PMDS503P – Statistical Inference LAB
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LAB ASSIGNMENT NO.3
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```
#Question-1
#Test the hypothesis at alpha = 0.05 & 0.01 that the mean viscosity of the two brands is eq
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#code
b1 = c(10,62,10.58 ,10.33 ,10.72 ,10.44 ,10.74)
b2 = c(10.50 ,10.52 ,10.58 ,10.62 ,10.55 ,10.51 ,10.53)
t1 = t.test(b1,b2,var.equal=TRUE,conf.level=0.95)
t1$p.value>=0.05

## [1] TRUE

t2 =t.test(b1,b2,var.equal=TRUE,conf.level=0.99)
t2$p.value>=0.01

## [1] TRUE
```

```
#Question-2
# A college prep program compared the practice SAT scores (math and reading combined) given
#code
a = c(1280, 1200, 1050, 1190 ,1250 ,1290 ,1220 ,1270 ,1260)
b = c(1380, 1310, 1090, 1240, 1290, 1360, 1270, 1330, 1310)
x = b-a
t1 = t.test(x,mu=50,conf.level = 0.95)
t2 = t.test(x,mu=50,conf.level = 0.90)
t1$p.value>=0.05

## [1] TRUE

t2$p.value>=0.10

## [1] TRUE
```

```
#Question-3
#Fifteen fishes were caught at one coast and twenty on another coast. Their length was meas
#An investigator is interested in testing whether the variability in fish size at two coast
c1 = c(18.8 ,20.5, 20.0, 21.0 ,17.8 ,18.2 ,17.8, 19.5 ,20.0,18.2 ,18.4,19.8 ,19.8 ,20.3 ,19.
```

```r
c2=c(19.8 ,21.0 ,20.0 ,19.5 ,18.9 ,18.0 ,18.5 ,18.2 ,20.2, 19.0 ,19.2,20.2 ,19.2 ,17.0 ,18.8
t1 = var.test(c1,c2,conf.level=0.99)
t1$p.value>0.01
```

```
## [1] TRUE
```

```r
t2 = var.test(c1,c2,conf.level=0.95)
t1$p.value>0.05
```

```
## [1] TRUE
```

```r
#question-4
d = matrix(c(41 ,20 ,12 ,16,31 ,11 ,9 ,14 ,15 ,17 ,16 ,10),nrow = 3,byrow = T)
c1 = chisq.test(d)
c1$p.value>0.01
```

```
## [1] TRUE
```

```r
c2 = chisq.test(d)
c1$p.value>0.01
```

```
## [1] TRUE
```

```r
#question-5
#Fit a Poisson distribution for the following distribution and also test the goodness of fi
x = 0:4
f=c(24 ,30 ,31 ,11, 6)
lambda = (sum(f*x)/sum(f))
expf = dpois(x,lambda)*sum(f)
f1 =round(expf)
sum(f)
```

```
## [1] 102
```

```r
sum(f1)
```

```
## [1] 100
```

```r
expf = c(24,35 ,25, 12,5)
obf= c(24 ,30 ,31 ,11, 6)
chisq = sum(((obf-expf)^2)/expf)
chisq
```

```
## [1] 2.437619
```

```r
qchisq(0.95,2)
```

```
## [1] 5.991465
```