CLASS: BE   SEMESTER: VII
BRANCH: EEE   SESSION :MO/2018

SUBJECT : MEE1119 CONTROL SYSTEM DESIGN

TIME: 1.5 HOURS   FULL MARKS: 25

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1 (a) State some performance characteristics of time domain approach.   [2]
    (b) A disturbance signal D(s) enters into a process control setup. Show it by a labeled block   [3]
         diagram, discuss its effects on output and means to eradicate it.

Q2 (a) What should be the choice of damping ratio, ξ in control system?   [2]
    (b) What are the general guidelines for design principles in time and frequency domain?   [3]

Q3 (a) Why are DC Motors preferred over AC motors in control system?   [2]
    (b) **Discuss op-amp realization of a PI controller and find the transfer function.**   [3]

Q4 (a) Inserting a PID controller changes the order of the overall system. Justify with transfer [2]
         function example.
    (b) What are the limitations of a single stage phase lead controller? How can it be solved?   [3]

Q5 (a) State some characteristics of derivative and integral control.   [2]
    (b) Enumerate steps for designing a phase lag controller.   [3]

Q6   For a unity feedback type-1 system having open loop transfer function   [5]
         $G(s) = K/s(s+1)(s+4)$
         Design a compensated system to meet following specifications:
         $K_v = 5$, $M_p = 25\%$ and $T_s = 10sec$

::::13/09/2018 M ::::::