Total No. of Questions – [6] Total No. of Printed Pages: 6

G.R. No.	

DECEMBER 2021 - ENDSEM EXAM

Final Year B. TECH. (Mechanical) (SEMESTER - I)

COURSE NAME: Solar and Wind Energy

COURSE CODE: Course code: IOEUA40183E

(PATTERN 2018)

Time: [1] [Max. Marks: 30]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6.**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Identify the difference between Wind Mill and Wind Turbine. How do you classify Wind Turbines? [4 marks]

b) Differentiate clearly Horizontal and Vertical Axis Turbine w. r. to Output power, Starting, Efficiency, Cost, Wind Direction, Gear Box and Generator, Maintenance in tabulated form. [6 marks]

OR

Q.2) a) Enumerate the site selection factors for Wind Turbine Installation/s. [4 marks]

b) Examine the difference between Solar and Wind Energy? Explain in tabular form. [6 marks]

Q.3) a) Draw labelled schematic diagram of Horizontal Axis Wind Turbine. [4 marks]

b) Distinguish the function of 1) Rotor, 2) Hub, 3) Gear Box, 4) Generator, 5) Brake 6) Nacelle, 7) Yaw Mechanism. 8) Tower [6 marks]

OR

Q.4) a) Analyze a) Power Coefficient, b) Blade Tip Speed Ratio with graphs. [4 marks]

b) Apply equation of Power available in Wind Energy. Explain design of rotor from Blade Length, Material, Shape, no. of blades etc. and Wind Velocity. [6 marks]

Q.5) a) Discover the difference between onshore and offshore wind power? [4 marks]

b) With labelled schematic diagram explain the types of generators used in Wind Turbines. [6 marks]

OR

Q.6) a) Inspect reactive power by drawing Power Triangle. [4 marks]

b) Judge the function of Electrical Collectors? With schematic diagram explain three typical layouts of electrical collectors for wind farms. [6 marks]

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