IAT 2

CONTROL ENGINEERING - 17ME73 / 15ME73

The respondent's email address (**rahu17me@cmrit.ac.in**) was recorded on submission of this form.

The overall transfer function of two blocks in parallel is : * 2 points

- (•) Sum of individual gain
- ( ) Product of individual gain
- ( ) Sum of squares of individual gain
- ( ) Division of individual gain

The overall transfer function of two blocks in series is: * 2 points

- ( ) Sum of individual gain
- (•) Product of individual gain
- ( ) Difference of individual gain
- ( ) Division of individual gain

In signal flow graph input node is a node having only * 2 points

- ○ incoming branches.
- ◉ outgoing branches.
- ○ both 1 and 2.
- ○ none of the above.

In signal flow graph output node is a node having only * 2 points

- ◉ incoming branches
- ○ outgoing branches
- ○ both 1 and 2
- ○ none of the above

At summing point, more than one signal can be * 2 points

- ○ added
- ○ subtracted
- ◉ both of the above
- ○ none of these

The value of variables at each node is _____the algebraic sum of all signals arriving at that node. * 2 points

- ( ) Less than
- (•) Equal to
- ( ) Greater than
- ( ) Can't be determined

Two loops are said to be non-touching only if no common _____exists between them. * 2 points

- ( ) Loop
- ( ) Feedback path
- ( ) Branch
- (•) Node

In a signal flow graph method, how is an overall transfer function of a system obtained? * 2 points

- ( ) Poisson's equation
- ( ) Block diagram reduction rules
- (•) Mason's equation
- ( ) Lagrange's equation

In block diagram representation, what are the lines connecting the blocks, known as? * 2 points

- (●) Branches
- ( ) Nodes
- ( ) Datums
- ( ) Sources

Which type of node comprises incoming as well as outgoing branches? * 2 points

- ( ) Source node
- ( ) Sink node
- (●) Chain node
- ( ) Main node

Match the following notations with their meanings: * 5 points

	ERROR SIGNAL	INPUT SIGNAL	OUTPUT SIGNAL	FORWARD TRANSFER FUNCTION	FEEDBACK TRANSFER FUNCTION
G(S)	○	○	○	◉	○
H(S)	○	○	○	○	◉
C(S)	○	○	◉	○	○
E(S)	◉	○	○	○	○
R(S)	○	◉	○	○	○

Match the following mechanical elements with their analogous electrical elements in F-I analogy * 5 points

	RECIPROCAL OF INDUCTANCE	CAPACITANCE	RECIPROCAL OF RESISTANCE	VOLTAGE	FLUX
MASS	○	◉	○	○	○
SPRING CONSTANT	◉	○	○	○	○
FRICTION FACTOR	○	○	◉	○	○
DISPLACEMENT	○	○	○	○	◉
VELOCITY	○	○	○	◉	○

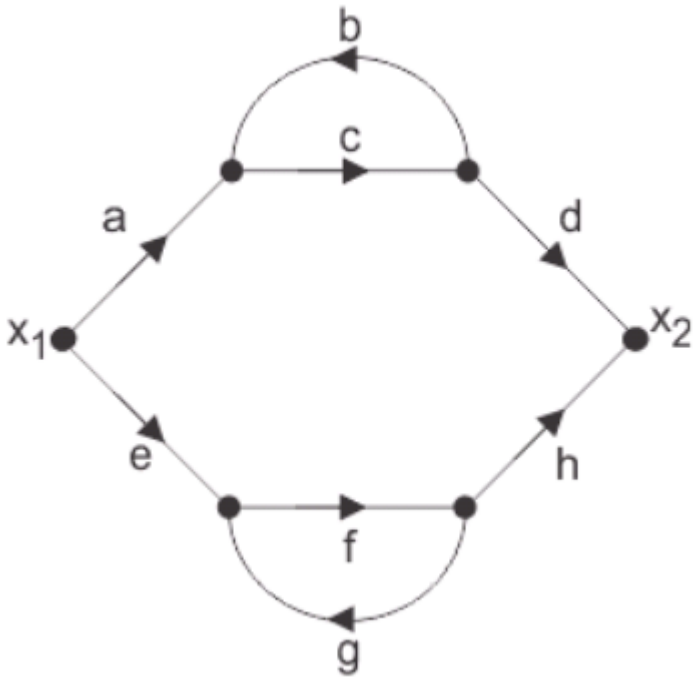
Match the following mechanical elements with their analogous electrical elements in F-V analogy * 5 points

	INDUCTANCE	RECIPROCAL OF CAPACITANCE	RESISTANCE	CURRENT	CHARGE
MASS	◉	○	○	○	○
SPRING CONSTANT	○	◉	○	○	○
FRICTION FACTOR	○	○	◉	○	○
DISPLACEMENT	○	○	○	○	◉
VELOCITY	○	○	○	◉	○

For the block diagram given in the following figure, the expression of C/R is: * 5 points

- ◉ (G1G2G3) / (1 - G1G2)
- ○ (G1G2) / (1 - G1G2G3)
- ○ (G1G2G3) / (1 + G1G2)
- ○ (G1G2) / G3 (1 - G1G2)

Use mason's gain formula to find the transfer function of the following signal flow graph: 5 points *



- (acd + efh - acdfg - efhbc) / (1- bc - fg + bcfg)
- (acd + efh) / (1+ bc + fg - bcfg)
- (acdfg + efhbc) / (1- bc - fg - bcfg)
- (acdfg + efhbc - acd - efh) / (1- bc - fg)

A unity feedback system has G(s) = 50 / [s (s+2) (s^2 + 2s + 5)]. Steady state error for r(t) = 2 + 4t + t^2 is * 5 points

- 0
- Infinity
- 50
- 25