MATHS

BOOKS - UNITED BOOK HOUSE

Scottish Church Collegiate School, Question Paper

Exercise

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1. Distinguish between discrete and continuous variable.

2. Find the median of first 10 multiples variable.

3. Standand deviation of the 6 numbers 5, 5, 5, 7, 7, 7 is

4. Find the probability of getting a difference of score as 3 when two perfect dice are thrown at a time.

5. If $P\left(A^C \cup B^c\right) = \dfrac{5}{6}$, $P(A) = \dfrac{1}{2}$, $P\left(B^C\right) = \dfrac{2}{3}$ are the events A and B independent?

6. Can two mutually exclusive events with positive probabilities be independent ? Give reasons.

7. A variable x takes only two values x_1, x_2 with equal frequencies. Find the mean deviation about mean and the standard deviation.

8. The sum of the deviations of the values of a variable from its ____ is zero.

9. For four positive values x_1, x_2, x_3, x_4 prove that $AM \geq GM$.

10. Prove that Mean deviation is minimum about its median.

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11. What are the different types of heart sound. State their causes and significance.

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12. If a, b, c and x, y, z are positive, then show that $\left(\dfrac{a}{x} + \dfrac{b}{y} + \dfrac{c}{z} \right)\left(\dfrac{x}{a} + \dfrac{y}{b} + \dfrac{z}{c} \right) \geq 9$

13. State Fermat's theorem. Also prove that $\triangle \log f(x) = \log\left[1 + \dfrac{\triangle f(x)}{f(x)} \right].$

14. Find the polynomial function f(x) for which it is known that f(0) = 1, f(1) = 2, f(2) = 11 and f(3) = 34.

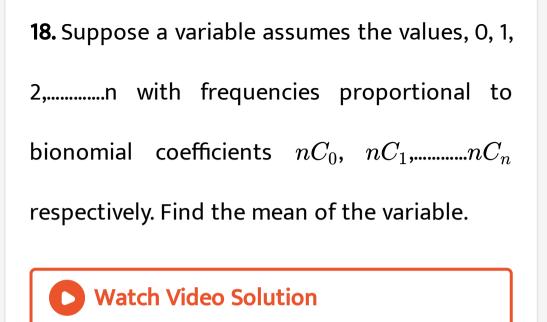**15.** Prove that $\dfrac{1}{n} \sum_{E_1}^{n} |x_i - A|$ attains, minimum when A = Median.

16. If the events A^C and B^C are independent then show that A and B are independent.

17. The probabilities of solving a problem by three students A,B,C are 3/7,3/8,and 1/3 if all of them try independently find the probability that the problem is not solved.

18. Suppose a variable assumes the values, 0, 1, 2,..............n with frequencies proportional to bionomial coefficients nC_0, nC_1,............nC_n respectively. Find the mean of the variable.

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19. For any frequecy distribution

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20. If the mean and variance of one set of values be $\bar{x}_1$ and s_1^2 and those of another set be $\bar{x}_2$ and s_2^2 respectively and each set has values 2, then prove that the variance $\left(s^2\right)$ of the combined set of values is given by $4s^2 = 2\left(s_1^2 + s_2^2\right) + d^2$ where $d = \left(\bar{x}_1 - \bar{x}_2\right)$.

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21. Define imbibition State its significance.

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22. The elements A, B and C have atomic numbers Z -2, Z and Z +1 respecively. Of the three, B is an inert gas.

Which one has the highest value of ionisation potential?

23. State and prove the theorem of compound probability.

24. The H.M of a set of values is 2. If each value

is tripled, the new H.M is equal to

A. 2

B. 3

C. 6

D. none of these

Answer:

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25. If the relation between two variable x and y is $5y + 7x = 11$ and the range of x is 5, then the range of y is _____ .

A. 4

B. 7

C. 5

D. none of these

Answer:

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26. A dinner party is to be fixed for a group of 100 persons. In this party, 50 persons do not prefer fish,60 prefer chicken and 10 do not prefer either chicken or fish. The number of persons who prefer both fish and chicken is

    A. attribute

    B. continuous variable

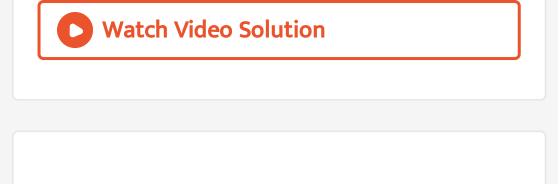   C. discrete variable

    D. none of these

Answer:

27. If var (x) = 7, then var (5 - 3x) is equal to

    A. 63

    B. 21

    C. 68

    D. none of these

Answer:

28. The first moment about the value 4 of a variable is 3, then its mean is

A. 1

B. 7

C. 3

D. 4

Answer:

29. The sum of the roots of the equation $x^3 + 5x + 1 = 0$ is

A. 0

B. 1

C. 2

D. 3

Answer:

30. If x is real, the minimum value of

$x^2 - 10x + 28$ is

A. 6

B. 3

C. 2

D. none of these

Answer:

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31. The two digited fermat number is

A. 37

B. 7
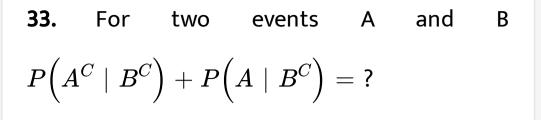
C. 11

D. none of these

Answer:

32. A and B are two independent events such that $P\left(A^{C}\right) = 0.7, P(B) = k$ and P(A uB) = 0.8`, then K is

A. $\dfrac{5}{7}$

B. 1

C. $\dfrac{2}{7}$

D. none of these

Answer:

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33. For two events A and B

$$P\left(A^C \mid B^C\right) + P\left(A \mid B^C\right) = ?$$

A. 0

B. 1

C. 0.5

D. none of these

Answer:

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34. Write a short note on 'measures of dispersion'.

35. Describe cross sectional data with their utility.

36. Define Pilot survey.

37. If a value of a variable is zero, then what

will be its geometric mean.

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38. What is the main difference between raw

moments and central moments?

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39. Write down the empirical relation between mean, median and mode.

40. Let A, B, C be three arbitrary events. Find the expressions for the following events at least two events occur.

41. Give the condition when two events A and B will be mutually independent?

42. A,B and C are three mutually exclusive and exhaustive events and P(A) =2P(B) =3P(C) then find P(A)

43. Describe the sample space when one coin is tossed repeatedly till head comes.

44. Explain the given word :

Organism.