

22528

22232

3 Hours / 70 Marks

Seat No.

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- 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) List location and the capacity of four major WPP in India.
- (b) Identify upwind and down wind power plants.
- (c) Define drag and lift principle of rotation in WPP.
- (d) Draw labelled diagram of squirrel cage induction generator.
- (e) Identify preventive maintenance schedule of actuators in WPPs.
- (f) List the types of generators used in SWTs.
- (g) List common mechanical faults in SWTs.

2. Attempt any THREE of the following :

12

- (a) Explain the following in connection with wind power.
 - (i) Wind profile
 - (ii) Roughness
 - (iii) Obstacles in wind path
- (b) Identify different types of sensors for Horizontal axis wind turbine.
- (c) Draw labelled diagram of Doubly fed Induction Generator.
- (d) Relate preventive maintenance schedule of yaw control, pitch control braking mechanisms and sensors.



- 3. Attempt any THREE of the following : 12**
- (a) Develop criteria to use Horizontal axis and Vertical axis wind turbine.
 - (b) Explain Anemometer and temperature sensors of nacelle.
 - (c) Explain wound rotor and permanent magnet synchronous generators.
 - (d) Describe Horizontal axis SWTs.
- 4. Attempt any THREE of the following : 12**
- (a) Compare Wound-rotor induction Generator and Doubly fed induction generator.
 - (b) Explain scheduled maintenance for large wind power plants.
 - (c) Classify upwind and downwind small wind turbines.
 - (d) Explain preventive maintenance schedule of accessories for SWTs.
 - (e) Construct Lattice tubular type SWT towers.
- 5. Attempt any TWO of the following : 12**
- (a) Construct nacelle layouts of Gearal, Direct drive and Semi-gearal WPPs.
 - (b) Develop braking mechanism of large WPPs (Wind Power Plants)
 - (c) Describe local impacts and system wide/impacts on WPPs.
- 6. Attempt any TWO of the following : 12**
- (a) Prepare plan for preventive maintenance for oiling and greasing electric and electronic equipment tower related minor repairs.
 - (b) Develop schematic for ladders, cables for hydraulic towers.
 - (c) Examine common electrical faults in SWTs.
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