1 The value of the probability of any event should be

Answer= More than 0

2 If A and B are two events, then they will be mutually exclusive if

(a) $A \cup B = \phi$
(b) $A \cap B = \phi$
(c) $A - B = \phi$
(d) $AB = \phi$

Answer= b

3 If A and B are mutually exclusive, then $P(A \cup B) =$?

(a) $P(A)P(B)$
(b) $P(A)/P(B)$
(c) $P(A) - P(B)$
(d) $P(A) + P(B)$

Answer= d

4 The probability of drawing a card of club from a pack of 52 cards is

Answer= ¼

5 If P(A)=1/2, then P(B)=? where B is the complement of A.
Answer= ½

6 P(A)=1/2, P(B)=1/3, then P(A/B)=?
Answer= ¾

7 Two bags contain respectively 2 red, 5 black, 7 green, and 1 red, 4 black, 9 green balls. One ball is drawn from each box. What is the probability that both are of same colour?
Answer= 85/196

8 If A and B are two independent events such that $P(A \cap B') = \frac{3}{25}$ and $P(A' \cap B) = \frac{8}{25}$. If P(A)<P(B then P(A) is

Answer= ⅕

9 If S and T have equal probability and are independent with $P(S \cap T) = p > 0$, then $P(S)$ is

(a) $\sqrt{p+1}$
(b) p
(c) $\sqrt{p}$
(d) p^2

Answer= C

10 A fair dice is rolled twice. The probability that an odd number will follow an even number is
Answer= 1/4

11 If E denotes expectation, the variance of a random variable X is given by

(a) $E(X^2)-\{E(X)\}^2$
(b) $E(X(X-1))-E(X)\{E(X)-1\}$
(c) $E(X)-\{E(X)\}^2$
(d) Both a and b

Answer= d

12 Two dice are thrown. What is the probability that is the sum of the numbers on the two dice is eight?
Answer= 5/36

13 In Baye's theorem which of the following is true?
Answer= This is an application of conditional probability

14 The probability of one head and one tail in case of tossing two coins is
Answer= 5/36

15 The probability of occurrence of only one event out of A and B is
Answer= P(A)+P(B)-2P(AB)

16 If A and B are any two pairwise mutually exclusive and exhaustive events, then for any event K, P(K)=?
Answer= P(K)=P(A)P(K/A)+P(B)P(K/B)

17 What is the chance that a leap year selected at random will contain 53 Wednesdays?
Answer= 2/7

18 The probability that the sum 8 appear in a single toss of pair of fare dice is
Answer= 5/36

19 If P(A)+P(B)+P(C)=1, then the events A, B, and C are

Answer= Both mutually exclusive and exhaustive

20 A coin is tossed. Event {H}, {T} are

Answer= both mutually exclusive and dependent

21 The population variance is said to be
Answer= parameter

22 Which one of the following is an example of statistic?
Answer= Sample mean

23 What is the statistic should be applied if the sample (5,9,15,10) is given and you need to test the mean of the population?
Answer= t statistic

24 Two set of data is said to be independent if
Answer= The correlation coefficient is 0

25 If the value of correlation coefficient is 1.2, then which one is the best conclusion you should draw?
Answer= None of the above

26 If two drugs are applied to two different sample of guinea pig to test and compare their effectiveness, then which one of the following is the best test to be chosen?

Answer= paired t test

27 A statistic t_n is said to be the unbiased estimator of the sample parameter p if

a. $E(p) = t_n$
b. $E(t_n) = p$
c. $\lim(t_n) = p \; as \; n \to \infty$
d. $E(t_n) = p^2$

Answer= B

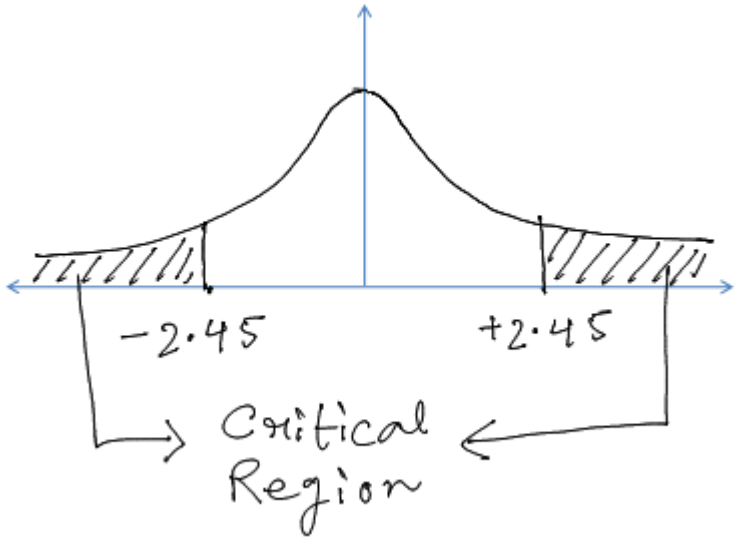
28 If t_n be a statistic from the sample with size n and p be a parameter and t_n is a consistent estimator of p, then $\lim_{n\to\infty} P\{|t_n - p| > \epsilon\}$ =? $(\epsilon > 0 \; be \; any \; arbitrary \; positive \; number)$

Answer= 0

29 Which one of the following is said to be the test of goodness of fit?
Answer= chi-square test

30 In a problem of statistical hypothesis, it is required to find that the population mean is less than 4.25. Then the test is called
Answer= Left tailed test

31



From the above figure, if the value of t is obtained as 2.5 for testing of single mean (two tailed), then which one of the following should be true?
Answer= Both option 1 and 2 are true

32 Given that the sample (size 6) average and s.d. are 3300 and 1016.53, respectively. Using 5% level of significance if we check whether the population mean is less than 3500 or not (at 5 degrees of freedom and 0.05 level of significance t=2.02), then
Answer= We accept null hypothesis

33 In a sample of five measurements, the diameter of the ball bearings is noted as 6.37, 6.32, 6.36, 6.37, and 6.33 cm. What is the unbiased estimate of the true mean diameter?

Answer= 6.35

34 Consider a population having Binomial distribution with parameter n and p. $\{x_1, x_2, x_3, x_4\}$ is a sample drawn from the population. The likelihood function will be written as

(a) $\binom{n}{x_1}\binom{n}{x_2}\binom{n}{x_3}\binom{n}{x_4} p^{x_1+x_2+x_3+x_4}(1-p)^{n-(x_1+x_2+x_3+x_4)}$

(b) $\binom{n}{x_1}\binom{n}{x_2}\binom{n}{x_3}\binom{n}{x_4} p^{x_1+x_2+x_3+x_4}(1-p)^{4n+(x_1+x_2+x_3+x_4)}$

(c) $\binom{n}{x_1}\binom{n}{x_2}\binom{n}{x_3}\binom{n}{x_4} p^{x_1+x_2+x_3+x_4}(1-p)^{4n-(x_1x_2x_3x_4)}$

(d) $\binom{n}{x_1}\binom{n}{x_2}\binom{n}{x_3}\binom{n}{x_4} p^{x_1+x_2+x_3+x_4}(1-p)^{4n-(x_1+x_2+x_3+x_4)}$

Answer= d

35 If the statistic t is a consistent estimator of β, then

(a) t^2 is an unbiased estimator of β

(b) t is an unbiased estimator of β^2

(c) t^2 is an unbiased estimator of β^2

(d) None of the above

Answer= C

36 The chance of rejecting a true hypothesis decreases when sample size is:

(a) Increased
(b) Decreased
(c) Remains same
(d) Both (a) and (b)

Answer= A

37 The range of test statistic-Z is

(a) 0 to 1
(b) -1 to 1
(c) 0 to ∞
(d) −∞ to ∞

Answer= d

38 The marks of roll 1,2,3,4,5, and 6 are 10,5,9,10,5, and 10 respectively. The ranking of roll 1 to 5 are respectively:
Answer= 2,5.5,4,2,5.5,2

39 The coefficient of rank correlation of the marks obtained by 10 students in Maths and Statistics was found to be 0·5. It was later discovered that the difference in ranks in two subjects obtained by one of the students was wrongly taken as 3 instead of 7. What is the correct coefficient of rank correlation?

Answer= 0.2576

40 If Cov(X,Y)=0, then which one is true ?
Answer= The data sets are independent

41 If the Cov(X,Y)=3, Var(X)=4.5, and Var(Y)=5.5, then what is the value of the correlation coefficient?
Answer= 0.603

42 Two regression lines are respectively given as:

2x-3y=-8

5x-y=6

What is the mean of X data set?

Answer= 2

43 What is the correlation coefficient of the following bi-variate data (1,-1), (2, -2), (3,-3) .. (n,-n) ?

Answer= -1

44 The mean of Binomial distribution B(n,p) is

Answer= np

45 If f(x) is the pdf of a random variable X, then which of the following options are t

(a) $\int_0^{\infty} f(x)dx = 1$

(b) $\int_{-\infty}^{\infty} f(x)dx = 1$

(c) $\int_{-\infty}^{x} f(x)dx = 1$

(d) *None of the above*

Answer= b

46 The variance of a random variable X is

(a) $E(X^2)$

(b) $E(X^2) + E(X)$

(c) $E(X^2) - \{E(X)\}^2$

(d) $E(X^2) + \{E(X)\}^2$

Answer= c

47 Which of the following distribution has same mean and variance?

Answer= Binomial

48 The probability $P(a \leq x \leq b)$ is defined by which of the following? ($F(x)$ is the

(a) $F(b) - F(a)$
(b) $F(b) + F(a)$
(c) $F(a) - F(b)$
(d) $F(b)F(a)$

Answer= a

49 Find the expectation of the following distribution

X:	0	1	2	3
F:	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{2}$

Answer= Not a valid PMF

50 Which of the following is true for two independent events X and Y?

(a) $E(XY) = E(X) + E(Y)$
(b) $E(XY) = E(X)E(Y)$
(c) $E(XY) = E(X) - E(Y)$
(d) $E(XY) = E(X)/E(Y)$

Answer= b

51 If X is a discrete random variable then

(a) $E|X| \leq |E(X)|$
(b) $E|X| \geq |E(X)|$
(c) $E|X| = |E(X)|$
(d) Cannot be decided due to limited information

Answer= b

52 The mean and S.D. of the standard normal variate are respectively
Answer= 0 and 1

53 The maximum value of the normal curve attains at the point of
Answer= Mean

54 The mean of X is 3 and $Var(X) = E(X^2) - E(X) - K$, then the value of K is

(a) 6
(b) 5
(c) 36
(d) -6

Answer= a

55 The pdf of a random variable is defined as

$$f(x) = \frac{3}{4}x(2-x), 0 \leq x \leq 2$$

$$= 0, \quad Otherwise$$

Then F(1)=? (where, F is the CDF)

(a) 1/3
(b) ¼
(c) ½
(d) 1

Answer= c

56 If a person gains or loses an amount equal to the number appearing when a balanced die is rolled once according to whether the number is even or odd, how much money can he expect from the game in long run?

Answer= 1/2

57 A random variable X has the density function

$$f(x) = \frac{a}{x^2 + 1}, -\infty < x < \infty.$$

Find the CDF of X.

(a) $\frac{1}{\pi}\left[\tan^{-1} x + \frac{\pi}{2}\right]$

(b) $\left[\tan^{-1} x + \frac{\pi}{2}\right]$

(c) $\frac{1}{\pi}[\tan^{-1} x]$

(d) $\frac{1}{\pi}$

Answer= a

58 What is the value of the constant k for which the pdf

$$f(x) = kx(1-x), 0 < x \leq 1$$

$$= 0, everywhere$$

Is a valid pdf?

(a) 3
(b) 4
(c) 5
(d) 6

Answer= d

59 A probability density function is of the form
$p(x) = Ke^{-\alpha|x|}$, $x \in (-\infty, \infty)$
The value of K is
(a) 0.5 (b) 1 (c) 0.5α

Answer= C

60 In a manufacturing plant, the probability of making a defective bolt is 0.1. The mean and standard deviation of defective bolts in a total of 900 bolts are respectively

Answer= 90 and 9

61 The probability of a defective piece being produced in a manufacturing pr
probability that out of 5 successive pieces, only one is defective, is

(a) $(0.99)^2\,(0.01)$ (b) $(0.99)(0.01)^4$

(c) $5\times(0.99)(0.01)4$ (d) $5\times(0.99)^4(0.01)$

Answer= d

62 If A and B are two independent events such that P(A)=1/2 and P(B)=1/2. Then, the value of P(AB) is

Answer= ¼

63 If X is normally distributed with mean a and standard deviation b, then the r.v. Z=(X-a)/b follows normal distribution with mean and s.d as respectively

Answer= 0 and 1