



## GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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

Course Code & Course Name : **IN452 - Process Instrumentation**

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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.

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|----|--|------|
| 1) | List and define different types of Processes.  | [10] |
| 2) | A) Define the terms process gain, time constant and dead time. Explain constant step method to determine steady state gain, time constant and dead time of the first order system. | [06] |
|    | B) Explain the concept self regulating process quoting example of level system.  | [04] |
| 3) | A) Draw the block diagram of feedback control system and explain its response to set point and disturbance.  | [05] |
|    | B) Explain the concept of controller tuning with reference to feedback controllers. How the tuning constants are determined?   | [05] |
| 4) | A) Draw the block diagram for cascade control system and explain the cascade control scheme for temperature control of jacketed CSTR.  | [06] |
|    | B) With the help of neat diagrams explain two alternative schemes of ratio control.  | [04] |
| 5) | A) Explain the concept of feed-forward control with the help its block diagram and list its advantages and disadvantages.  | [06] |
|    | B) Explain override control with the help of suitable example.   | [04] |
| 6) | A) Explain the concept of interaction and decoupling for a two input two output system.  | [06] |
|    | B) What is relative gain array? How it is used to decide loop pairing in the interacting multivariable systems?  | [04] |

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