



MATHS

BOOKS - UNITED BOOK HOUSE

Question Paper 2016

Exercise

1. Marks obtained in an examination is

A. a) attribute

B. b) discrete variable

C. c) continuous variable

D. d) none of these

Answer:



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2. Mode of frequency distribution can be obtained from

A. Frequency polygon

B. Histogram

C. Ogive

D. none of these

Answer:



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3. The mean deviation about median of n distinct numbers is

A. least

B. zero

C. greatest

D. none of these

Answer:



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4. The least Fermat number is

A. 5

B. 3

C. 7

D. none of these

Answer:



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5. Remainder of the polynomial $2x^2 + 5x - 6$

when it is divided by $(2x - 1)$ is

A. 3

B. (-)3

C. 0

D. 2

Answer:



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6. If $P(A) = 0.2$, $P(B) = 0.4$, $P(AB) = 0.08$, then

$P\left(\frac{B}{A^c}\right)$ equals to

A. a) 0.4

B. b) 0.2

C. c) 0.8

D. d) none of these

Answer:



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7. A coin is tossed three times in succession, the number of sample points in the sample space is

A. 6

B. 8

C. 3

D. 9

Answer:



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8. If for a distribution $Q_1 = 25$ and $Q_3 = 45$, what percentage of observations lie between 25 and 45?:



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9. Under what condition the weighted average becomes identical to the simple average?



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10. Which decile is taken as the measure of central tendency?



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11. What is cross-sectional data?



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12. What is Random experiment?



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13. Define sample space.



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14. State De Morgan's law for two arbitrary events A and B.



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15. Define Real wage.



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16. What do you mean by price relative?



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17. Define simple aggregative price index.



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18. If arithmetic mean and coefficient of variation of a variable x are 10 and 50% respectively, find $\text{Var}(5 - 2x)$.



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19. Define discrete variable and continuous variable.



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20. Explain the meaning of ordinal data with example.



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21. If A and B are mutually exclusive events,

show that
$$P\left(\frac{A}{A \cup B}\right) = \frac{P(A)}{P(A) + P(B)}$$



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22. Prove that
$$P(A^C) = 1 - P(A)$$



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23. A box contains 15 balls numbered 1 to 15.

Find the probability that a ball selected at

random would bear a number that is a multiple of 3 or 5.



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24. What is mail questionnaire method? When this method is useful?



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25. Write down the different steps for drawing Ogive.



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26. Suppose a variable x takes only two values x_1 and x_2 with frequencies f_1 and f_2 . If s be the s.d. of x , show that $s^2 = f_1 f_2 \left[\frac{x_1 - x_2}{f_1 + f_2} \right]^2$



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27. What is interpolation? Explain Δ operator?



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28. Find $\Delta(\Delta(ax^2 + bx + c))$, ($a \neq 0$).



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29. Explain the concepts of pairwise independence and mutual independence of events.



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30. A_1, A_2, \dots, A_n are n independent events such that

$$P(A_i) = 1 - q_i, I = 1, 2, 3, \dots, n$$

Prove that $P\left[\bigcup_i^n A_i\right] = 1 - q_1 q_2 \dots q_n$



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31. What is Time Reversal Test? Show that Fisher's Index No. satisfies Time Reversal Test.



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32. Suppose a variable assumes the values 0, 1, 2,.....,n with frequencies proportional to binomial coefficients ${}^n C_0, {}^n C_1, {}^n C_2, \dots, {}^n C_n$ respectively.

Find the mean of variable.



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33. In a frequency table, the upper boundary of each class-interval has a constant ratio to the lower boundary. Show that the geometric

mean (G) may be expressed as

$$\log G = A + \frac{k}{n} \sum_{i=1}^r f_i(i - 1).$$



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34. Write down two cases when mean deviation about mean and standard deviations are equal.



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35. There are three urns containing respectively b_i black balls, w_i white balls and g_i green balls for $i = 1, 2, 3$. One ball is drawn at random from each of the three urns. Find the probability that the balls are of same colour.



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36. Three boxes of the same appearance have the following proportions of black and white balls : Box-I -5 black and 3 white, Box-II-6 black

and 2 white. Box-III-3 black and 5 white. One of the box is selected at random and one ball is drawn randomly from it. Given that the ball is black, find the probability that it came from Box-III.



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37. Describe how you would construct a cost of living index number for the lower middle class people in Kolkata.



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