

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
S	2	9	16	23
S	3	10	17	24

January 2018

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

February 2018

M	5	12	19	26
T	6	13	20	27
W	7	14	21	28
T	1	8	15	22
F	2	9	16	23
S	3	10	17	24
S	4	11	18	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 continuous decay rate of about 0.0427869% per year. Determine its half life.

11.00

11.30

Ans

$$\text{Decay Rate} = 0.0427869\% / 0.000427869$$

Noon

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

12.30

$$\therefore Q = 0.5 Q_0 \text{ for its half life}$$

1.00

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

1.30

2.00

taking log both side

2.30

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

3.00

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

3.30

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

4.00

4.30

$$t = \frac{40.693147}{0.000427869} = 1620$$

5.00

6.00 pm

November

WEEK 47

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

26 Sunday

8:00 am

8:30

Module 28

Review Question for

9:00

(a) Difference Equation

9:30

Growth of Population $\rightarrow P$

10:00

$t =$ time step 0.1 units

10:30

$t - \Delta t$ is $P \leq 1000$

11:00

carrying capacity = 1000

11:30

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

Noon

Initial Population = 20

12:30

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

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

$$= \boxed{625.2}$$

4:30

Population

5:00

6:00 pm

December 2017					January 2018					February 2018				
M	4	11	18	25	M	1	8	15	22	M	5	12	19	26
T	5	12	19	26	T	2	9	16	23	T	6	13	20	27
W	6	13	20	27	W	3	10	17	24	W	7	14	21	28
T	7	14	21	28	T	4	11	18	25	T	1	8	15	22
F	1	8	15	22	F	5	12	19	26	F	2	9	16	23
S	2	9	16	23	S	6	13	20	27	S	3	10	17	24
S	3	10	17	24	S	7	14	21	28	S	4	11	18	25

November

WEEK 48

331034 Monday 27

Arrive Day* (Chatham Islands NZ)

8.00 am

Module 3.1

8.30

Review Question 8

9.00

9.30

(a)

Greater, Bcz projected Area is less, crossing air friction to be less, force acceleration velocity more.

10.00

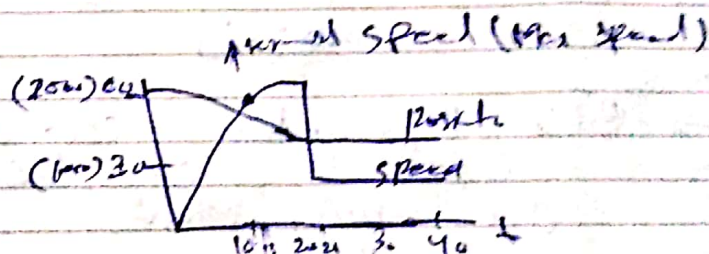
10.30

11.00

(b)

13 sec.

11.30



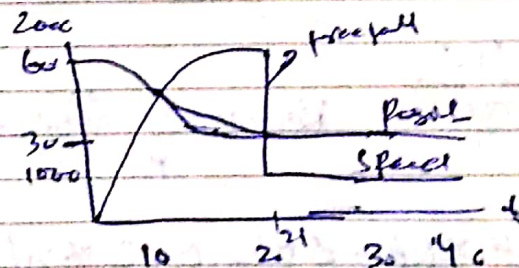
Noon

(c)

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

28 Tuesday 3/2/03

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 BPS constant (b)

10.30

$w > b$

11.00

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

11.30

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

December 2017

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S	3	10	17	24

January 2018

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

February 2018

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

33/032 Wednesday 29

8.00 am

(b)

 $x > \text{Predator}$
 $y < \text{Prey}$

8.30

~~Predator~~ - population $(0) = 15$
~~Predator~~ Birth fraction $= 0.01$

10.00

(c)

10.30

Prey Birth fraction $= 2$

11.00

Prey - population $x(0) = 100$

11.30

(d)

Predator - death - proportionality constant $= 1.06$

Noon

12.30

(e)

1.00

Prey - death - proportionality - constant $= 0.02$

1.30

2.00

(f)

Initial Number of Predator $= 15$

2.30

3.00

3.30

(g), Initial Number of Prey $= 100$

4.00

4.30

5.00

6.00 pm

November

WEEK 48

September 2017

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

October 2017

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

November 2017

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

30 Thursday 334031

Bonifacio Day (Philippines)

8.00 am

Module 4.3

8.30

Review Question 7

9.00

9.30

(a) Average = 5 days to infectious stage

10.00

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

10.30

11.00

(b)

11.30

rate of change of exposed individuals.

Noon

not Quarantined $\xrightarrow{\text{more}}$ Infectious and Undetected

12.30

$E \rightarrow I_u$ (Infectious Undetected)

1.00

P (fraction per exposed)
 E (Exposed)

1.30

$$P \times E = \boxed{PE}$$

2.00

2.30

(c)

3.00

Exposed who are Quarantined
 E_Q to Q_Q

3.30

Infectious \rightarrow Quarantined

4.00

$\Rightarrow \boxed{P \times E_Q}$ is P (fraction per Exposed)
 E_Q (Infectious)

4.30

5.00

6.00 pm

December 2017					January 2018					February 2018					
M	4	11	18	25	M	1	8	15	22	29	M	5	12	19	26
T	5	12	19	26	T	2	9	16	23	30	T	6	13	20	27
W	6	13	20	27	W	3	10	17	24	31	W	7	14	21	28
T	7	14	21	28	T	4	11	18	25		T	1	8	15	22
F	1	8	15	22	F	5	12	19	26		F	2	9	16	23
S	2	9	16	23	S	6	13	20	27		S	3	10	17	24
S	3	10	17	24	S	7	14	21	28		S	4	11	18	25

Mouloud, Prophet's Birthday* (Indonesia)
 Birthday of Prophet Muhammad* (M'ski) Devonport Show (Devonport, Kentish, Latrobe only) (Tas Aust)

335/030 Friday 1

8.00 am

8.30

(d) 10% people Quarantine → Not SARS →

9.00

lower → Quarantine

9.30

$= \frac{10}{100} = 0.1 / \text{day} \rightarrow \text{total into 1 day}$

10.00

10.30

(e)

Quarantine day = 16

11.00

11.30

$U = \frac{1}{16} \text{ per day} = 0.0625 / \text{day}$

Noon

12.30

(f)

Formula

1.00

Rate of change of susceptible,
 quarantined individuals leaving Quarantine
 from Sata S.

1.30

2.00

~~Rate~~ $U \times S_0$ all from the per day.
 $\sim S_0$: change of susceptible

2.30

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

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F	3	10	17	24
S	4	11	18	25
S	5	12	19	26

December 2017

M	4	11	18	25
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S	2	9	16	23
S	3	10	17	24

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 Infected and susceptible

11.30

Noon

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

12.30

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

Percentage of all possible contacts. Result of transmission each day.

2.00

2.30

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

3.00

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

3.30

4.00 (d)

Infectious - Undetected = 5000

4.30

Susceptible = 9,000,000

5.00

Possible contact \rightarrow

6.00 pm

January 2018							February 2018							March 2018						
M	1	2	3	4	5	6	M	1	2	3	4	5	6	M	1	2	3	4	5	6
T	7	8	9	10	11	12	T	7	8	9	10	11	12	T	7	8	9	10	11	12
W	13	14	15	16	17	18	W	13	14	15	16	17	18	W	13	14	15	16	17	18
T	19	20	21	22	23	24	T	19	20	21	22	23	24	T	19	20	21	22	23	24
F	25	26	27	28	29	30	F	25	26	27	28	29	30	F	25	26	27	28	29	30
S	31						S							S						

December

WEEK 36

15/12/2017 Sunday 3

8:00 am

$$5000 \times 9000000 = 45000000000$$

8:30

9:00 (E) Using part (c) and (d)

9:30 # of contact per day.

10:00

$$(0.00000006 \times 45000000000) = 2700$$

10:30

11:00

11:30

(F) $q = 0.1 = 1\%$ of individuals (Using part (d))

Noon

$$(0.1)(2700) \text{ exposed Quarantine}$$

12:30

270 A

1:00

1:30

(G) formula, Rate of change from susceptible (S) to exposed-Quarantined (E_q)

2:00

2:30

- q = fraction per day individually
- k = mean Number of contact per day
- b = probability of contact b/w person and infective (III)
- I_u = Infectious-Undetected
- S = susceptible
- N_0 = total no of population

3:00

3:30

4:00

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

4:30

5:00

6:00 pm

December

WEEK 49

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

4 Monday 338/027

Annie Day* (Westland NZ)

8.00 am

8.30

9.00

9.30

10.00

10.30

11.00

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

(h)

$$q = 0.1$$

Number of men from per (e) year

single q per (e)

$$= (1 - 0.1)(2700)$$

$$= (0.9)(2700) = 2430 \text{ people}$$

(i)

$$(1 - q) K_b E_u \left(\frac{S}{N_0} \right)$$