Name: Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2023

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. Out of the total target of _____ MW installed capacity from solar, wind, biomass and small hydro to be completed by year 2022 in India, _____ MW is the targeted installed capacity from wind.

Section – B (5 marks * 4 = 20 Marks)

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

Briefly explain the following:

1. Betz Law
2. Wind Park Effect
3. Biomass Gasification
4. Offshore wind power project

Section – C (10 marks * 3 = 30 Marks)

Answer any three questions from this section: (CO2)

1. Draw a hypothetical power curve for a 1 MW wind turbine indicating cut-in speed, rated speed and cut-out speed parameters.
2. Derive the relationship between wind power, swept area and wind velocity.
3. Discuss Sweden's waste management practices (including waste to energy practices) that make it a world leader in this area.
4. Assuming yourself as a policymaker, discuss policy measures that can help create a market for biogas run vehicles.

Section – D (30 marks * 1 = 30 Marks)

Answer any one question from this section: (CO3)

1. 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.

OR

2. Compare the potentials of solar and wind power in India, discuss their pros and cons, and suggest a comprehensive framework for their promotion in the country.
