



MATHS

BOOKS - UNITED BOOK HOUSE

HIGHER SECONDARY EXAMINATION 2016

Exercise

1. Find out the correct answer out of the options given against each questions : If the

two regression lines are mutually perpendicular to each other, then r is equal to

A. 1

B. ± 1

C. 1

D. 0

Answer:



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2. Find out the correct answer out of the options given against each questions : $(E-k)^2$ is minimum when

A. $k < E$

B. $k > E$

C. $k = E$

D. $k = \text{median of } X$

Answer:



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3. Find out the correct answer out of the options given against each questions : The variance of 'number of success' in a set of 20 Bernoullian trials cannot exceed

A. 10

B. 5

C. 0.25

D. 0.125

Answer:



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4. Find out the correct answer out of the options given against each questions : Poisson distribution is always

- A. negatively skewed and platykurtic
- B. positively skewed and platykurtic
- C. positively skewed and leptokurtic
- D. positively skewed and mesokurtic.

Answer:



5. Find out the correct answer out of the options given against each questions : If P (Type 1 error) = 0.2 and P (type II error) = 0.7, then power of the test is

A. 0.7

B. 0.5

C. 0.8

D. 0.3

Answer:



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6. Find out the correct answer out of the options given against each questions : In a simple random sampling with replacement from a population of size N , the probability that a particular member is included in the selected sample of size n is

A. n/N

B. $\left(1 - \left(1 - \frac{1}{N}\right)^n\right)$

C. $\left(1 - \left(1 - \frac{n}{N}\right)^n\right)$

D. $\left(1 - \frac{1}{N}\right)^n$

Answer:



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7. Find out the correct answer out of the options given against each questions : The number of all possible samples of size 2 from a

population of 10' members using simple random sampling with replacement is

A. 100

B. 45

C. 20

D. 1024

Answer:



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8. Answer the following questions: Write down two properties of distribution function.



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9. Answer the following questions: Let X be a continuous random variable where $f(x) = kx(3-x), 0 \leq x \leq 3$: Then obtain k .



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10. Answer the following questions: Let X and Y be two random variable which are defined on the same sample space. When the two random variables are said to be independent?



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11. Answer the following questions: If two modes of a Poisson distribution be 2 and 3, then what is the value of μ ?



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12. Answer the following questions: What is meant by bias?



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13. Answer the following questions: What is meant by BLUE?



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14. Answer the following questions : Write down two demerits of determining trend by moving average method.



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15. Answer the following questions: What is product control in statistical quality control?



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16. Answer the following questions: What is meant by 'assignable causes of variation in statistical quality control?



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17. Answer the following questions in short:
When mean and mode of binomial distribution are same?



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18. Answer the following questions : Show that Normal distribution is symmetric about mean.



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19. Answer the following questions in short:
Find the maximum value of the product of two positive numbers when their sum is 24.



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20. Answer the following questions in short:

Show that if n numbers are drawn at random without replacement from the set $(1, 2, 3, \dots, N)$,

$$\text{then } \text{var}(\bar{X}) = \frac{(N+1)(N-n)}{12n}.$$



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21. Answer the following questions in short: If

three uncorrelated variables x_1, x_2, x_3 have

the same standard deviation, find the

correlation coefficient between $x_1 + x_2$ and $x_2 + x_3$.



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22. Answer the following questions in short:

What is the expectation of the number of failures preceding the first success in an infinite series of independent trials with constant probability p of success in each trial?



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23. Answer the following questions in short:

Following are two regression lines :

$3x - 5y = 1$ and $4x - 7y = 3$ Identify which

one is regression equation of x on y and which

one is of y on x .



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24. Answer the following questions in short:

Following are two regression lines :

$3x - 5y = 1$ and $4x - 7y = 3$ Find \bar{x} , \bar{y} and

correlation coefficient r .



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25. Answer the following questions in short: A box contains ten tickets numbered 1 to 10. Let X be the largest number drawn in n random draws with replacement. Obtain probability mass function of X .



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26. Answer the following questions in short:

Show that points of inflexion of a normal curve

are at $x = \mu \pm \sigma$.



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27. Answer the following questions in short:

Discuss the concept of $3 - \sigma$ limits in the

construction of control charts.



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28. Answer the following questions in short:

What is the difference between product model and additive model?



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29. Answer the following questions in short:

Describe the construction of control chart for mean from appropriate data when standards are not given.



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