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Question Paper Code :

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
(AUTONOMOUS)**

M.E/M.Tech I-Semester Regular Examinations, November 2015

**Control Systems Components
(Control Systems Engineering)**

Date: _____ **Time: 3 hours** **Max Marks: 60**

**Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only**

- 1 a) Explain briefly the construction and working principles of gyroscopes. (6 M)
b) Explain the working and operation of horizontal and vertical gyroscopes. (6 M)

(or)
- 2 a) Define potentiometer? Explain briefly various types of potentiometers. (6 M)
b) Write about the selection of potentiometers and drawbacks for it? (6 M)
- 3 a) Explain the construction and working of D.C tachometers and derive its transfer function? (6 M)
b) Explain the construction and working of A.C. tachometers derives its transfer function? (6 M)

(or)
- 4 a) Explain the construction and working of synchro pair as error detector? (6 M)
b) What is meant by electrical zero of a synchro? Explain the types of synchros? (6 M)
- 5 a) Explain the construction and working of any two types of stepper motors (6 M)
b) Write the applications of stepper motors? Write the advantages and disadvantages? (6 M)

(or)
- 6 a) Write about servo motors? Derive the transfer function for D.C servo motor (armature controlled method). (6 M)
b) Derive the transfer function for A.C servo motor from its characteristics? (6 M)

- 7 a) Derive the time constant for series connected magnetic amplifier? (6 M)
b) Describe the construction and working principles of parallel connected and self saturated magnetic amplifier? (6 M)

(or)

- 8 a) Explain the features and applications of D.C servo amplifiers? (6 M)
b) Explain the features and applications of A.C servo amplifiers? (6 M)

- 9 Explain briefly about micro electromechanical systems and write its applications? (12 M)

(or)

- 10 a) Explain briefly about accelerometers and write its advantages and disadvantages? (6 M)
b) Explain the construction and working of any two types of accelerometers? (6 M)