22528

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Assume suitable data, if necessary.

Marks

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

(a) State the advantages of wind power for Generating Electricity (Any Four).

(b) List the different obstacles in wind path.

(c) State the meaning of Aerodynamic control in wind power plants briefly.

(d) State any two breaking mechanisms used for large Wind Power Plant.

(e) Identify any two weekly maintenance activities for WPP.

(f) Give the classification of SWT on any two factors.

(g) State any two power electronic components used in SWT.

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

(a) Explain lift and drag wind energy conversion principle.

(b) Identify and explain any two difficulties faced while connecting WPP to the grid.

(c) Plan the preventive maintenance schedule for actuators and sensors.

(d) Name any four main parts of SWT. Give function of each part.

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

(a) Compare horizontal axis and vertical axis wind turbine.

(b) Define cut-in and cut-out speed of WPP with neat labelled graph.

(c) Explain working of Doubly Fed induction generator with suitable sketch.

(d) State any four basic requirements for installation of small wind turbine.

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

(a) Describe the important features of horizontal axis Wind Power Plants (Any Four).

(b) State the functions of rotor blades Hub, Tower, Electric Generator of a WPP.

(c) Explain the stall and pitch control for WPP.

(d) List the activities in the minor and major repairs in WPP.

(e) List any four mechanical and electrical faults in SWT.

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

(a) Identify sensors for the following :

(i) Wind speed

(ii) RPM of generator shaft

(iii) Temperature in generator

(iv) Cable untwisting

(v) Vibration

(vi) Wind direction

(b) Construct lattice, tubular type SWT towers and explain in detail.

(c) Prepare preventive maintenance schedule for SWT related to

(i) Oiling and greasing

(ii) Electronic equipment

(iii) Towers

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

(a) Explain with sketches the breaking mechanism for large wind turbine.

(b) State the requirements of general maintenances. List such a general maintenance activities (Any Eight).

(c) Explain with neat sketch working of direct drive SWT. Give any two advantages of it over geared type SWT.
