314306

12526

3 Hours / 70 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following : **10**

a) State various non conventional energy resources with examples.

b) List various types of solar PV-cell.

c) Classify the wind energy systems.

d) State suitable situation in selection of micro hydro power station.

e) Interpret specification of small Biogas plant.

f) State various sources of Biofuels.

g) State advantages of wind-solar hybrid system.

Marks

2. Attempt any THREE of the following : **12**

a) Explain working principle of liquid flat plate collector with neat sketch.

b) In lieu of solar PV-system : explain net metering and battery rating. State methods of selection of battery.

c) Represent the efficiency of various types of collectors as a function of operating temperatures.

d) State four advantages and disadvantages of VAWT and HAWT.

3. Attempt any THREE of the following : **12**

a) Explain the site selection criterion for wind energy resources. State applications of momentum theory for wind energy resources.

b) State the functions of different components of Micro hydro power system.

c) Explain stepwise installation procedure and operating procedure for micro hydro power energy resources.

d) Explain the working principle of polymer Electro type Membrane (PEM) fuel cells with neat sketch.

4. Attempt any THREE of the following : **12**

a) Classify Biogas plants. Explain steps of installation for Biogas plant.

b) Explain layout, construction and principle of working for Biodiesel power plant.

c) State working principle of smokeless Chulha's with neat sketch.

d) Explain the working principle of ocean Thermal Energy Conversion (OTEC) system.

e) Write notes on

i) Technical and commercial feasibility assessment of renewable energy sources.

ii) Magneto-hydrodynamic (MHD) system.

Marks

5. Attempt any TWO of the following : **12**

a) State different types of fuel cells, state the advantages and limitations of PEM fuel cells.

b) Explain Grid connected and stand alone solar photo voltaic system with neat sketches.

c) Represent the wind turbine power plant with neat sketch. Explain its various components and their functions.

6. Attempt any TWO of the following : **12**

a) Explain the working principle and components of KVIC Biogas plant with neat sketch.

b) Write notes on

i) Geothermal energy

ii) Tidal energy

iii) Grid tied hybrid solar - wind energy system

c) Compare the hybrid power and solar power on the basis of production design, energy density and battery life.