



# MATHS

## BOOKS - UNITED BOOK HOUSE

### Model Test Set - 9

#### Exercise

1. Step diagram is used for presenting.

A. Attributes

B. Continuous variables

C. Discrete variable

D. none of these

**Answer:**



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2. In a frequency curve of scores, the mode was found to be higher than the mean. This shows that the distribution is

A. symmetric

B. negatively skewed

C. positively skewed

D. normal

**Answer:**



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**3. A.M., G.M., and H.M. in any series are equal when**

A. a) the distribution is symmetric

B. b) all the values are same

C. c) the distribution is positively skewed

D. d) the distribution is unimodal

**Answer:**



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4. The column diagram is appropriate for exhibiting the frequency distribution of family size. (write true or false)



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5. If  $\Delta x = 1$ , the  $\Delta(5x^2) =$  \_\_\_\_\_

A.  $5(2x + 1)$

B.  $2x + 1$

C.  $5(2x)$

D. 0

**Answer:**



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6. When  $(x^5 - 1)$  is divided by  $(2x + 1)$ , then the remainder is

A.  $\frac{33}{32}$

B.  $(-)\frac{33}{32}$

C.  $(-)\frac{33}{32}$

D.  $\frac{32}{33}$

**Answer:**



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7. If  $0 < a < 1$  and  $x > y > 0$  then  $\log_a^x < \log_a^y$

(write true or false)



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8. If  $a \equiv b \pmod{n}$ , then  $a^3 \equiv b^3 \pmod{n}$

(write true or false).



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9. The probability of drawing any one spade card from a pack of card is

A.  $\frac{1}{52}$

B.  $\frac{1}{13}$

C.  $\frac{4}{13}$

D.  $\frac{1}{4}$

**Answer:**



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10. A single letter is selected at random from the word probability. The probability that it is a vowel is

A.  $\frac{3}{11}$

B.  $\frac{2}{11}$

C.  $\frac{4}{11}$

D. 0

**Answer:**



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**11.** Let  $x$  be a variable assuming values  $x_1, x_2, \dots, x_n$  state the condition when  $AM(x) = GM(x) = HM(x)$



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**12.** If the value of a variable are 4, 4, 3, 3, 4, 1, 2 then find the value of mode and median.



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**13.** If wrong correct the statement: mode can be obtained from ogive



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**14.** If  $x=5$  find the value of the algebraic expressions:  $x^3 + 8$ .



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**15.** If all the values of a variable are equal to 7 then what is its variance.



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**16.**  $P(A) = 1/2$ ,  $P(B) = 2/3$ , what will be the least value of  $P(A \cap B)$ .



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17. A-set contains 4 elements. It's power set will contain \_\_\_\_\_ element.



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18. Draw venn diagram to represent the following set :  $(A \cup B) - C$ .



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**19.** Draw Venn diagram to represent the following sets

$$AB^c$$



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**20.** Let A and B be two events such that  $P(A) = 0.3$  and  $P(A \cup B) = 0.8$ . If A and B are independent events then  $P(B) = ?$



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**21.** Discuss about different sources of data on vital events.



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**22.** What do you mean by Broca's Index?



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**23.** Find the variance of the following observations : 30, 40, 50, 60, 70.





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**24.** Let there be two sets of observations. The first set contains 10 observations with mean 20. The second set contains 20 observations with mean 25. Find the mean of the combined set.



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**25.** Distinguish between primary and secondary data.





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26. if  $P(A | B) = \frac{1}{3}$ ,  $P(A) = 1/4$  and  $P(B) = 1/2$ , find the probability that exactly one of the events A and B occurs.



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27. If  $P(A) = 0.2$ ,  $P(B) = 0.3$ ,  $P(C) = 0.4$  and A, B and C be independent then  $P(ABC^c) = ?$



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**28.** Write the axiomatic definition of probability?



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**29.** Sum of the squares of deviation is least about



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**30.** What do you mean by a cumulative frequency distribution. Point out its special advantages and uses.



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**31.** What is the value of Sheppard's correction of moments for  $m_4$ ?



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**32.** For three unequal positive real numbers  $a$ ,  $b$ ,  $c$  show that  $(b + c)(c + a)(a + b) > 8abc$ .

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**33.** If  $x_1, x_2, \dots, x_n$  are real quantities. Prove

that 
$$\frac{1}{n} \sum_{i=1}^n x_i^2 \geq \left( \frac{1}{n} \sum_{i=1}^n |x_i| \right)^2$$

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**34.** First the greatest common divisor of 801 and 423.



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**35.** State and prove Remainder theorem.



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**36.** Show that if events  $A$  and  $B$  are independent, then so are  $A^c$  and  $B^c$ .



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**37.** A Box contains 5 white and 3 black ball. One ball is drawn and it is seen to be white. A second ball is drawn without returning the first ball. What is the probability that the second ball is also white?



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**38.** A box contains 7 white and 5 black balls two are drawn at random find the probability that they are not of the same colour when the balls are drawn at a time



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**39.** Define crude birth rate and point out its defects.



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**40.** Explain the Time reversal and Factor reversal tests of index numbers.



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**41.** What are different measures of skewness.



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**42.** Let  $x$  be a variable assuming the values 1, 2,..... $k$  and let  $F_1 = n$ ,  $F_2, \dots, F_k$  be the



corresponding cumulative frequencies of the

greater than type show that  $\bar{x} = \frac{1}{n} \sum_{i=1}^k F_i$ .



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**43.** Suppose that all the four possible outcomes  $e_1, e_2, e_3, e_4$  of an experiment are equally likely. Define the events A, B, C as  $A = (e_1, e_4), B = (e_2, e_4)$ . What can you say about the dependence or independence of events A, B, C?



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**44.** Prove that Fisher's ideal index number lies between Laspeyre's and Paasche's index numbers.



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**45.** Define standardised death rate. Discuss the direct method of standardisation.



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