IT24100499
Sankalpa E.R.H.K.S
Lab 06

1

i)

```
> X <- dbinom(0:50, size = 50, prob = 0.85)

> print(X)
 [1] 6.376215e-42 1.806594e-39 2.508155e-37 2.274061e-35 1.514145e-33 7.893744e-32
 [7] 3.354841e-30 1.194963e-28 3.639657e-27 9.624870e-26 2.236178e-24 4.607882e-23
[13] 8.486183e-22 1.405660e-20 2.105143e-19 2.862995e-18 3.548921e-17 4.022110e-16
[19] 4.178526e-15 3.987926e-14 3.502728e-13 2.835542e-12 2.118064e-11 1.461157e-10
[25] 9.314877e-10 5.489568e-09 2.991111e-08 1.506633e-07 7.013020e-07 3.014793e-06
[31] 1.195868e-05 4.371989e-05 1.470992e-04 4.546703e-04 1.288233e-03 3.337136e-03
[37] 7.879349e-03 1.689446e-02 3.275154e-02 5.710525e-02 8.898901e-02 1.229929e-01
[43] 1.493486e-01 1.574528e-01 1.419461e-01 1.072481e-01 6.605863e-02 3.185806e-02
[49] 1.128306e-02 2.609688e-03 2.957647e-04
```

ii)

```
> p_at_least_47 <- 1 - pbinom(46, size = 50, prob = 0.85)

> print(p_at_least_47)
[1] 0.04604658
```

2.

i) The random variable X here is the number of calls received in one hour.

ii)

```
> X_poisson <- dpois(0:20, lambda = 12)

> print(X_poisson)
 [1] 6.144212e-06 7.373055e-05 4.423833e-04 1.769533e-03 5.308599e-03 1.274064e-02
 [7] 2.548128e-02 4.368219e-02 6.552328e-02 8.736438e-02 1.048373e-01 1.143679e-01
[13] 1.143679e-01 1.055704e-01 9.048890e-02 7.239112e-02 5.429334e-02 3.832471e-02
[19] 2.554981e-02 1.613672e-02 9.682032e-03
```

iii)

```
> p_exactly_15 <- dpois(15, lambda = 12)

> print(p_exactly_15)
[1] 0.07239112
```