**ESE PRACTICAL EXAMINATION**

**> #q1**

> n=400

> xb=10.2

> sd=2.25

> muo=10

> z=(xb-muo)/(sd/sqrt(n))

> pv=2\*pnorm(z,0,1,lower.tail=F)

> pv

[1] 0.07544036

> #conclusion: assuming alpha=0.05, pv>alpha. accept Ho

**> #q2**

> x=c(70000 ,78000 ,62000 ,66000 ,61000 ,72000 ,58000 ,64000 ,60000 ,73000 ,74000 ,76000)

> t.test(x,alternative="less",mu=73000)

One Sample t-test

data: x

t = -2.6191, df = 11, p-value = 0.01193

alternative hypothesis: true mean is less than 73000

95 percent confidence interval:

-Inf 71376.02

sample estimates:

mean of x

67833.33

> #conclusion: assuming alpha=0.05, pv<alpha. reject Ho

**> #q3**

> l=4/3

> dpois(0,l)

[1] 0.2635971

> dpois(3,l)

[1] 0.1041371

**> #q4**

> mu=5

> sd=2

> #p(x>2)=1-p(x<=2)

> 1-pnorm(2,mu,sd)

[1] 0.9331928

> pnorm(15,mu,sd)-pnorm(10,mu,sd)

[1] 0.006209379

**#installing BSDA package**

> utils:::menuInstallPkgs()

--- Please select a CRAN mirror for use in this session ---

also installing the dependencies ‘proxy’, ‘e1071’

trying URL 'https://cran.icts.res.in/bin/windows/contrib/4.3/proxy\_0.4-27.zip'

Content type 'application/zip' length 180085 bytes (175 KB)

downloaded 175 KB

trying URL 'https://cran.icts.res.in/bin/windows/contrib/4.3/e1071\_1.7-14.zip'

Content type 'application/zip' length 665223 bytes (649 KB)

downloaded 649 KB

trying URL 'https://cran.icts.res.in/bin/windows/contrib/4.3/BSDA\_1.2.2.zip'

Content type 'application/zip' length 902107 bytes (880 KB)

downloaded 880 KB

package ‘proxy’ successfully unpacked and MD5 sums checked

package ‘e1071’ successfully unpacked and MD5 sums checked

package ‘BSDA’ successfully unpacked and MD5 sums checked

The downloaded binary packages are in

C:\Users\Student\AppData\Local\Temp\Rtmp2DXCAh\downloaded\_packages

> library("BSDA")

Loading required package: lattice

Attaching package: ‘BSDA’

The following object is masked from ‘package:datasets’:

Orange

Warning message:

package ‘BSDA’ was built under R version 4.3.3

**> #q5**

> x=c(25 , 19 , 38 ,52 ,57 ,39 ,46 ,46 ,30 ,49 ,27 ,39 ,44 ,63 ,31 ,67 ,42)

> SIGN.test(x,md=41,alternative="two.sided",conf.level=0.95)

One-sample Sign-Test

data: x

s = 9, p-value = 1

alternative hypothesis: true median is not equal to 41

95 percent confidence interval:

31.07104 48.96955

sample estimates:

median of x

42

Achieved and Interpolated Confidence Intervals:

Conf.Level L.E.pt U.E.pt

Lower Achieved CI 0.8565 38.000 46.0000

Interpolated CI 0.9500 31.071 48.9696

Upper Achieved CI 0.9510 31.000 49.0000

**> #q6**

> x=c(1.5 ,2.2 ,0.9 ,1.3 ,2.0 ,1.6 ,1.8 ,1.5 ,2.0 ,1.2 ,1.7)

> wilcox.test(x,mu=1.8,conf.level=0.95)

Wilcoxon signed rank test with continuity correction

data: x

V = 13, p-value = 0.1522

alternative hypothesis: true location is not equal to 1.8