.

Paper Discussion Schedule for T.Y. Diploma Sem.VI

Date	Day	Timing	Centre
9 April 2017	Sunday	9 a.m. to 11 a.m.	Dadar, Nerul
9 April 2017	Sunday	12 p.m.to 2 p.m.	Thane

□ □ □ □ □