WST211: Memorandum Practical 5 (2016)

Question 1

Variable	N	Mean	Std Dev	Minimum	Maximum
inda	100000	0.2826400	0.4502851	0	1.0000000
indb	100000	0.5516700	0.4973255	0	1.0000000

(a) 0.2826
(b) 0.5516

SAS Program

```
data q1;
do j=1 to 100000;
men=RAND('HYPER',23,10,10);
if men=5 then inda=1; else inda=0;
if men<5 then indb=1; else indb=0;
output;
end;
proc means;
var inda indb;
run;
```

Question 2

Variable	N	Mean	Variance
x	50000	120.0326444	14433.83
inda	50000	0.3383800	0.2238835
indb	50000	0.2303600	0.1772978

The empirical values are as follows:

(a) 0.338
(b) 0.230
(c) 120.0326
(d) 14433.83

SAS Program

```
data q2;
do i=1 to 50000;
x=120*ranexp(35);
if x>130 then inda=1; else inda=0;
if 90<=X<170 then indb=1; else indb=0;
output;
end;
proc means n mean var;
var x inda indb;
run;
```

Question 3

Variable	Mean	Variance
ind	0.5010200	0.2500040
x	75.0207728	74.6448383

The empirical values are as follows:

(a) 0.501
(c) 75.020
(d) 74.644

SAS Program

```
data q3;
Do i = 1 to 50000;
        x = (ranuni(54)*30 + 60);
        If 65 < x < 80 then ind = 1; else ind=0;
        output;
end;
proc means data = q4 mean var;
var ind x;
run;
```

Question 4

Obs	a	b	c	d	e	f1	f2	f3c	f3d
1	0.77219	13.7333	0.09159	0.51368	0.21623	0.71447	0.42319	4.08846	42.0297

The answers are as follows:

(a) 0.77219
(b) 13.7333
(c) 0.44514
(d) 0.51368
(e) 0.21623
(f) (i) 0.71447
(f) (ii) 0.42319
(f) (iii) c = 4.08846
d = 42.0297

SAS Program

```
data q4;
a=quantile('NORMAL',0.78);
b=quantile('NORMAL',0.40)*sqrt(25)+15;
c=cdf('BINOM',50,0.7,80);
d=cdf('NORMAL',28,25,sqrt(32))-cdf('NORMAL',20,25,sqrt(32));
e=cdf('POISSON',27,32);
f1=cdf('GAMMA',20,3,5)-cdf('GAMMA',4,3,5);
f2=1-cdf('GAMMA',15,3,5);
f3c=quantile('GAMMA',0.05,3,5);
f3d=quantile('GAMMA',0.99,3,5);
proc print; var a b c d e f1 f2 f3c f3d;
run;
```