| Name:<br>Enrolment No: | UPES<br>UNIVERSITY OF TOMORROW |
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**End Semester Examination, December 2024**

**Course: Wind and Alternative Sources of Energy** **Semester: III**
**Program: MBA (Power Management)** **Time: 03 hrs.**
**Course Code: PIPM 8002** **Max. Marks: 100**

**Section – A (2 marks * 10 = 20 Marks)**

**Fill in the blanks with the most suitable word/figure. Correct filling of each blank will fetch 2 marks.** **(CO1)**

1. Wind energy is the energy content of air in motion due to _____ heating of earth's surface.
2. For both wind and biomass energy, _____ energy is the input source of energy.
3. Biomass gasification leads to the generation of _____ gas that is a mixture of _____ and _____ .
4. Based on location, wind power projects can be classified as _____ , _____ and _____ wind farm.
5. India aims to achieve the following short-term and long-term targets under the Panchamrit action plan:
   a) reaching a non-fossil fuel energy capacity of _____ GW by 2030
   b) fulfilling a minimum of 50% of its energy requirements via renewable energy by 2030
   c) reducing $CO_2$ emissions by 1 billion tons by 2030
   d) reducing carbon intensity below _____ % by 2030
   e) and pave the way for achieving a net-zero emission target by 2070.

**Section – B (5 marks * 4 = 20 Marks)**

**Briefly explain the following:** **(CO1)**

1. Wind Atlas
2. Betz Law

3. Wind Park Effect
4. Bio-CNG

**Section – C (10 marks * 3 = 30 Marks)**

**Answer all questions in this section:** **(CO2)**

1. Discuss the various options to improve wind power at a particular site.
2. Assuming yourself as a policymaker, discuss policy measures that can help create a market for biogas run vehicles.
3. It has been observed that the wind power industry is going for larger and larger wind turbines. Discuss the reasons for such a trend.

**Section – D (30 marks * 1 = 30 Marks)**

**Answer any one question:** **(CO3)**

1. Discuss Sweden's transition to a country that is a world leader in waste management practices including waste to energy. Elaborate policy framework, technological innovations, and social practices of Sweden that make it a world leader in this area.
2. RPO, Feed-in Tariff, Generation Based Incentive, Accelerated Depreciation and other incentives have been used worldwide for creating an initial market for wind power. Explain how these instruments and incentives have created an initial market for wind power in India. Additionally, discuss the role of competitive bidding in making stable wind power market efficient, competitive and transparent.