

7. In the opposite diagram Which of the following statement is in correct?

- a) The range of the set (A) = 30
- b) The median for the set (B) = 62
- c) the mode of the set (A) = 43
- d) set A is more variant than set B

Set B	Leaves	Set A
0	4	1 2 3 3
6 3	5	4 5
2 1	6	2 5
7 6 5 2	7	1

Key 3|5|4 means 54 for set a and 53 for set B

8. if X is a normal random variable whose mean μ and standard deviation σ then

$$P(M \leq x \leq M + 2\sigma) = \dots$$

- a) 0.9772
- b) 0.0228
- c) 0.4772
- d) 0.5844

9. If the distribution of wages of workers of a factory is a normal random distribution whose mean $\mu = 5,000$ pounds and standard deviation $\sigma = 500$ pound then the percentage of workers whose wages exceed 6,145 pounds equals%

- a) 11
- B) 0.1
- c) 10
- d) 1.1

10. The mathematical expectation (mean) of a geometric distribution with probability of success 0.2 is equal to

- a) 3
- b) 4
- c) 5
- d) 6

11. if the equation of the regression line Y on X is $Y = 2x - 1$ then the expected value of y when $x = 10$ is

- a) 9
- b) 18
- C) 19
- d) 8

12. When calculating Spearman's rank correlation coefficient + between x and y if $D^2 = 40$ and $n = 5$, then $r =$

- a) 1 b) -1 c) 0 d) 0.5

13. If the lower limit of the confidence interval for the mean is 23.04 at 95% confidence level and the sample size is 625 and the mean of the sample is equal to 25 then: the standard deviation of the data

- a) 25 b) 26 c) 27 d) 28

14. If the upper quartile order of a set of individual values is 48, then the number of this values is.....

- a) 64 b) 60 c) 96 d) 63

15. the function which represent the probability distribution function of the random variable X is...

a)

x_i	1	2	3
$f(x_i)$	0.2	0.3	0.5

b)

x_i	1	2	3
$f(x_i)$	0.2	0.3	0.4

c)

X_i	1	2	3
$f(X_i)$	0.2	0.8	0.1

d)

x_i	1	2	3
$f(x_i)$	0.2	-0.1	0.9

16. 1000 students are studing in a language college. the number students studying English is 600, the number of students studying french is 500 and the numer of students studying both language is 350 students, if a student from this college is chosen at random the probability that this student is studying french knowing that is studying English =

- a) $\frac{2}{5}$ b) $\frac{7}{12}$ c) $\frac{3}{20}$ d) $\frac{7}{20}$

17. If x is a discrete random variable and its probability distribution is shown in the following table

x_i	1	2	3	4
$\sum(x_i)$	0.4	0.3	0.2	0.1

then the average $\mu = \dots$

- a) 1 b) 2 c) 3 d) 4

18. In a statistical study to find the correlation coefficient between two variables x , and y if

$$\sum x = 0, \sum y = 0, \sum x^2 = 10, \sum y^2 = 40, \sum xy = 20,$$

then the Pearson's linear correlation coefficient equal to ...

- a) 0.4 b) 0.5 c) 0.6 d) 1

19. From the stem and leaves diagram

$$Q_1 + Q_2 + Q_3 = \dots$$

- a) 100
b) 92
c) 106
d) 98

Stem	Leaves
2	1 1 2 3
3	6 7 7
4	0 1 2 2

Key 2|3=23

20. If A and B are two events from a sample S of a random experiment where $ACB, P(B) = 0.5$ then $P(A \cup B) = \dots$

- a) 1
b) $\frac{1}{2}$
c) $\frac{2}{3}$
d) 1

21. In the experiment of throwing regular die once, the probability of getting an odd number, giving that the number appearing on the upper face is less than 4 is equal to...

- a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) $\frac{2}{3}$ d) 1

29. If $P(A') = 0.3$, $P(B) = 0.4$, $P(A \cap B) = 0.2$ then $P(A | B') = \dots$

- a) $\frac{1}{2}$ b) $\frac{5}{6}$ c) 1 d) $\frac{3}{4}$

30. If x is a continuous random variable its probability density function is:

$$f(x) = \begin{cases} \frac{x+1}{12} & , 0 \leq x \leq 4 \\ 0 & , \text{other wise} \end{cases}$$

then $P(x \geq 2) = \dots$.

- a) $\frac{5}{12}$ b) $\frac{1}{2}$ c) $\frac{1}{6}$ d) $\frac{2}{3}$

31. If the probability of success in a trial is 0.25 then the probability that the first success will occur before or on the third attempt....

- a) $\frac{15}{64}$ b) $\frac{37}{64}$ c) $\frac{7}{16}$ d) $\frac{69}{64}$

32. If a player wins 75% of the matches he played during his career, then the probability that he will win 3 matches out of 5 upcoming matches equal to.....

- a) $\frac{135}{512}$ b) $\frac{45}{512}$ c) $\frac{5}{1024}$ d) $\frac{47}{512}$

33. If the upper limit of the 95% Confidence interval for the sample mean is 7.25 and the estimation error is 1.25 then the sample mean equal

- a) 5 b) 6 c) 7 d) 8

Essay question

34. From the data in the following table

x	Excellent	good	very-good	pass	weak	good
y	good	weak	pass	Excellent	very-good	pass

Calculate spearman's rank correlation coefficient between x , y

35. The corresponding data represent maximum temperatures and the minimum for some governorates of in Egypt represent the data using stem and leaf diagram

Represent the data using

- a) Find the median for each group separately
- b) which of these degrees is more variation

Governorate	Max. temp	Min. temp.
Cairo	27	22
Giza	26	22
El-Fayoum	30	25
Alexandria	25	17
Damietta	26	18
Luxor	36	22
A swan	41	32
Bani sues	30	24

Third secondary
 Statistics Model 1

1. If the two variables increase together or decrease together, then the correlation between them is

- a) Directly
- b) Inversely
- c) Non-linear
- d) nihilistic

2. Given 7 values whose arithmetic mean is 8, then the sum of values is.....

- a) 40
- b) 56
- c) 60
- d) 80

3. In the given stem and leaves diagrams
 The greatest number is

- a) 2.71
- b) 23.5
- c) 27.5
- d) 275

Stem	Leaves
23	4 5
24	4 7 9
25	0 4 4 8
26	3 8 9
27	1 2 5

Key: 24 | 7 = 24.7

4. If X is a normal random variable with mean $\mu = 6$ and standard deviation $\sigma = 3$, then its standard normal distribution is equal to $Z = \frac{X - \mu}{\sigma} = \frac{X - 6}{3}$.

- a) $\frac{6-x}{3}$
- b) $\frac{x-3}{6}$
- c) $\frac{x-6}{3}$
- d) $\frac{3-x}{6}$

5. $P(A \cap B)$ is equivalent to all of the following except...

- a) $P(B | A) \times P(A)$
- b) $P(A | B) \times P(B)$
- c) $P(A) + P(B) - P(A \cup B)$
- d) $\frac{P(A \cup B)}{P(B)}$

6. The two events A and B are independent if and only if

- a) $P(A \cup B) = P(A) + P(B)$
- b) $P(A \cup B) = P(A) \times P(B)$
- c) $P(A \cap B) = P(A) + P(B)$
- d) $P(A \cap B) = P(A) \times P(B)$

7. The data given in the stem and leaves diagram are ...

- a) 162,1745,1867
- b) 162,174,175,186,187
- c) 16.2,17.4,17.5,18.6,18.7
- d) 1.62,1.74,1.75,1.86,1.87

Stem	Leaves
16	2
17	4 5
18	6 7

Key: 17|4 = 17.4

8. If the score of a student in an exam which follow a normal distribution with mean 75 , and standard deviation 5. if a student's score is 80 then his standard normal score is...

- a) -1
- b) 1
- c) 1.07
- d) -1.07

9. A sample of 225 values with confidence 95% and the estimation error was 0.784, then the standard deviation of the sample = ...

- a) 25
- b) 5
- c) 6
- d) 36

10. If the Confidence interval for a sample mean is] 9.3,10.7[, then the arithmetic mean of the sample = ...

- a) 8
- b) 9
- c) 10
- d) 11

11. If the two points (2,8), (7,3) lie on the regression line y on x and the correlation was perfect, then the correlation Coefficient is

- a) -1
- b) Zero
- c) $\frac{1}{2}$
- d) 1

12. From the given data

X	6	5	7	8	10
Y	4	7	5	6	8

if the error at $x = 8$ is 0.3, then the value of x which satisfy the regression equation = ...

- a) 6
- b) 6.6
- c) 6.3
- d) 10

13. All the following represent the discrete random variable except ...

- a) Number of stocks allocated to a person in a shareholder company
- b) Number of weekly calls for a person
- c) Number of accidents in a certain highway in a month.
- d) The height of a candidate of a basketball team.

14. The third quartile of the values 1,4,3,7,8,5,9,2 is ...

- a) 3.75 b) 3 c) 7.75 d) 5.5

15. If the range of the random variable in an experiment of flipping a coin twice is $\{0,1\}$ then the experiment refers to

- a) Number of heads.
b) Number of tails.
c) Num of heads - Number of tails.
d) Number of heads \times Number of tails.

16. The mutually exclusive events A and B are independent if and only if

- a) $P(A) \times P(B) = \text{zero}$
b) $P(A) \times P(B) = 1$
c) $P(A) \times P(B) = P(A \cup B)$
d) $P(A) + P(B) = P(A \cap B)$

17. In the experiment of flipping a coin 4 successive times, then the probability that exactly three heads appears =

- a) $\frac{1}{16}$ b) $\frac{1}{2}$ c) $\frac{1}{8}$ d) $\frac{1}{4}$

18. If D is the difference between ranks of two variables and $\Sigma D^2 = \text{zero}$, then the correlation coefficients r between the two variables = ...

- a) -1 b) zero c) 0.5 d) 1

19. If the order of the first quartile is 5.75 then the number of values is...

- a) 23 b) 22 c) 24 d) 21

20. If $P(A \cap B) = \frac{2}{5}$, $P(A) = \frac{4}{5}$, then $P(B | A) = \dots\dots$

- a) $\frac{1}{2}$ b) $\frac{8}{25}$ c) $\frac{1}{4}$ d) $\frac{2}{5}$

21. If $P(A | B) = \frac{1}{3}$, $P(B) = \frac{12}{25}$ then $P(A \cap B) = \dots\dots$

- a) $\frac{4}{25}$ b) $\frac{1}{4}$ c) $\frac{25}{36}$ d) $\frac{16}{25}$

22. If A and B are two independent events, and $P(A) = 0.2$, $P(B) = 0.6$, then $P(A \cup B) = \dots$

- a) 0.12 b) 0.32 c) 0.68 d) 0.8

23. If the number of certain set of values is n , then which of the following could be the value of n given that all three quartiles are subsets of the values?

- a) 5 b) 12 c) 21 d) 35

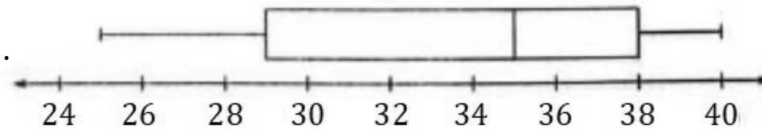
24. If X is a discrete random variable with expectations $\mu = 3.5$ and its probability distribution is given by

x_i	0	1	2	b	6
$f(x_i)$	0.1	0.1	0.3	a	0.3

then $a + b = \dots$

- a) 0.2 b) 5.2 c) 5 d) 4.8

25. In the given box plot
The semi quartile range = ...



- a) 15
b) 7.5
c) 9
d) 4.5

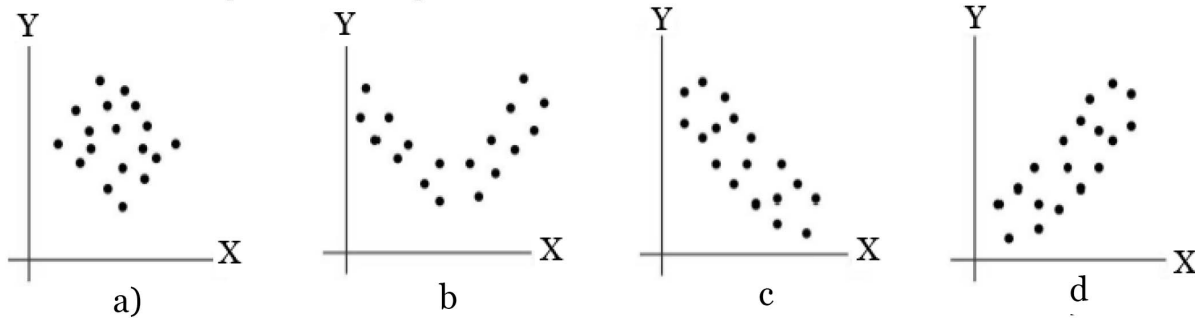
26. If the mean population in a sample of 36 values satisfies the inequality

$$36 - \frac{5}{6} \times 1.96 > \mu > 36 + \frac{5}{6} \times 1.96$$

with a confidence interval 95% then the standard deviation of the sample is...

- a) 1.96 b) 5 c) 6 d) 36

27. The scatter plot which represent an inverse Correlation is...



28. The number of students in a math test is 100. If the scores follow a normal distribution of mean = 70, and standard deviation = 5, then the number of students who got scores more than 78 is

- a) 5 b) 6 c) 15 d) 55

29. If A and B are two independent events $p(A) = 0.25$, $p(B) = 0.4$, then $p(A - B) = \dots$
 a) 0.1 b) 0.15 c) 0.3 d) 0.65

30. for the two variables X and Y , if $\sum x_r \cdot f(x_r) = 4$ and $\sum x_r^2 \cdot f(x_r) = 25$ then the coefficient of variation =
 a) 16% b) 75% c) 64% d) 15.6%

31. If the probability distribution for the random variable x is given by the function

$$F(x) = \begin{cases} kx & 2 > x > 4 \\ \text{zero} & \text{otherwise} \end{cases}$$

then $k = \dots$

a) $\frac{1}{6}$ b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{3}{4}$

32. If the probability distribution of the random variable X is $\{(0,0.25), (1,0.5), (2,0.25)\}$ then the expectation =
 a) 0.5 b) 1 c) 1.25 d) 1.5

33. If X is a normal variable with mean μ and standard deviation σ , then

$P(x > \mu - 1.5\sigma) = \dots\dots$

a) 0.0668 b) 0.4332
 c) 0.8664 d) 0.9332

34. In the given table

x	7	7	8	3	7	11
y	8	4	12	2	10	11

Calculate Spearman's rank correlation coefficient between X and Y

35. The frequency table shows the weights of a number of births in a certain hospital in a 14 days period

Weight in kg	2	2.5	3	3.5	4	4.5	Sum
Number of Births	3	7	10	8	4	2	34

Find the semi quartile range.