MATHS

BOOKS - UNITED BOOK HOUSE

HIGHER SECONDARY EXAMINATION 2017

Exercise

1. Find out the correct answer out of the options given against each question : Total no.

of all possible samples of size 3 from a population of size 20 in case of simple random sample without replacement is-

A. C_3^{20}

B. P_5^{20}

C. $\dfrac{1}{C_3^{20}}$

D. 20^3

Answer:

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2. Find out the correct answer out of the options given against each question : For a normal distribution the maximum value of the p.d.f. f(x) will be-

A. $\sigma\sqrt{2\pi}$

B. $\dfrac{1}{\sigma}\sqrt{2\pi}$

C. $\sqrt{\dfrac{2}{\pi}} \cdot \sigma$

D. none of these.

Answer:

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3. Find out the correct answer out of the options given against each question : For X~R (α, β), median of X equals to-

A. $\dfrac{\beta - \alpha}{2}$

B. $\dfrac{\beta + \alpha}{2}$

C. $\dfrac{(\beta - \alpha)^2}{12}$

D. none of these.

Answer:

4. Find out the correct answer out of the options given against each question : In usual significance,n if 3y - 2x = 9 be the regression line of y on x and if $r_{x,y} = \dfrac{1}{3}$, var (x) = 4, then var (y) =

    A. 4

    B. 9

    C. 1

    D. none of these.

Answer:

5. Find out the correct answer out of the options given against each question : In case of perfect. disagreement, the Spearman's rank correlation coefficient takes the value-

A. 1

B. -1

C. 0

D. none of these.

Answer:

6. Find out the correct answer out of the options given against each question : If the mean of a binomial distribution is a positive integer, then-

A. $mean > \mod e$

B. $mean < mode$

C. $mean = mode$

D. $mean > variance.$

Answer:

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7. Find out the correct answer out of the options given against each question : If ax + by=1 is the relation between x and y (where

$a > 0$ and $b > 0$), then correlation coefficient between x and y is-

A. $+1$

B. -1

C. 0

D. $+1$

Answer:

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8. Find out the correct answer out of the options given against each question : In any testing problem, our main objective is-

A. to minimise two types of errors simultaneously

B. to minimise type-I error keeping type- II error at a preassigned low level

C. to minimise type-II error keeping type I error at a minimum preassigned level

D. none of these.

Answer:

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9. Answer the following questions: Mention the product model used in time series analysis.

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10. Answer the following questions: Mention two main differences between Seasonal

variation and Cyclical variation in a time series.

11. Answer the following questions: Mention the situations where the definite integral $\int_a^b f(x)dx$ becomes improper.

12. Answer the following questions: What is hypothetical population?

13. Answer the following questions: What is sampling frame?

14. Answer the following questions: What is finite population correction (fpc) of S.E. of $(\bar{x})$ in case of SRSWOR?

15. Answer the following questions: What is distribution function?

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16. Answer the following questions: What is probability mass function of a random variable?

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17. Answer the following questions: Mention the control limits of np-chart in context of S.Q.C.

18. Answer the following questions: In any testing problem, two types of errors are complementary to each other. (Verify True/False)

19. Answer the following questions: If the correlation coefficient between x and y be 0.8, determine the correlation coefficient between x and 5 - 3y.

20. Answer the following questions: Why 3σ limit is important for construction of control chart?

21. Answer the following questions: What is the difference between Seasonal variation or cyclical variation?

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22. Answer the following questions: What is rank correlation? In which situations it is useful?

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23. Answer the following questions: For what value of k the following function would be a p.m.f.? $f(x) = \begin{cases} k\frac{1}{2^x} & (x = 0, 1, 2) \\ 0 & otherwise \end{cases}$ Also find the mean of the distribution.

24. Answer the following questions: Two persons toss a fair coin n times each. Show that the probability of their scoring same no. of tails is $\left(\dfrac{2n}{n}\right) \cdot \left(2^{-2n}\right)$.

25. Answer the following questions: What are type-I and type-II errors? Find their relations with level of significance (α) and power (β) of a test.

26. Answer the following questions : (Alternatives are to be noted): If T_1, T_2, T_3 be

estimators with expectations

$$E(T_1) = \theta_1 + 2\theta_2, \quad E(T_2) = \theta_2 + 2\theta_3, \quad \text{and}$$

$E(T_3) = \theta_3 + 2\theta_1$ find unbaised estimator of

$\theta_1 + \theta_2 + \theta_3$.

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27. Answer the following questions: Write the control limits for the control chart of defectives when standards are not given.

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28. Answer the following questions: What is secular trend of time Series?

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29. Answer the following questions: Explain large sample test for poisson distribution parameter (λ).

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30. Answer the following questions: Describe the testing procedure to test $H_0 : \sigma = \sigma_0$ (specified) against $H_1 : \sigma > \sigma_0$, when μ is unknown in case of a $N(\mu, \sigma^2)$ population.