

22540

24225

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.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (7) Preferably write the answers in sequential order.

Marks

1. Attempt any FIVE of the following :

10

- (a) State two advantages of wind energy.
- (b) List the power electronics devices used in Solar PV system (any four).
- (c) State electrical issues while maintaining wind power system (any two).
- (d) Write any two applications of solar power.
- (e) List the types of wind power plants.
- (f) List any two advantages and two disadvantages of vertical axis wind turbine.
- (g) Write any two safety precautions to be followed while doing battery maintenance of solar PV system.



2. Attempt any THREE of the following : 12

- (a) Describe the grid connecting issues with respect to grid integrated solar system.
- (b) Describe the standalone solar power plant system with suitable diagram.
- (c) Explain the operation of matrix convertor with suitable diagram.
- (d) State the procedure of testing charge control circuit of the given solar street light system.

3. Attempt any THREE of the following : 12

- (a) Explain the necessity of the inverter in a solar PV system.
- (b) Describe the working principle of the signal conditioner in solar system.
- (c) Describe the procedure to troubleshoot the faults of wind power plants (any four points).
- (d) Explain the operation of back to back convert with neat diagram.

4. Attempt any THREE of the following : 12

- (a) Describe the working of the charge controller used in solar PV system.
- (b) Describe the importance of maximum power point tracking in the operation of photovoltaic system.
- (c) State the procedure of maintenance of the given solar PV system used in water pump system.
- (d) Describe two features of IGBT & two features of GTD used in wind power plant.
- (e) Define the following terminology with respect to solar PV system :
 - (i) Inverter
 - (ii) Series Panel Connection
 - (iii) Photovoltaic Effect
 - (iv) Parallel Panel Connection

5. Attempt any TWO of the following : 12

- (a) Explain the principle of conversion of solar energy into heat with neat sketch.
- (b) Describe the types of batteries used in solar PV system.
- (c) Describe the working of the soft starter used in wind power plant.

6. Attempt any TWO of the following : 12

- (a) Explain hybrid wind solar system with suitable sketch.
 - (b) Explain any six considerations in selecting a site for wind power plant.
 - (c) Compare horizontal axis wind turbine with vertical axis wind turbine with respect to
 - (i) Output power
 - (ii) Generator and gear box
 - (iii) Starting
 - (iv) Efficiency
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