Code No: 138EN

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, December - 2020
RENEWABLE ENERGY SOURCES
(Mechanical Engineering)

Time: 2 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks

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1. Discuss the potential of renewable energy sources with respect to India. [15]
2. Classify different energy sources by their origin and state the sharing of different energy production in Global and in Indian scenario. [15]
3. Differentiate between sensible and latent heat storage systems with diagrams. [15]
4. Derive the equation for solar energy balance and collector efficiency write their advantages and limitations. [15]
5. Give a brief description on types of wind turbines. [15]
6. A HAWT having the rotor diameter as 75 m is rotating at 35rpm.The wind speed is 25m/s at 1 atm and 250 C. Calculate the torque produced at the shaft for maximum output of the turbine. [15]
7. The following data given for a family biogas digester suitable for the output of 8 cows. Given: Calorific value of methane: 28MJ/m^3; Burner efficiency: 70%; Retention period: 20days; Temperature of fermentation: 30^{0}C; Dry matter (cow dung) collected per cow per day: 2Kg; Density of dry matter in fluid (slurry) in the digester: 50kg/m^3; Biogas yield: 0.2m^3 per kg of dry input; Methane proportion in the biogas: 0.7. Calculate (a) The volume of biogas digester (b) The power available from the digester. [7+8]
8. Describe working of Closed Cycle OTEC system with the help of neat sketch. [15]

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