

SEAT No.:

P16

[Total No. of Pages : 2]

TE/INSEM/APR-19
T.E. (Mech.) (Semester - II)
302050 : MECHATRONICS
(2015 Pattern)

Time: 1 Hour

[Max. Marks : 30

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) All questions carry equal marks.
- 5) Assume suitable data, if necessary.
- 6) Use of electronic pocket calculator and steam tables is allowed.

01) a) Explain need for mechatronics in mechanical industries.

[6]

b) For te

it is

volt.

[4]

The sensor Transfer Function (TF) is given as 0.01 volt/degree.

Find:

- i) Sensor output voltage if temperature is 600°F
- ii) Temperature for 3.5 V .

OR

Q2) a)

A linear resistance potentiometer is 50mm long and uniformly wound with wire having resistance of $10\text{K}\Omega$. Under normal conditions, the slider is at the centre of the potentiometer. Find the linear displacement when the resistance of the potentiometer is (i) 3850Ω (ii) 7500Ω . If minimum measurable resistance is 10Ω . Comment on the displacement direction. Find the resolution of potentiometer in mm.

Find the

b) Define:

Define:

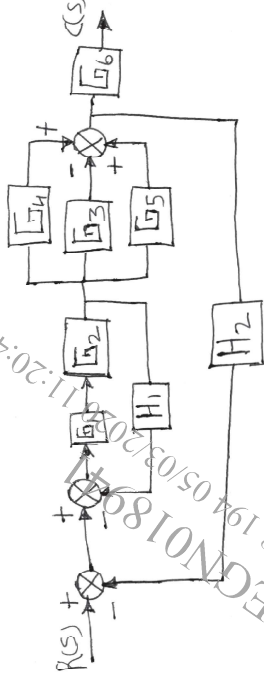
i) Resolution

ii) Sensitivity:

P.T.O.

Q_3	a)	Obtain $\frac{C(S)}{R(S)}$ using block reduction rule.
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[9]



b) Explain any one Automotive application of mechatronics system.

[4]

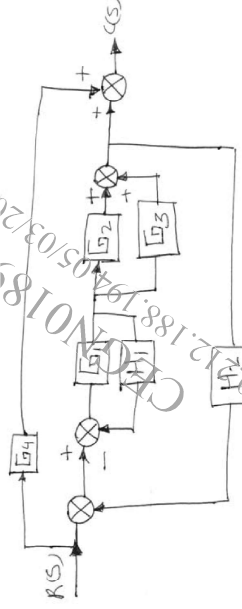
OR

Q4) a) Explain concept of Transfer function.

[4]

b) Reduce the following Block diagram into single Block diagram.

[6]



05) a) Explain in detail Analog to digital conversion process.

[6]

b) A 4-bit DAC has reference voltage of 8V. The binary input is 1101. Find the analog output voltage. [4]

[4]

OR

Q6) a) Compare parallel and serial communication.

[4]

b) A 4-bit R-2R type DAC is supplied with 2.56 volt reference potential. Determine the full scale output potential and LSB. [6]

[6]