



UNIVERSITY NAME

Final Exam – 2016
variant: 1

Course Title

INDEX555

Teacher Name

Student Information *(fill completely)*

First Name

Last Name

ID

Attention

Good luck!

- Exam Duration: 2 hours
- Permitted Materials: Permitted materials
- Any Caution

№1. Problem

5 point

Joint distribution given by table.

X	Y		
	-1	0	1
-1	0.2	0.2	0.1
0	0	0.1	0.2
1	0	0	0.2

Are random variables correlated?

*Solution:***№2. Problem**

5 point

Source code on Python:

```

import random, math                                     # this is comment
                                                         1
c = 2.2039                                              2
                                                         3
while True :                                           4
    u = random.random()                                5
    y = -1.0 * math.log(random.random())                6
    if c * u < y * (math.exp(-1.0 * y ** 2 / 2) + y) :  # this line is extra . . . too 7
        long                                           8
        print y                                         9
        break                                          10

```

Listings package was used.

*Solution:***№3. Question**

3 point

Let X and Y are independent random variables. Find $E(XY)$. Where E – expectation of random variable.

*Answer:***№4. Selective Test**

2 point

What planet do you live on?

Selection:

Full Name:

Student ID:

A. Earth B. Mars C. Jupiter D. Saturn

№5. *Placement Test*

3 point

Let $EX = 2$ and $EY = 1$. $E(2X + Y) = ____ + EY$.

№6. *Placement Test*

3 point

Attila was king of the $____$.

Total point 21

**** The End of Examination ****



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№1. Problem

5 point

Joint distribution given by table.

X	Y		
	-1	0	1
-1	0.2	0.2	0.1
0	0	0.1	0.2
1	0	0	0.2

Are random variables correlated?

*Solution:***№2. Problem**

5 point

Which probability distribution was simulated?

```
import random, math
Lambda = float( raw_input("Lambda = ") )
print -1.0 * math.log( random.random() ) / Lambda
```

1
2
3

Prove actual formula was used here.

*Solution:***№3. Question**

3 point

Let X and Y are independent random variables. Find $E(XY)$. Where E – expectation of random variable.*Answer:***№4. Selective Test**

2 point

What planet do you live on?

Selection:

A. Earth B. Mars C. Jupiter D. Saturn

№5. Placement Test

3 point

Let $EX = 2$ and $EY = 1$. $E(2X + Y) = \underline{\hspace{1cm}} + EY$.

№6. Placement Test

3 point

Attila was king of the .

№7. Problem

5 point

Joint distribution given by table.

X	Y		
	-1	0	1
-1	0.2	0.2	0.1
0	0	0.1	0.2
1	0	0	0.2

Are random variables correlated?

Solution:

№8. Question

3 point

Let X and Y are independent random variables. Find $E(XY)$. Where E – expectation of random variable.*Answer:*

№9. Selective Test

2 point

What planet do you live on?

Selection:

A. Earth B. Mars C. Jupiter D. Saturn

№10. Placement Test

3 point

Let $EX = 2$ and $EY = 1$. $E(2X + Y) = \underline{\hspace{1cm}} + EY$.

№11. Placement Test

3 point

Attila was king of the .

Total point 37

*** The End of Examination ***