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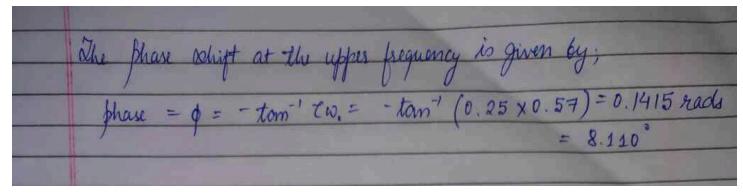
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Answer

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	Page No.
(3)	@ given; static constinity = K = 5 notes
	input / wolts
	and, time constant = T = 0.25 second
	The second secon
alo;	The system can be modeled by first order differential equation
41	The system can be modeled by first order differential equation > 0.25 dy(+) + y(+) - 5x(+)
	odt 0
	The above is the differential equation describing the system.
	where y(x) is the output of the transduar and x(t) is the input.
	The frequency veryouse for 1tt order differential equation is given by;
	K 5
	1 10 25 1/2
#N 5	1+jtw 1+j0.25)w
9	Thus: 41 1.
	Thus; the ferequency response function is _5
- 3	$1+j(0.25)\omega$
2 3	(b) At very low frequency;
	(b) At very low frequency;
	Thus; output amplitude at low frequency = 5.
	we need to find a frequency for which output amplitude = 3, -2.5
	Let the irequired frequency to wo
1 22	
1 m Mall	do,
	$ 0(2.5) = K^- = 5^+$
	1+ (TWo) 2 1+00625 62
	$=7$ 1+0.0625 $W_0 = 4$ = $W_0 = \sqrt{0.0625}$
	and Thus 1 w. = 148 rad/s.
3	

z4, 12.55 AW Loading
F08± 110-1
Thus the frequency at which complitude would be half = \$\frac{48}{18} \text{ rad /sec}
1% amplitude distortion means that frequency response function's magnitude is either 0.99 or 1.01 times the magnitude at DC
magnitude is either 0.99 or 1.01 times the magnitude at DC
Ot a to be a local direct
It is a known fact that,
the magnitude of frequency cresponse function decreases as pageonical (10) frequency increases > our new magnitude is 0.99 times of that at 1
dt Dc; 10 = 0 => magnitude of frequency response function = 5
Now, we need to find some frequency, we ouch that to the magnitude of frequency oresponse function is \$x 0.99 = 4.95.
We need to Delive for wo,
$\frac{(4.95)^2 = 5^2}{1 + 0.0625(\omega_0)^2} = \frac{5^2}{1 + 0.0625$
=) Q4.5025 = 5 ⁴
$1+0.062 \le \omega_3^2$
- When overlying we get;
W. = 0.57 rad/s
The be because of some for course distriction would be low than tot
is a (oc) to 8.57 orad/s.

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