**Total No. of Questions : 4]**

**SEAT No. :** ____

**PA-10010**

**[Total No. of Pages : 1**

**[6008]-269**

# S.E. (Robotics & Automation Engineering)

## CONTROL SYSTEM ENGINEERING

## (2019 Pattern) (Semester - II) (211509)

***Time : 1 Hour]*** ***[Max. Marks : 30***

***Instructions to the candidates:***

1) ***All questions are compulsory. i.e. Solve Q.1 or Q.2, Q.3 or Q.4.***
2) ***Assume Suitable Data, if necessary.***
3) ***Use of electronic pocket calculator is allowed.***
4) ***Neat Diagrams must be drawn wherever necessary.***

***Q1)*** a) What is control system explain different parts of control system. Give example and applications of open loop and closed control system. **[8]**

b) Draw the circuit diagram of closed loop system explain it with suitable example also give the features of it **[7]**

OR

***Q2)*** a) Define following terms with example **[8]**

i) Source node
ii) Sink node
iii) Feedback path
iv) Feedback loop

b) Define transfer function. What are the different methods used to obtain transfer function explain any one. **[7]**

***Q3)*** a) Derive the expression for Steady state error and Static error coefficient. **[8]**

b) With the help of neat sketch explain any seven time domain specifications of second order underdamped system. **[7]**

OR

***Q4)*** a) Consider unity feedback system with open loop transfer function G(S)=16/S(S+4) Determine time domain specifications of closed loop system. **[8]**

b) With suitable diagram explain PD,PI controller state the advantages and applications of both. **[7]**

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