



# GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

(An Autonomous Institute of Government of Maharashtra)

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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **EE304UA - Professional Elective-I-Wind and Solar Power Technologies**

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Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

- 1) Solve any three from the following:
  - a) What are the different considerations of PV modules to be connected in series and parallel for deciding PV system design? [6]
  - b) Explain about solar radiation on tilted surface and give its advantages over concentrating surfaces. [6]
  - c) Draw a neat sketch of solar flat plate collector and explain its working principle. [6]
  - d) Discuss the advantages and disadvantages of flat plate collector. [6]
- 2) Solve any three from the following:
  - a) Draw and explain the P-V and I-V characteristics of the PV System for different Input quantities of irradiance and temperature. [6]
  - b) Explain the significance of MPPT methods with respect to the PV System performance and illustrate any one MPPT method. [6]
  - c) Explain the operation wind energy system with a neat sketch. [6]
  - d) Discuss the merits and demerits associated with wind energy systems. [6]
- 6) Solve any three from the following:
  - a) Explain Input-output curve and heat rate curve. [6]
  - b) Explain the principle of operation of wave power generation with a neat sketch. [6]
  - c) Derive the kinetic energy equation associated with wave power. [6]
  - d) Discuss the renewable energy scenario in India and list its advantages over other Sources. [6]
- 4) Solve the following:
  - a) With a neat sketch, explain the working principle of solar pond electric power plant. [6]

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