

Q1) Write about wind power, tidal power and hydropower.

WIND POWER

• Wind power generation

Modern wind turbines, typically featuring two or three blades with a diameter of about 33 meters, can produce substantial power.

For example,

A turbine can generate 300 kW at a wind speed of Beaufort scale 6 (strong breeze). Wind farms, such as the Fair Isle scheme established in 1982, demonstrate this potential, generating 50 MW and meeting 90% of the island's electricity needs.

• Physics of Wind Power

→ The kinetic energy in wind can be expressed as

$$\frac{1}{2} \rho v^2 \text{ where}$$

ρ is the density

v is wind velocity