Sri Lanka Institute of Information

Technology

Lab Submission

<Lab sheet 07>

<IT24101536>

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Probability and Statistics - IT2120

B.Sc. (Hons) in Information Technology

```
setwd("C:\\Users\\TUF\\Desktop\\IT24101536")
getwd()
```

```
> setwd("C:\\Users\\TUF\\Desktop\\IT24101536")
> getwd()
[1] "C:/Users/TUF/Desktop/IT24101536"
```

Question 01

```
##Question 01

#Part 1
punif(10,min = 0, max = 30, lower.tail = TRUE)

#Part 2
1-punif(20,min = 0, max = 30, lower.tail = TRUE)
punif(20,min = 0, max = 30, lower.tail = FALSE)
```

```
> ##Question 01
>
> #Part 1
> punif(10,min = 0, max = 30, lower.tail = TRUE)
[1] 0.3333333
>
> #Part 2
> 1-punif(20,min = 0, max = 30, lower.tail = TRUE)
[1] 0.3333333
> punif(20,min = 0, max = 30, lower.tail = FALSE)
[1] 0.3333333
```

Question 02

```
##Question 02

#Part 1
pexp (3,rate = 0.5,lower.tail = TRUE)

#Part 2
1-pexp(4,rate = 0.5,lower.tail = TRUE)
pexp (4,rate = 0.5,lower.tail = FALSE)


#Part 3
pexp (4, rate = 0.5, lower.tail = TRUE)-pexp(2,rate = 0.5,lower.tail = TRUE)
```

```
> ##Question 02
>
> #Part 1
> pexp (3,rate = 0.5,lower.tail = TRUE)
[1] 0.7768698
>
> #Part 2
> 1-pexp(4,rate = 0.5,lower.tail = TRUE)
[1] 0.1353353
> pexp (4,rate = 0.5,lower.tail = FALSE)
[1] 0.1353353
>
>
> #Part 3
> pexp (4, rate = 0.5, lower.tail = TRUE)-pexp(2,rate = 0.5,lower.tail = TRUE)
[1] 0.2325442
```

Question 03

```
##Question 03

#Part 1
1-pnorm(37.9,mean = 36.8, sd=0.4, lower.tail = TRUE)

1 - pnorm(37.9, mean = 36.8, sd = 0.4)

# Part 2
pnorm(36.9, mean = 36.8, sd = 0.4) - pnorm(36.4, mean = 36.8, sd = 0.4)

#Part 3
qnorm(0.012,mean = 36.8, sd=0.4, lower.tail = TRUE)

#Part 4
qnorm(0.01,mean = 36.8, sd=0.4, lower.tail = FALSE)
```

```
> ##Question 03
>
> #Part 1
> 1-pnorm(37.9,mean = 36.8, sd=0.4, lower.tail = TRUE)
[1] 0.002979763
>
> 1 - pnorm(37.9, mean = 36.8, sd = 0.4)
[1] 0.002979763
>
> # Part 2
> pnorm(36.9, mean = 36.8, sd = 0.4) - pnorm(36.4, mean = 36.8, sd = 0.4)
[1] 0.4400511
>
> #Part 3
> qnorm(0.012,mean = 36.8, sd=0.4, lower.tail = TRUE)
[1] 35.89715
> #Part 4
> qnorm(0.01,mean = 36.8, sd=0.4, lower.tail = FALSE)
[1] 37.73054
```

Exercise

Question 01

```
# Question 1

p_train <- punif(25, min = 0, max = 40) - punif(10, min = 0, max = 40)
p_train
```

```
> # Question 1
>
> p_train <- punif(25, min = 0, max = 40) - punif(10, min = 0, max = 40)
> p_train
[1] 0.375
```

Question 02

```
# Question 2

p_update <- pexp(2, rate = 1/3)
p_update
```

```
> # Question 2
>
> p_update <- pexp(2, rate = 1/3)
> p_update
[1] 0.4865829
```

Question 03

```
# Question 3

p_iq_above130 <- 1 - pnorm(130, mean = 100, sd = 15)
p_iq_above130

# (ii) 95th percentile of IQ
iq_95th <- qnorm(0.95, mean = 100, sd = 15)
iq_95th
```

```
> # Question 3
>
> p_iq_above130 <- 1 - pnorm(130, mean = 100, sd = 15)
> p_iq_above130
[1] 0.02275013
>
> # (ii) 95th percentile of IQ
> iq_95th <- qnorm(0.95, mean = 100, sd = 15)
> iq_95th
[1] 124.6728
```