25 Exceller !!

BIRZEIT UNIVERSITY

MATH DEPARTMENT

Stat 2371

Fall Semester 2021

Student Name: Ehda Toisear Dahdustudent Number 1190545 Sec: ____

Section #	Day - Time	Instructor	
1	M, W 10:00-11:15	Hassan	
2	T, R 14:15-15:30	Ayah	
3	T, R 11:25-12:40	Ayah	

Formulas:

Random Variable	F(x)	$E(X) = \mu_s$	Var(X)
Discrete	-	$\sum x.f(x)$	$\sum (x-\mu_x)^2 \cdot f(x) \text{ Or } (\sum x^2 \cdot f(x)) - \mu^2$
Binomial	$\binom{n}{x} p^x (1-p)^{n-x}$	np	np(1-p)
Normal		μ	σ²

Question # 1 Choose the correct answer

- The name (or shape) of the continuous random variables that expresses the height of a student in a sample of 100 Birzeit students is: 1) Binomial 2 Normal 3. Uniform 4. Exponential.
 - The name (or shape) of the discrete random variables that expresses number of boys in a sample of 100 Birzeit students is:

 (1) Binomial 2. Normal 3. Uniform 4. Exponential.
 - III) A random variable that may assume either a finite number of values or an infinite sequence of values such as 0, 1, 2,.... Is Discrete 2) Continuous
- A numerical description of the outcomes of an experiment:

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stion #2 If Z has a standard normal probability distribution, find the following:

I)
$$P(Z < 1.53) = ...Q \cdot 937D$$

II)
$$P(Z < 0.5) = ...O.6.9.15$$

III)
$$P(Z > 1.65) = P(Z - 1 - p(Z < 1.65)) = 1-0.9505 = 0.0495$$

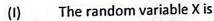
IV)
$$P(Z > -1.53) = P(Z < 1.53) = 0.9370$$

V) The value of Z the area to the left of which is 0.9906 is :......2...35......

Question #3

A local ambulance service handles 0 to 5 service calls on any given day. The probability distribution for the number of service calls is shown in the following Table: Use the table to answer questions(I to IV).

X^2	f(x)	≥ (x. Fa)	Z(x2. fx
Name of the state of	0.1	or be O	0
	0.2	0.2	0.2
4	0.3	0.6	1.2
9	0.1	0.3	0.9
16	0.3	1.2	4.8
30	1.00	2.3	7.1
	0 1 4 9	0 0.1 1 0.2 4 0.3 9 0.1 16 0.3	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$



- Discrete
- b) Continuous
- c) Both . .
- d)neither

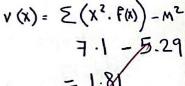
m= { (x.Fx)

- The probability that the ambulance receives exactly 3 calls in a certain day is (11)
 - a) 0.05
- (b) 0.1
- c) 0.2
- d) 0.3
- The probability that the ambulance receives at least 3 calls in a certain day is (111)
 - a) 0.1
- b) 0.2
- c) 0.3
- (d) 0.4

- The expected value of X is. (IV)
 - 2.05
- **(b)** 2.3
- c) 4.05
- d) 5.05

- The variance is of X is. (V)
 - 1.5

- (6))1.81
- c) 1.99
- d) 4.05



2



Assume that 90% of Birzeit university students have received the vaccination against the Corona virus. Let a sample of 16 students are taken, let the variable X represent the number of students in the sample that are vaccinated.

The name of the variable X is

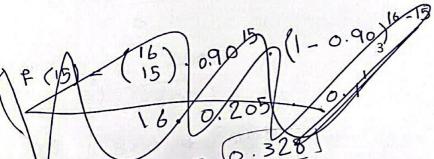
- Binomial
- b) Poisson
- c) Hypergeometric
- d) Normal
- (11) What is the probability that exactly 16 of the selected students are vaccinated?
- a) 0.215

- b) 0.275
- (c) 0.185
- d) 0.405
- What is the probability that at most 15 students out of the 16 that were received the (III) vaccination?
- a) 0.014
- b) 0.154
- c) 0.504
- (d) 0.814
- What is the expected number of vaccinated students in the sample? (IV)
- a) 9
- (c)14
- d)20
- What is the variance of the number of vaccinated students in the sample? (V)
- b) 1.0
- (c) 1.44
- d)2.4

$$f(16) = \binom{16}{16} \cdot 0.90^{16} \cdot (1-0.90)^{16-16}$$

$$= \frac{1 \cdot 0.1853}{1 - 0.1853}$$

= B 1- P(16) (P = 15) = 1-(P > 15) = 1-01853



ex= n.p V= n.p. (1-P) = 1.44

Lestion # 5

The mean cost for employee alcohol rehabilitation programs involving hospitalization is \$2000 (USA Today, September 12, 1991). Assume the rehabilitation program cost has a normal probability distribution with a standard deviation of \$600. Answer the following questions.

a. What is the probability that a rehabilitation program will cost at least \$1,700?

$$P(X) = \frac{1700 - 2000}{600}$$

$$= \frac{-300}{600} z = \frac{-0.5}{600}$$

$$= P(z < 0.5)$$

$$= P(z < 0.5)$$

b. What is the cost above which is the most expensive 10% of the rehabilitation programs?

$$Z = \frac{X - M}{6}$$

$$1.28 = \frac{1.28 \times -2000}{600}$$

$$1.28 \times 600 + 2000$$

$$1.28 \times 600 + 2000$$

