December 2017 | January 2018 | February 2018

November
WEEK 47

329/036 Saturday 25

8.00 am — Computer Modeling and Simulation

8.30

Reinforcement Task 2

9.00

9.30 Module 2.2:-

10.00 Review Question 5:-

10.30 → Radium-226 has a continous decay Rate of about 0.0427869% per year. Determine its half life.

11.00

11.30 Ans:

Decay Rate = 0.0427869% / 0.000427869

$Q = Q_0 e^{-0.0427869\% t}$

Noon

12.30 $\therefore Q = 0.5 Q_0$ for its half life

1.00

1.30 $0.5 Q_0 = Q_0 e^{-0.000427869 t}$

2.00 taking log both sides

2.30 $\ln(0.5) = \ln(e^{-0.000427869 t})$

3.00 $\ln(0.5) = -0.000427869 t$

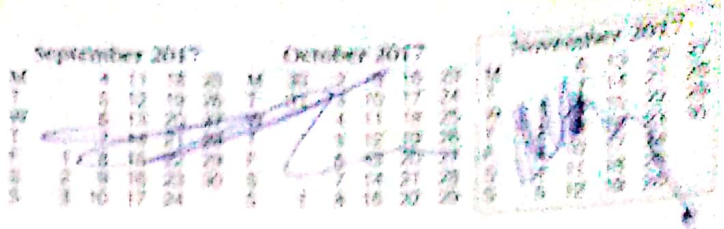
3.30 $t = \frac{\ln(0.5)}{(-0.000427869)}$

4.00

4.30 $t = \frac{+0.693147}{+0.000427869} = 1620$

5.00

6.00 pm



26 Sunday

8.00 am

8.30 Module 2 Review Question 2e

9.00

(a) Difference Equation

9.30 Growth of Population → P

10.00 t = time step 0.1 months

10.30 t-Δt is P ≤ 1000

11.00 carrying capacity = 1000

11.30 rate $\frac{dB}{dt}$ = 105% = $\frac{105}{100}$ = 1.05

Noon Initial Population = 20

12.30 $\Delta P = \frac{dB}{dt}\left(1-\frac{P}{1000}\right)(P)(0.1)$ / : $\frac{dB}{dt}\left(1-\frac{P}{1000}\right)P(t)$

1.00

$$\boxed{\Delta P = (1.05)\left(1-\frac{P}{1000}\right)(P)(0.1)}$$

1.30

2.00 (b) Maximum Population = 1000

2.30

3.00 (c) for P = 600

3.30 $P + \Delta P = 600 + 1.05\left(1-\frac{600}{1000}\right)(600)(0.1)$

4.00

4.30 $= \boxed{625.2}$ Ans.

Population

5.00

6.00 pm

December 2017 | January 2018 | February 2018

November

Week 48

Annie: Day* (Chatham Islands NZ)

Monday 27

8.00 am

Module 3.1

8.30

Review Question 8

9.00

9.30 (a)

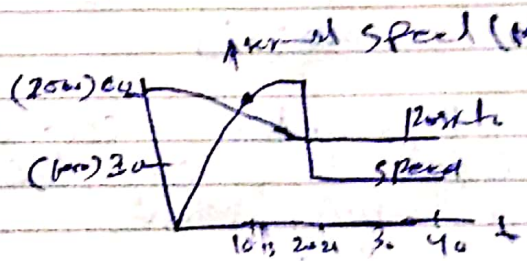
A Greater, Bcz Projected Area is less, causing air friction to be less & force acceleration velocity more.

10.00

10.30

11.00 (b)

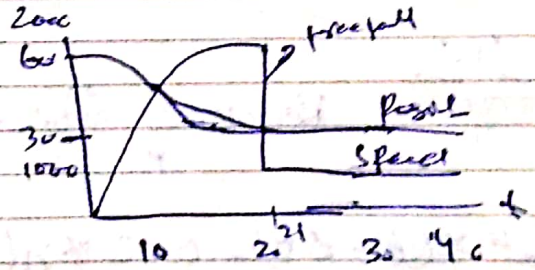
A 13 sec.



11.30

Noon (c)

A 21 sec.



12.30

1.00

1.30

2.00

2.30

3.00

3.30

4.00

4.30

5.00

6.00 pm

November

WEEK 48

September 2017

M		4	11	18	25	
T		5	12	19	26	
W		6	13	20	27	
T		7	14	21	28	
F	1	8	15	22	29	
S	2	9	16	23	30	
S	3	10	17	24		

October 2017

M	30	2	9	16	23	
T	31	3	10	17	24	
W		4	11	18	25	
T		5	12	19	26	
F		6	13	20	27	
S		7	14	21	28	
S	1	8	15	22	29	

November 2017

M		6	13	20	27	
T		7	14	21	28	
W	1	8	15	22	29	
T	2	9	16	23	30	
F	3	10	17	24		
S	4	11	18	25		
S	5	12	19	26		

28 Tuesday 332/033

8.00 am

Module 4.1

8.30

Review Question 2

9.00

9.30 WTS death proportionality constant (w)

10.00 PS larger than the BTS constant (b)

10.30

$w > b$

11.00

→ BTS population should be larger after a few time step. BCZ white tip shark are dying more.

Noon

12.30 Module 4.2

Review Question 2

1.00 $x(0) = 100$

1.30 $\Delta x = (2 * x(t-\Delta t) - 0.02 * y(t-\Delta t) * x(t-\Delta t) * \Delta t$

2.00 $y(0) = 15$

$\Delta y = (0.01 * x(t-\Delta t) * y(t-\Delta t) - 1.06 * y(t-\Delta t) * \Delta t$

2.30

3.00

(a) Δy, equation Model change in predator population

3.30 $y(0) = 15$

4.00

4.30

5.00

6.00 pm

8.00 am

8.30 (b) y = Predator
x = Prey

Predator_population(0) = 15

Predator Birth fraction = 0.01

10.00

10.30 (c) Prey Birth fraction = 2

11.00 Prey_Population x(0) = 100

11.30 (d) Predator_death_proportionality constant = 1.06

Noon

12.30

1.00 (e) Prey_death_Proportionality_constant = 0.02

1.30

2.00 (f) Initial Number of Predator = 15

2.30

3.00 (ff) Initial Number of Prey = 100

3.30

4.00

4.30

5.00

6.00 pm

November

WEEK 48

September 2017

M		4	11	18	25	
T		5	12	19	26	
W		6	13	20	27	
T		7	14	21	28	
F	1	8	15	22	29	
S	2	9	16	23	30	
S	3	10	17	24		

October 2017

M	30	2	9	16	23	
T	31	3	10	17	24	
W		4	11	18	25	
T		5	12	19	26	
F		6	13	20	27	
S		7	14	21	28	
S	1	8	15	22	29	

November 2017

M		6	13	20	27	
T		7	14	21	28	
W	1	8	15	22	29	
T	2	9	16	23	30	
F	3	10	17	24		
S	4	11	18	25		
S	5	12	19	26		

30 Thursday 334/031

Bonifacio Day (Philippines)

8.00 am

Module 4.3

8.30

Review Question 7

9.00

9.30 (a) Average = 5 days to infections stage.

10.00

$P = \frac{1}{5} = 0.2/day$

10.30

11.00

(b)

11.30 rate of change of exposed individuals.

Noon not Quarantined $\xrightarrow{\text{Move}}$ Infectious and Undetected

12.30 $E \& I_U$ (Infections Undetected)

1.00

P (fraction, per exposed)

1.30 E (Exposed)

2.00 $P \times E \rightarrow \boxed{PE}$

2.30

(c)

3.00 Exposed who are Quarantined

EQ to PQ

3.30 Infections → Quarantine.

4.00

$\rightarrow \boxed{P_{QE_Q}}$: P (fraction per Exposed)

4.30 E_Q (Infections).

5.00

6.00 pm

8.00 am

8.30 (d) 10% people Quarantine → Not SARS →

9.00 leave → Quarantine

9.30 $= \frac{10}{100} = 0.1$ / day → total into 1 day.

10.00

10.30

11.00 (e) Quarantine day = 16

11.30 $U = \frac{1}{16}$ per day = OR | 0.0625/day

Noon

12.30 (f) Formula,

1.00

1.30 Rate of change of susceptible, quarantined individuals leaving Quarantine from Sq to S.

2.00

2.30 U*Sq — U fraction per day. Sq: change of susceptible

3.00

3.30

4.00

4.30

5.00

6.00 pm

December

WEEK 48

October 2017						
M	30	2	9	16	23	
T	31	3	10	17	24	
W		4	11	18	25	
T		5	12	19	26	
F		6	13	20	27	
S		7	14	21	28	
S	1	8	15	22	29	

November 2017						
M		6	13	20	27	
T		7	14	21	28	
W	1	8	15	22	29	
T	2	9	16	23	30	
F	3	10	17	24		
S	4	11	18	25		
S	5	12	19	26		

December 2017						
M		4	11	18	25	
T		5	12	19	26	
W		6	13	20	27	
T		7	14	21	28	
F	1	8	15	22	29	
S	2	9	16	23	30	
S	3	10	17	24	31	

2 Saturday 336/029

8.00 am

Review Question 8

8.30

9.00 (a)

$K = 10$ contact/Day and $N_0 = 10{,}000{,}000$ people

9.30

$$\frac{K}{N_0} = \frac{10}{10{,}000{,}000} = 0.000001 = 0.0001\%/\text{day}$$

10.00

10.30

11.00 (b)

Suppose 6% contact Btw Infectious and susceptible

11.30

$$\frac{6}{100} \rightarrow 0.06/\text{Day}$$

Noon

12.30

1.00 (c) Using Part (a) & (b)

1.30 Percentage of all possible contacts result of transition each day.

2.00

2.30 $(0.000001) \times (0.06) = 0.00000006$

$= 0.000006\%/\text{Day}$

3.00

3.30

4.00 (d)

Infectious_Undetected = 5000

4.30 susceptible = 9,000,000

5.00 possible contact =>

6.00 pm

9.00 am

$5000 \times 9000000 = 45,000,000,000$

9.30

9.00 (e) Using Pivot (c) and (d):

# of contact Per day.

10.00 $(0.000000006)(45,000,000,000) = 2700$

10.30

11.00

11.30 (f) $q = 0.1 = 1\%$ of Individuals (Using part (e))

Noon $(0.1)(2700)$ ← Exposed Quarantine

12.30 270 A

1.00

1.30 (g) formula,

Rate of change from susceptible (I_S) to exposed-Quarantined (E_Q)

2.00

2.30 q = fraction Per day Individually

K = Mean Number of contact per day

3.00 b = Probability Not a contact btw Person and Infection (TB)

3.30 S_U = Infective-Undetected

S = susceptible

N_0 = Initial No of Population

4.00

4.30 $= qKbI_q\left(\frac{S}{N_0}\right)$

5.00

6.00 pm

December

WEEK 49

October 2017						November 2017						December 2017					
M	30	2	9	16	23	M		6	13	20	27	M		4	11	18	25
T	31	3	10	17	24	T		7	14	21	28	T		5	12	19	26
W		4	11	18	25	W	1	8	15	22	29	W		6	13	20	27
T		5	12	19	26	T	2	9	16	23	30	T		7	14	21	28
F		6	13	20	27	F	3	10	17	24		F	1	8	15	22	29
S		7	14	21	28	S	4	11	18	25		S	2	9	16	23	30
S	1	8	15	22	29	S	5	12	19	26		S	3	10	17	24	31

4 Monday 338/027

Annie Day (Westland NZ)*

8.00 am

(h)

8.30 q = 0.1 Number of them from Part (e) yields expand

9.00 ↙single ↙q ↙Part (e)

9.30 = (1 − 0.1)(2700)

10.00 = (0.9)(2700) = 2430 people

10.30

11.00 (i) $(1-q)\, kbE[u, \frac{S}{W_0}]$

11.30

Noon

12.30

1.00

1.30

2.00

2.30

3.00

3.30

4.00

4.30

5.00

6.00 pm

Scanned with CamScanner