

Sri Lanka Institute of Information Technology



Lab Submission
<Lab sheet No 07>

<IT24102493>

<Bandara DKAS>

Discrete Mathematics | IT1160

B.Sc. (Hons) in Information Technology

Exercise

Q1)

```
5 #Q1
6 #Part 1
7 # Define the start and end of the uniform distribution
8 a <- 0
9 b <- 40
10
11 # Calculate the probability that the train arrives before 8:25 a.m. (25 minutes)
12 prob_before_25 <- punif(25, min = a, max = b)
13
14 # Calculate the probability that the train arrives before 8:10 a.m. (10 minutes)
15 prob_before_10 <- punif(10, min = a, max = b)
16
17 # The probability of the train arriving between 8:10 and 8:25 is the difference
18 probability <- prob_before_25 - prob_before_10
19 print(probability)
```

```
> #Q1
> #Part 1
> # Define the start and end of the uniform distribution
> a <- 0
> b <- 40
>
> # Calculate the probability that the train arrives before 8:25 a.m. (25 minutes)
> prob_before_25 <- punif(25, min = a, max = b)
>
> # Calculate the probability that the train arrives before 8:10 a.m. (10 minutes)
> prob_before_10 <- punif(10, min = a, max = b)
>
> # The probability of the train arriving between 8:10 and 8:25 is the difference
> probability <- prob_before_25 - prob_before_10
> print(probability)
[1] 0.375
```

Q2)

```
21 #Part2
22 rate <- 1/3
23 probability <- pexp(2, rate = rate)
24 print(probability)
```

```
> #Part2
> rate <- 1/3
> probability <- pexp(2, rate = rate)
> print(probability)
[1] 0.4865829
```

Q3) i)

```
26 #Part3
27 #i)
28 # Define the mean and standard deviation
29 mu <- 100
30 sigma <- 15
31 prob_above_130 <- pnorm(130, mean = mu, sd = sigma, lower.tail = FALSE)
32 print(paste("Probability of IQ > 130:", prob_above_130))

> #Part3
> #i)
> # Define the mean and standard deviation
> mu <- 100
> sigma <- 15
> prob_above_130 <- pnorm(130, mean = mu, sd = sigma, lower.tail = FALSE)
> print(paste("Probability of IQ > 130:", prob_above_130))
[1] "Probability of IQ > 130: 0.0227501319481792"
```

ii)

```
34 #ii)
35 iq_95th_percentile <- qnorm(0.95, mean = mu, sd = sigma)
36 print(paste("IQ score for 95th percentile:", iq_95th_percentile))

> #ii)
> iq_95th_percentile <- qnorm(0.95, mean = mu, sd = sigma)
> print(paste("IQ score for 95th percentile:", iq_95th_percentile))
[1] "IQ score for 95th percentile: 124.672804404272"
> |
```