Question # 5(4 points)

On the average, 8 customers arrive at ATM located at BZU every hour. Define the random variable X to be the number of customers arriving in any hour.

    a. What is the appropriate probability distribution for X? Write the probability function for X

    b. Compute the probability that exactly 5 customers will arrive in the next two hours.

    c. Compute the probability that between 3 and 6 customers will arrive in the next half hour.

    d. What is the expected number of customers who will arrive in a particular work day (8:00 am to 16:00 pm)

Question %6 (4 points)

Twenty percent of the applications received for a particular position are rejected. What is the probability that among the next fourteen applications,

    a. less than 2 will be rejected?

    b. more than four will be accepted?

    c. Determine the expected number of accepted applications and its variance.

Question # 4 (7 points)

The following table shows the number of students in three faculties and whether they are graduate or undergraduate students(education)

	Undergraduate	Graduate	
Business	150	50	
Engineering	150	25	
Sciences	100	25	

1) The variable faculty is a (an)
   a. Ordinal
   b. Nominal
   c. Interval
   d. Ratio

2) If we know that a selected student is an undergraduate, what is the probability that he or she is a business major?

3) A student is enrolled in the Arts and Sciences school. What is the probability that the student is an undergraduate student?

4) What is the probability that a randomly selected student is a graduate but not Business major?

5) The variables faculty and education status are
   a. Mutually exclusive
   b. Dependent
   c. Independent

Question #3(8 points)

Below you are given the ages of a sample of 12 college students who are enrolled in stat 236 Fall 2014.

20	18	20	21	19	23
19	23	21	27	19	22

a) Compute the following :

    1) The mean_____

    2) The mode_____

    3) The median_____

    4) The standard deviation_____

    5) Q_1 _____

    6) Q_3 _____

    7) IQR _____

    8) Five number summary_____

    9) Box plot fence limits. _____

    10) Outliers (if exists) _____

b) In Fall 2013, the average age of students of this course was 21.5 with a standard deviation of 2.8. In which year(2013 or 2014) do the ages show a more dispersed distribution? Show your complete work and support your answer.

5. If two events (both with probability greater than 0) are mutually exclusive, then:
   a) They cannot be independent.
   b) They cannot be complements.
   c) They also must be independent.
   d) They also could be independent.
6. The smaller the spread of scores around the arithmetic mean,
   a) The smaller the standard deviation.
   b) The smaller the coefficient of variation.
   c) The smaller the interquartile range.
7. Which of the following is a discrete quantitative variable?
   a) The Dow Jones Industrial average
   b) The volume of water released from a dam
   c) The distance you drove yesterday.
   d) The number of employees of an insurance company
8. The answer to the question "How do you rate the quality of your business statistics course" is an example of.
   a) An interval scale variable.
   b) A ratio scale variable.
   c) A nominal scale variable.
   d) An ordinal scale variable.
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Question #2(3 points)

A general contractor has submitted two bids(عروض) for two projects (A and B). The probability of getting project A is 0.7. The probability of getting project B is 0.8. The probability of getting at least one of the projects is 0.90.

1) What is the probability that he will get both projects?

2) Are the events of getting the two projects mutually exclusive? Explain, using probabilities.

3) Are the two events independent? Explain, using probabilities.

Name(بالعربية)...Number.................

Instructor...Sec.........

Formulas:

$$z = \frac{x-\mu}{\sigma}, \quad s^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1} = \frac{\sum (x-\bar{x})^2}{n-1}$$

- **Discrete Random Variable**

$$E(X) = \mu = \sum x f(x) \qquad Var(X) = \sum (x-\mu))^2 f(x)$$

- **Binomial Probability Distribution**

$$P(X = x) = \binom{n}{x} p^x (1-p)^{n-x} \qquad E(X) = np, \quad \sigma(X) = \sqrt{np(1-p)}$$

- **Poisson Probability Distribution** $\qquad f(x) = \frac{\mu^x e^{-\mu}}{x!}$

Question # 1(4 points)

1. In a left-skewed distribution
   a) The median equals the arithmetic mean.
   b) The median is less than the arithmetic mean.
   c) The median is larger than the arithmetic mean.

2. A company manufactures batteries in batches of 26 and there is a 3% rate of defects To find the probability that exactly 100 of the batteries will be defective, one will use what type of probability distribution?
   a) Poisson distribution.
   b) Binomial distribution.

3. In a sample of 1000 students in BZU, 350, or 35%, are from Ramallah. Based on the above information, BZU paper reported that "35% of all the students at the university are from Ramallah." This report is an example of descriptive statistics
   a) True
   b) False

4. Students university numbers consist of numeric values. Therefore, university numbers is an example of
   a) a quantitative variable
   b) either a quantitative or a qualitative variable
   c) a qualitative variable