IT24100715-Madhushan W M G

Probability and Statistics | Lab Sheet 06 Exercise

```r
setwd("C:\\Users\\Gaveesha\\Desktop\\LabSheet\\Lab06")
# Exercise
#(01)
n <- 50
p <- 0.85

#(i) Distribution of X?
X ~ Binomial(n=50, p=0.85)

#(ii) Probability that at least 47 students passed the test?
# P(X >= 47) = 1 - P(X <= 46)

prob_at_least_47 <- 1 - pbinom(46, size = n, prob = p)
prob_at_least_47

#(02)
#(i) Random variable (X) = # of calls received in an hour

#(ii) Distribution of X
X ~ Poisson(lambda = 12)

#(iii) Probability that exactly 15 calls are received in an hour?
lambda <- 12
prob_15 <- dpois(15, lambda = lambda)
prob_15

```

(01)

```
> # Exercise
> #(01)
> n <- 50
> p <- 0.85
> #(i) Distribution of X?
> X ~ Binomial(n=50, p=0.85)
X ~ Binomial(n = 50, p = 0.85)
> #(ii) Probability that at least 47 students passed the test?
> # P(X >= 47) = 1 - P(X <= 46)
> prob_at_least_47 <- 1 - pbinom(46, size = n, prob = p)
> prob_at_least_47
[1] 0.04604658
```

(02)

```
> #(02)
> #(i) Random variable (X) = # of calls received in an hour
> #(ii) Distribution of X
> X ~ Poisson(lambda = 12)
< ~ Poisson(lambda = 12)
> #(iii) Probability that exactly 15 calls are received in an hour?
> lambda <- 12
> prob_15 <- dpois(15, lambda = lambda)
> prob_15
[1] 0.07239112
```

Values	
lambda	12
n	50
p	0.85
prob_15	0.0723911201466387
prob_at_least_47	0.0460465788923019