<u>IT24103506 – Siriwardana S.A.D.V.I</u>

IT2120- Probability and Statistics | Lab Sheet 06

Exercise

01)

```
setwd("C:\\Users\\vimuk\\OneDrive\\Desktop\\IT24103506")
 2
 3
   # Exercise
 4
   #(01)
 5
   n <- 50
 6
    p < -0.85
   #(i) Distribution of X?
 8
 9
    X \sim Binomial(n=50, p=0.85)
10
   #(ii) Probability that at least 47 students passed the test?
11
    \# P(X >= 47) = 1 - P(X <= 46)
12
13
    prob_at_least_47 <- 1 - pbinom(46, size = n, prob = p)
14
    prob_at_least_47
15
Console
         Terminal × Background Jobs ×

¬ R 4.5.1 · C:/Users/vimuk/OneDrive/Desktop/IT24103506/ 
→
> setwd("C:\\Users\\vimuk\\OneDrive\\Desktop\\IT24103506")
> # Exercise
> #(01)
> n <- 50
> p < -0.85
> #(i) Distribution of X?
> X \sim Binomial(n=50, p=0.85)
X \sim Binomial(n = 50, p = 0.85)
> prob_at_least_47 <- 1 - pbinom(46, size = n, prob = p)
> prob_at_least_47
[1] 0.04604658
```

02)

```
17 #(02)
   \#(i) Random variable (X) = \# of calls received in an hour
18
19
20 #(ii) Distribution of X
21
    X \sim Poisson(lambda = 12)
22
   #(iii) Probability that exactly 15 calls are received in an hour?
23
   lambda <- 12
    prob_15 <- dpois(15, lambda = lambda)</pre>
25
    prob_15
27
> #(ii) Distribution of X
> X ~ Poisson(lambda = 12)
X \sim Poisson(lambda = 12)
> #(iii) Probability that exactly 15 calls are received in an hour?
> lambda <- 12
> prob_15 <- dpois(15, lambda = lambda)</pre>
> prob_15
[1] 0.07239112
```

R ▼	Environment	History	Connections	Tutorial		
lambda 12 n 50 p 0.85 prob_15 0.0723911201466387	🚰 📊 🌃 Import Dataset 🕶 ಿ 210 MiB 🕶 🌠					≣ List • ⓒ •
n 50 p 0.85 prob_15 0.0723911201466387	R ▼ 🗐 Global Environment ▼				Q	
n 50 p 0.85 prob_15 0.0723911201466387	Values					
p 0.85 prob_15 0.0723911201466387	lambda	lambda				
prob_15 0.0723911201466387	n	n				
·	p		0.85			
prob_at_least_47 0.0460465788923019	prob_15		0.072	3911201466387		
	prob_at_	least_4	7 0.046	0465788923019		