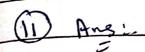
Exexcise 5.1



ma F=mg

F= KS

5.2

Damped Motion.

md24 + cdy + xx = 60 f(t)

Example 1:-

F= 8 lb

S = 26 1+ =

X(+)=?, Fe=2dx

F=mg

8= m (32)

m = 1/4 Slugs

Also F=Kg - 8 = K(6) = K=46

 $\frac{1}{4} \frac{d^2x}{dt^2} + 2 \frac{dx}{dt} + 4x = 0$

d2x + p dx + 16x = 0

x2 + 8x + 16 = 0

X+412=0

X = -4

x(t)= c, e" + c2 + e-46

Date:

Day: M T

$$x(0) = c_1e^{\circ} + c_2(0)e^{\circ} \times (0) = -4c_1e^{\circ} + c_2(-40)e^{\circ}$$

 $x(0) = c_1 + c_2(0)e^{\circ} \times (0) = -4c_1e^{\circ} + c_2(-40)e^{\circ}$
 $x(0) = c_1 + c_2(0)e^{\circ}$
 $x(0) = c_1 + c_2(0)e^{\circ}$

$$1 = -4c_1 + c_2(0+1)$$

$$1 = -4c_1 + c_2$$

(b)
$$\chi(0) = -1/2$$

 $\chi'(0) = 5$

$$C = \frac{1}{32}F$$
, $E(t) = 220$

$$\frac{2 d^2 Q}{dt^2} + \frac{32 Q}{2} = \frac{220}{2}$$

Date: Mysū

Day: M T W T

Qp(t)=?

Let Qp(+) = A

Qp'(+) = .0

Qp"(+)=0

D+16(A)=110

A = 55/8

-: Qp(+) = 55

Q(+) = 4 Sin4+ + 6 654+ + 55

Q'(t) = 4c, cos 4 = 4 C2 Sin4+ 0.

Q(0) = C, Sind + C, (050 + 53)

Q(0) = C, (0) + C2(4) + 55

8

Q'(0) = 4c, wso - 4c2 sino

0 - 40,(1) - 40,(0)

0 = 40

[C120

1 19	M Y50	Day: M T W T F 5				
e:	Q(+) -	- 55	(0547	₄ 55		
	9(1)	8	(0347	8		
A .				:		
Q (4)		***				
			-			
	•				*	
				<u> </u>		
			<u> </u>			
		<u>la</u>		- a'-		1
			4			
1)	-					
		-	,			
			- 2			
				-		
	-					
					-	(d) (79.4) (d)