

IT2120 - Probability and Statistics – Lab Sheet 07

Exercise

01)

```
setwd("C:/Users/Bursar/Desktop/IT24104054")

#Question 1
## 1) Uniform(0, 40) minutes:  $P(10 \leq X \leq 25)$ 
p1 <- punif(25, min = 0, max = 40) - punif(10, min = 0, max = 40)
p1
```

```
R 4.4.1 · C:/Users/Bursar/Desktop/IT24104054/ ↗

> setwd("C:/Users/Bursar/Desktop/IT24104054")
>

> #Question 1
> ## 1) Uniform(0, 40) minutes:  $P(10 \leq X \leq 25)$ 
> p1 <- punif(25, min = 0, max = 40) - punif(10, min = 0, max = 40)
> p1
[1] 0.375
```

02)

```
#Question 2
#Exponential rate  $\lambda = 1/3$  per hour:  $P(t \leq 2)$ 
1 p2 <- pexp(q = 2, rate = 1/3)
2 p2
```

```
> #Question 2
> #Exponential rate  $\lambda = 1/3$  per hour:  $P(t \leq 2)$ 
> p2 <- pexp(q = 2, rate = 1/3)
> p2
[1] 0.4865829
```

03) i)

```
5 #Question 3
6 #Normal( $\mu = 100$ ,  $\sigma = 15$ )
7 #part (i)  $P(X > 130)$ 
8 p3_i <- 1 - pnorm(130, mean = 100, sd = 15)
9 p3_i
```

```
> #Question 3
> #Normal( $\mu = 100$ ,  $\sigma = 15$ )
> #part (i)  $P(X > 130)$ 
> p3_i <- 1 - pnorm(130, mean = 100, sd = 15)
> p3_i
[1] 0.02275013
```

ii)

```
2 #part(ii) 95th percentile
3 q3_ii <- qnorm(0.95, mean = 100, sd = 15)
4 q3_ii
```

```
> #part(ii) 95th percentile
> q3_ii <- qnorm(0.95, mean = 100, sd = 15)
> q3_ii
[1] 124.6728
```

Environment History Connections Tutorial	
Import Dataset 144 MiB	
R Global Environment	
Values	
p1	0.375
p2	0.486582880967408
p3_i	0.0227501319481792
q3_ii	124.672804404272