TOPIC

Engineering Mechanics (Statics and Dynamics) – Section VII – Question 12

QUESTION

A damped free response of a spring-mass-damper system is given by the differential equation

$$2\ddot{x} + c\dot{x} + 5x = 0$$

The value of c for which the response would be non-oscillatory (overdamped) satisfies

(A) $c < \sqrt{40}$
(B) $c \geq \sqrt{40}$
(C) $c < 40$
(D) $c \geq 40$

HINT

Find the roots of the characteristic equation of the ordinary differential equation. If the roots of the equation are complex, the transient response is oscillatory.

CONTRIBUTOR

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