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

Course Code & Course Name : **IN301U - Control System Components**

Generated At : **19-04-2022 11:05:52**

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) Attempt any three of the following

- a) Explain the advantages of pneumatic systems over hydraulic systems. [4]
- b) Explain the working principle and application of the square root extractor. [4]
- c) Explain with a neat sketch the working of the electric to pneumatic converter. Enlist any two applications of it. [4]
- d) Write a short note on the flow totalizer. [4]

2) Attempt any three of the following

- a) Explain the effects of cavitation and flashing on the control valve. [4]
- b) What is the difference between the control valve positioner and a control valve actuator? On which factors does the selection of control valve actuator depends? [4]
- c) Explain the selection criteria of the control valve. [4]
- d) Explain control valve characteristics. [4]

3) Attempt the following

- a) What is meant by a pneumatic power supply? [4]
- b) With a neat sketch explain the Differential Pressure Regulator used in hydraulic systems. [4]
- c) Explain the single-acting pneumatic cylinder [4]

4) Attempt any three the following

- a) What are the advantages of electronic controllers over pneumatic controllers? [4]
- b) Explain continuous controller mode versus floating control mode [4]
- c) Draw and explain the schematic diagram of an ac servo system using ac servomotor. [4]
- d) Explain the working of a synchro unit as a position transducer. [4]

5.) Attempt the following

- a) Describe the construction and working of permanent magnet type stepper motor. [6]
- b) Explain construction and working of dual trace oscilloscope. [6]

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