

# **Sri Lanka Institute of Information Technology**



**Lab Submission**

**Lab sheet No:07**

**IT24103838**

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**Probability And Statistics | IT2120**

**B.Sc. (Hons) in Information Technology**

1. A train arrives at a station uniformly between 8:00 a.m. and 8:40 a.m. Let the random variable  $X$  represent the number of minutes the train arrives after 8:00 a.m. What is the probability that the train arrives between 8:10 a.m. and 8:25 a.m.?

```
> #Question 01
> punif(25, min=0, max=40, lower.tail=TRUE) - punif(10, min=0, max=40, lower.tail=TRUE)
[1] 0.375
>
```

2. The time (in hours) to complete a software update is exponentially distributed with rate  $\lambda = \frac{1}{3}$ . Find the probability that an update will take at most 2 hours.

```
> #Question 02
> pexp(2, rate=1/3, lower.tail=TRUE)
[1] 0.4865829
>
```

3. Suppose IQ scores are normally distributed with a mean of 100 and a standard deviation of 15.
  - i. What is the probability that a randomly selected person has an IQ above 130?
  - ii. What IQ score represents the 95th percentile?

```
> #Question 03
> #Part 01
> pnorm(130, mean=100, sd=15, lower.tail=FALSE)
[1] 0.02275013
>
> #Part 02
> qnorm(0.95, mean=100, sd=15, lower.tail=TRUE)
[1] 124.6728
>
```

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