Class Test No. 02   Thursday 08th August 2019 Duration: 10 Minutes   Closed notes

Name: _____   Roll No. _____

Choose only one option which is the most appropriate for questions 1 - 5.

1. In the input-output form of the mathematical model, the transformation,
      (a) 'u' operates on 'g' to give 'y'
      (b) 'y' operates on 'u' to give 'g'
      (c) 'u' operates on 'y' to give 'g'
      <u>(d) 'g' operates on 'u' to give 'y'</u>

2. If we shift a branch point to the right of a block with G as operator, signal in that branch
      (a) is multiplied by G
      <u>(b) is divided by G</u>
      (c) becomes zero
      (d) remains unchanged

3. In linearization, we assume that
      (a) higher order derivatives are small
      <u>(b) higher order terms are small</u>
      (c) operating point is close to zero
      (d) the mathematical relation is linear

4. Linearization procedure makes use of
      (a) Arithmetic series
      (b) Fourier's series
      <u>(c) Taylor's series</u>
      (d) Laurent's series

5. Range of applicability of a linearized form predominantly depends on the value of
      (a) operating point itself
      (b) first derivative at the operating point
      <u>(c) second and higher order derivatives at the operating point</u>
      (d) value of function at the operating point

Give short (1 - 2 lines) answer to the questions 6-10.

6. Define the summing point.

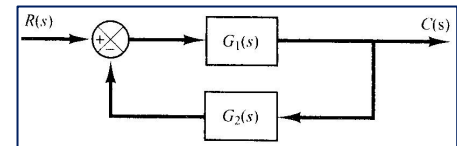   It is the point which takes many inputs and gives out one output as the algebraic sum of all the inputs.

..... 2 (PTO)

7. What is impact of linearity and time invariance?

Linearity allows addition and scaling of responses. Time invariance preserves the response under the time shift of input.

8. Give the expression for C/R for the following diagram.

$$\frac{C(s)}{R(s)} = \frac{G_1(s)}{1 + G_1(s) \cdot G_2(s)}$$

9. What is the role of operating point in the linearization process?

Operating point defines the condition that the linearized system is expected to achieve in the steady-state.

10. Give the pre-multiplier of signal X_2 in figure below, when the summing point is moved to the right of the block G.

Pre-multiplier = 1/G