# University of Mumbai
## Examination 2020- Inter Cluster

Program: BE Instrumentation Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester VI

Course Code: ISC601 and Course Name: Process Instrumentation System

Time: 1hour                                                                 Max. Marks: 50

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Note to the students:- All Questions are compulsory and carry equal marks .

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| Q1. | The optimum process performance can be judged by ----- criteria |
| Option A: | Decay ratio |
| Option B: | Subsidence ration |
| Option C: | Integral absolute error |
| Option D: | Any one of the above |
| | |
| Q2. | The time for the process-control loop to make necessary adjustments to the final control element |
| Option A: | Dead time |
| Option B: | Control lag |
| Option C: | Process lag |
| Option D: | Settling time |
| | |
| Q3. | If a controller outputs a 4- to 20-mA current signal to the final control element and has a p=25% , then what is the corresponding current? |
| Option A: | 19 mA |
| Option B: | 10 mA |
| Option C: | 8 mA |
| Option D: | 6 mA |
| | |
| Q4. | If the error is zero, the output stays fixed at a value equal to what it was when the error went to zero. |
| Option A: | Integral-Control Mode |
| Option B: | Proportional-Control Mode |
| Option C: | Derivative-Control Mode |
| Option D: | On off-Control Mode |
| | |
| Q5. | The proportional bias (Po) is added to proportional action for ---------- |
| Option A: | Making error zero |
| Option B: | To minimize reset windup |
| Option C: | To handle positive as well as negative errors |
| Option D: | Making the action proportional |
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| Q6. | Setting the PID controller parameters for optimum process performance is- |
| Option A: | Tuning |
| Option B: | Correction |
| Option C: | Optimizing |

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| Option D: | Performance Setting |
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| Q7. | ......... action is not preferred when noise is present on the process that is to be controlled |
| Option A: | Derivative |
| Option B: | Integral |
| Option C: | Proportional |
| Option D: | On/off |
| | |
| Q8. | In which control scheme the secondary loop should be at least 3 times faster than the primary loop. |
| Option A: | Auctioneering Control |
| Option B: | Feedforward control |
| Option C: | Cascade control |
| Option D: | Ratio control |
| | |
| Q9. | If process is not known well, we need to evaluate the objective function online using the values of the controlled output. |
| Option A: | Self-adaptive control |
| Option B: | Split range control |
| Option C: | Override control |
| Option D: | Selective control scheme |
| | |
| Q10. | It changes from normal control action and attempt to prevent a process variable from exceeding an allowable upper or lower limit. |
| Option A: | Cascade control |
| Option B: | Ratio control |
| Option C: | Split range control |
| Option D: | Override control |
| | |
| Q11. | ………. controller is a special type of feedforward controller |
| Option A: | Model Reference Adaptive |
| Option B: | Cascade |
| Option C: | Ratio |
| Option D: | Split Range |
| | |
| Q12. | Which control scheme involves two controlled variables, but only one valve? |
| Option A: | Feedforward control |
| Option B: | Cascade control |
| Option C: | Ratio control |
| Option D: | Feedback control |
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| Q13. | A control scheme select among several similar measurements the one with the highest value and feed it to the controller. |
| Option A: | Ratio control |
| Option B: | Auctioneering Control |
| Option C: | adaptive control |
| Option D: | Override control |

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| Q14. | When the coil is energized, the contacts are not energized until the time delay has lapsed.it is- |
| Option A: | off-delay timer relay |
| Option B: | on-delay timer relay |
| Option C: | Control relay |
| Option D: | Internal relay |
| | |
| Q15. | A discrete-state process is one for which the process variables can take on only …….. states |
| Option A: | Four |
| Option B: | Two |
| Option C: | one |
| Option D: | six |
| | |
| Q16. | If there are three input variables and three output variables then there is a total of …… possible states |
| Option A: | 36 |
| Option B: | 64 |
| Option C: | 06 |
| Option D: | 09 |
| | |
| Q17. | It can be used as an energy-level translator |
| Option A: | Solenoids |
| Option B: | Relays |
| Option C: | limit switches |
| Option D: | coils |
| | |
| Q18. | For two non-interacting first order systems connected in series, the overall transfer function is the…….of the individual transfer function |
| Option A: | Ratio |
| Option B: | Product |
| Option C: | Sum |
| Option D: | Difference |
| | |
| Q19. | A schematic way of describing the sequence of events of a discrete state control system. |
| Option A: | event |
| Option B: | schematic diagram |
| Option C: | process diagram |
| Option D: | ladder diagram |
| | |
| Q20. | Which of the following in not an advantage of cascade control? |
| Option A: | The system reacts to disturbances more quickly |
| Option B: | More efficient control of the primary variable |
| Option C: | It is a cheap control scheme to implement |
| Option D: | The effects of dead time and phase lag time are reduced in the system |
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| Q21. | RGA is useful for process engineers because it allows us to determine: |
| Option A: | Which matrix size to use. |
| Option B: | What eigenvalues and eigenvectors are paired |
| Option C: | What input and output pairs to use |
| Option D: | When feed forward control is preferred over feedback control. |
| | |
| Q22. | The open loop transfer function of control system is KR/(1+TS).This represents- |
| Option A: | A first order system |
| Option B: | Dead time system |
| Option C: | A first order time lag |
| Option D: | A second order system |
| | |
| Q23. | For MIMO systems |
| Option A: | Control loops are isolated |
| Option B: | Each controlled variable is only manipulated by one variable |
| Option C: | Decoupling the system makes it more complicated |
| Option D: | Manipulated variables may affect several controlled variables |
| | |
| Q24. | The number of operational amplifiers require for designing of an electronic PID controller is- |
| Option A: | 5 |
| Option B: | 6 |
| Option C: | 2 |
| Option D: | 4 |
| | |
| Q25. | The variable which is adjusted for making process variable equal to the desired value is- |
| Option A: | Set point |
| Option B: | Measured variable |
| Option C: | Controlled variable |
| Option D: | Manipulated variable |