17611

11819

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) Assume suitable data, if necessary.
(6) Use of Non-programmable Electronic Pocket Calculator is permissible.
(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE : **5 × 4 = 20**

(a) Explain the necessity of renewable energy.

(b) Discuss the consequences of global warming.

(c) Classify small hydroelectric plants.

(d) Explain the desirable features of bioethanol that makes it suitable as automobile fuel.

(e) Define energy audit and discuss why energy audit is necessary.

(f) Draw a labelled sketch of water flow meter.

(g) Define :

(i) Boiler efficiency

(ii) Furnace efficiency

2. Attempt any FOUR : **4 × 4 = 16**

(a) Explain the features of latent heat storage.

(b) Define :

(i) Hour Angle (ii) Declination (iii) Zenith Angle (iv) Inclination Angle

(c) What is solar spectrum ? Discuss it.

(d) Explain the principle of wind energy conversion.

(e) What are the most favourable sites for installing of wind turbines ?

(f) How energy loss is prevented with thermal insulation ?

3. Attempt any TWO : **2 × 8 = 16**

(a) Explain with neat sketch construction and working of Francis Turbine.

(b) Explain with neat sketch solar photovoltaic pumping.

(c) (i) Explain the principle of tidal energy.

(ii) What are the merits and demerits of geothermal energy ?

4. Attempt any FOUR : **4 × 4 = 16**

(a) Explain with figure, sunshine recorder.

(b) State the advantages of anaerobic digestion.

(c) Draw a typical layout of micro hydropower plant.

(d) What are green house gases ?

(e) With the help of a schematic diagram explain the working of solar dryer.

(f) Explain with figure solar refrigeration.

5. Attempt any FOUR : **4 × 4 = 16**

(a) Explain with diagram solar water heating system.

(b) Describe the principle solar photovoltaic energy conversion.

(c) Define :

(i) Lift

(ii) Drag

(d) State the factors to be considered for erection of hydropower plant.

(e) Describe the process of photosynthesis.

(f) What do you understand by energy plantation ?

6. Attempt any TWO : **2 × 8 = 16**

(a) With schematic diagram, explain the process of pyrolysis.

(b) Describe in detail, preliminary energy audit methodology.

(c) (i) How does solar powered traffic signal work ?

(ii) Draw a well labelled diagram of Box type solar cooker.

———