

Name:

ID No:

Section:

You have 30 questions and 90 minutes to solve the exam. Please mark all your answers on the answer sheet provided to you. You have to submit both question paper and answer sheet but only answer sheets will be graded. Good luck

Choose the best answer for each of the following questions:

1. If 79% of all people have brown eyes and 3 people are selected at random, the probability that all of them have brown eyes is
  - A)  $3 \times 0.79$
  - B)  $(0.79)^3$
  - C)  ${}^3C_3 (0.79)^0 \times (0.21)^3$
  - D)  $\frac{3}{0.79}$
2. A chance process that leads to well-defined results called outcomes is a/an .....
  - A) probability experiment
  - B) sample space
  - C) outcome
  - D) tree diagram
3. A probability experiment is conducted. Which of these **cannot** be considered a probability of an event?
  - A) 0.75
  - B) 0
  - C) 1
  - D) -0.25

4. If 7% of calculators are defective, find the mean of the number of defective calculators for a lot of 4200 calculators.
- A) 52.29
  - B) 2940
  - C) 294
  - D) 2734.2
5. Given nine flowers, four of which are white and five of them are red, if two flowers are selected at random, without replacement, what is the probability that both flowers are red?
- A)  $\frac{5}{9}$
  - B)  $\frac{5}{18}$
  - C)  $\frac{20}{81}$
  - D)  $\frac{1}{3}$
6. In ....., all outcomes in the sample space are equally likely.
- A) empirical probability
  - B) classical probability
  - C) subjective probability
  - D) conditional probability

An apartment building has the following apartments ( شقق )

	<b>1 bedroom</b>	<b>2 bedroom</b>	<b>3 bedroom</b>
<b>1st floor</b>	3	2	1
<b>2nd floor</b>	0	4	2
<b>3rd floor</b>	1	4	1

If an apartment is selected at random, find these probabilities in **questions ( 7,8 )**

7. what is the probability that it has one bedroom, given that it is on the 3rd floor?

- A)  $\frac{1}{18}$
- B)  $\frac{6}{18}$
- C)  $\frac{1}{6}$
- D) 1

8. what is the probability that it is on the 2nd floor or has 3 bedrooms?

- A)  $\frac{2}{9}$
- B)  $\frac{1}{3}$
- C)  $\frac{4}{9}$
- D)  $\frac{2}{3}$

9. Two students were asked to rate six different television shows on a scale from 0 to 10 points. The data are shown in the following table:

Show	A	B	C	D	E	F
Student 1	10	8	6	4	3	7
Student 2	7	9	3	4	0	5

What is the Spearman Rank Correlation Coefficient for this set of data?

- A) 0.886  
B) 0.114  
C) 0.2  
D) -0.886
10. The correlation coefficient between the number of absences and the final grade of students in the statistics class might be
- A) close to 1  
B) close to -1  
C) 0  
D) 0.1
11. The probability of randomly selecting 3 science books and 4 math books from 8 science books and 9 math books is
- A) 0.363  
B) 0.5  
C) 0.76  
D) 0.001

12. A television executive (موظف اداري كبير) selects 11 television shows and compares the average number of viewers the show had last year(  $x$  ) with the average number of viewers this year(  $y$  ), if he got the following data in millions,

$$\sum x = 50, \sum y = 60, \sum xy = 116, \sum x^2 = 120$$

then the equation of the regression line is:

- A)  $y' = -1.186 + 9.074x$
- B)  $y' = -2.358 + 1.461x$
- C)  $y' = 1.461 - 1.186x$
- D)  $y' = -1.186 + 1.461x$

13. Compute the value of the pearson product moment correlation coefficient for the data below:

<b>x value</b>	-2	3	5
<b>y value</b>	7	-1	2

- A) -0.789
  - B) 0.882
  - C) 0.924
  - D) -0.224
14. A radio news director wishes to use 3 news stories on an evening show. One story will be the first story, one be the second story, and the third story will be a last story. If the director has a total of 12 stories to choose from, how many possible ways can the program be set up?
- A)  $3 \times 12$
  - B)  ${}_{12}C_3$
  - C)  ${}_{12}P_3$
  - D)  $12^3$

15. How many ways can a person select 4 television commercials from 33 television commercials?
- A)  $\frac{33!}{(33-4)!}$
- B)  $\frac{33!}{(4! \times 29!)}$
- C)  $4 \times 33$
- D)  $\frac{4}{33}$
16. If 4 different-sized washers (غسالات) are arranged in a row, then the probability that they will be arranged in order of size is
- A)  $4!$
- B)  $\frac{1}{24}$
- C)  $\frac{1}{12}$
- D)  $\frac{1}{4}$
17. If a menu has a choice of 7 appetizers (مقبلات), 6 main courses (اطباق رئيسية), and 5 desserts (اطباق تحلية), then the sample space for all possible dinners can be determined by using.....
- A) the fundamental counting rule.
- B) the permutation rule.
- C) the combination rule.
- D) the addition rule.

A store manager has found there is a relationship between the age, ( $x$ ), of her employees and the number of sick days, ( $y$ ), they take each year. If the equation of the regression line is :

$$\hat{y} = 21.1 - 0.317x.$$

**Answer questions (18-20 )**

**18.** Predict the number of sick days the employee takes each year if his age is 47 years.

- A) 20
- B) 6.2
- C) 23
- D) 12

**19.** For each increase of the age of the employee by one year, then the number of sick days he or she takes each year

- A) decreases by 0.317 on average.
- B) increases by 0.317 on average.
- C) increases by 21.1 on average.
- D) decreases by 21.1 on average.

**20.** The slope of the regression line is

- A) 0.317
- B) 21.1
- C) -0.317
- D) -21.1

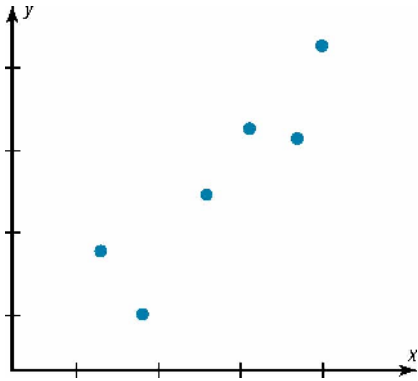
21. The average length of stay in a hospital is useful for planning purposes. suppose that the following is the probability distribution of the length of stay in a hospital after an operation, find the mean and variance of this distribution?

<b>days</b>	0	1	2	3	4
<b>probability</b>	0.06	0.7	0.2	0.03	0.01

- A)  $\mu = 1.23, \sigma^2 = 0.4171$   
B)  $\mu = 0.645, \sigma^2 = 1.23$   
C)  $\mu = 1.23, \sigma^2 = 1.93$   
D)  $\mu = 1.93, \sigma^2 = 1.23$
22. A student takes a 6 question multiple choice quiz with 4 choices for each question. If the student guesses at random on each question, what is the probability that the student gets exactly 3 questions correct?
- A) 0.088  
B) 0.0512  
C) 0.132  
D) 0.022
23. A coin is tossed 72 times. The standard deviation for the number of heads that will be tossed is
- A) 18  
B) 4.24  
C) 6  
D) 36



24. Determine the type of linear relationship in the figure below.



- A) It is a strong positive.
- B) It is a strong negative.
- C) It is a weak negative.
- D) It is a perfect positive.

25. If the value of the correlation coefficient  $r = -0.1$ , that means that the linear relationship between the variables is

- A) positive strong.
- B) negative strong.
- C) positive weak.
- D) negative weak.

26. The probability distribution for the number of girls in a family of three children is.

A)

<b>x</b>	0	1	2	3
<b>p(x)</b>	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$

B)

<b>x</b>	0	1	2	3
<b>p(x)</b>	$\frac{1}{8}$	$\frac{2}{8}$	$\frac{4}{8}$	$\frac{1}{8}$

C)

<b>x</b>	1	2	3	4
<b>p(x)</b>	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

D)

<b>x</b>	0	1	2	3
<b>p(x)</b>	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$

27. Which of the following is a binomial experiment?

- A) Asking 100 people if they swim.
- B) Testing five different brands of aspirin to see which brands are effective.
- C) Asking 60 people which brand of soap they buy.
- D) Drawing four balls without replacement from a box contains 5 white balls, 7 blue balls and one green ball.

28. In a certain company, it is known that 20% of the staff members are smokers. A random sample of 5 staff members is selected at random, let X represents the number of smokers in the sample.

Find the probability that at most 4 staff members are smokers.

- A) 0.00032
- B) 0.0016
- C) 0.8
- D) 0.99968

29. Let  $X$  denote the number of patients who die at a certain hospital in a day. The following table gives the probability function of  $X$ .

<b>x</b>	0	1	2	4	6
<b>p(x)</b>	0.2	0.1	K	0.3	0.2

What the value  $K$  would be needed to complete the probability distribution?

- A) 0.15
  - B) 0.2
  - C) -0.25
  - D) -0.2
30. If a player rolls one die and when gets a number greater than 4, he wins 12\$, the cost to play the game is 5\$. What is the expectation of the gain?
- A) 2\$
  - B) -1\$
  - C) -2\$
  - D) 1\$

## Answer Key

1. B
2. A
3. D
4. C
5. B
6. B
7. C
8. C
9. A
10. B
11. A
12. D
13. A
14. C
15. B
16. C
17. A
18. B
19. A
20. C
21. A
22. C
23. B
24. A
25. D
26. D
27. A
28. D
29. B
30. B