



GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Summer 2021** - (Preview)

Course Code & Course Name : **IN453A - Elective -II-Power Plant Instrumentation**

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Maximum Marks : **60**

Duration : **3 Hrs**

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Answer Key Submission Type: No marking scheme and solution

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) Attempt any three from the following?

- a) Draw a typical load curve of a city? State the formulae to calculate load factor, plant capacity factor, and use factor? [5]
- b) Define Co-generation? Explain what do you mean by topping cycle and bottoming cycle in the co-generation plant? [5]
- c) Draw a diagram of the Electrostatic precipitator? Explain it working? [5]
- d) Explain the construction and working of the baghouse filter? [5]

2) Attempt any three from the following?

- a) Draw and explain the three-element drum level control system used in a boiler? [5]
- b) Explain along with a proper schematic diagram how CO₂ in flue gas is measured by thermal conductivity measurement technique? [5]
- c) Write a brief note on turbine instrumentation and control? [5]
- d) Enlist various boiler interlocks and explain all of them in brief (at least five)? [5]

3) Attempt any three from the following?

- a) Classify the nuclear reactors available? Give full forms of the following nuclear reactors PWR, BWR, PHWR, CANDU? [5]
- b) Write a brief note on fuel, moderator, reflector, coolant, and control rods used in a nuclear power plant? [5]
- c) Draw and explain the working of high-temperature Rankine cycle with central tower solar thermal power generation plant? [5]
- d) Draw and explain the complete wind power generation system? What is the pitch angle control? [5]

4) Attempt All three from the following?

- a) Write a note on substation automation and smart grid? Draw appropriate diagrams to support your answer? [5]
- b) What do you mean by condition monitoring? Explain with block diagram the concept and working of condition monitoring? [5]
- c) Draw and explain the burner management system in a typical coal-fired thermal power plant? [5]

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