J.K. SHAH TEST SERIES
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CA FOUNDATION
SUBJECT- AJM 1063
Test Code – STATS
(Date :)

(Marks - 50)

TOPIC : Correlation and Regression, Index Numbers and Time series, - Probability and random variable, Random variable, Theoritical distribution

1. Correlation between temperature and power consumption is

   (a) Positive   (b) Negative   (c) Zero   (d) None

2. To determine the height of a person when his weight is given is :

   (a) Correlation problem   (b) Association problem

   (c) Regression problem   (d) Qualitative problem

3. What is the probability of getting 53 Sundays in a normal year.

   (a) $\frac{1}{7}$ (b) $\frac{2}{7}$ (c) $\frac{3}{7}$ (d) None

4. A bag contains 6 red and 4 blue balls. 1 ball is drawn at random. Find the probability that the ball is red.

   (a) 0.6   (b) 0.4   (c) 0.24   (d) None

5. If a coin is tossed 5 times then the probability of getting Tail and Head Occurs alternatively is

   (a) $\frac{1}{8}$ (b) $\frac{1}{16}$ (c) $\frac{1}{32}$ (d) $\frac{1}{64}$

6. The method applied for deriving regression equations is known as :

   (a) Concurrent deviation   (b) Product moment

   (c) Least squares   (d) Normal equation

7. The secular trend is measured by the method of semi – averages when :

   (a) Time series based on yearly values

   (b) Trend is linear

   (c) Time series consists of even number of values

   (d) None of them

8. Regression coefficients are affected by _____.

   (a) Change of origin   (b) Change of Scale

   (c) Both origin & scale   (d) Neither origin nor scale

9. Two events A and B are such that they do not occur simultaneously then they are called _____ events.

   (a) Mutually exhaustive   (b) Mutually exclusive

   (c) Mutually independent   (d) Equally likely

10. Consumer Price Index number for the year 1957 was 313 with 1940 as the base year. The Average Monthly wages in 1957 of the workers into factory be Rs. 160/- their real wages is :

    (a) Rs. 148.40   (b) Rs. 51.12   (c) Rs. 40.30   (d) 195.63

11. If r = - 0.6 then the coefficient of non – determination is :

    (a) -0.36 (b) -0.64 (c) 0.36   (d) 0.64

12. The ____ makes index numbers time – reversible.

    (a) Arithmetic.Mean.   (b) Geometric.Mean.

    (c) Harmonic.Mean.   (d) none

13. A committee of 7 members is to be formed from a group comprising 8 gentlemen and 5 ladies. What is the probability that the committee would comprise 2 ladies.

    (a) $\frac{131}{429}$ (b) $\frac{140}{429}$ (c) $\frac{141}{429}$ (d) None

14. If cov (x, y) = 20, what restrictions should be put for the standard deviations of x and y ?

    (a) the sum of the standard deviations should be less than 20.

    (b) no restriction

    (c) the product of the standard deviations should be more than 20.

    (d) the product of the standard deviations should be less than 20.

15. The Multiplicative Time Series Model is

    (a) Y = T + S + C + I   (b) Y = T.S.C.I

    (c) Y = a + bx   (d) Y = a + bx + Cx^2

16. The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2015 as base year the price relative is

    (a) 109.8   (b) 110.25   (c) 113.25   (d) 83.33

17. If the two lines of regression are x + 2y – 5 = 0 and 2x + 3y – 8 = 0, then the regression line of y on x is

    (a) x + 2y – 5 = 0   (b) x + 2y = 0

    (c) 2x + 3y – 8 = 0   (d) 2x + 3y = 0

18. DEEPA is known to hit a target 5 times in 9 shots whereas RINA is known to hit the same target 6 times in 11 shots. What is the probability that atleast one can hit the target ?

    (a) $\frac{7}{11}$ (b) $\frac{79}{99}$ (c) $\frac{80}{99}$ (d) None

19. The prices of commodity in the year 2015 and 2020 were 25 and 30 respectively taking 2015 as base year the price relative is

    (a) 109.8   (b) 110.25   (c) 113.25   (d) 83.33

20. Correlation coefficient is a pure number.

(a)   True   (b)   False   (c)   Both   (d) None of these

21. In a business venture, a man can make a profit of Rs. 1,00,000 or incur a loss of Rs. 40,000. The probabilities of making profit or incurring loss, from the past experience, are known to be 0.75 and 0.25 respectively. What is the expected profit ?

(a)   Rs. 55,000   (b)   Rs. 65,000   (c)   Rs. 45,300   (d)   None

22. A die is thrown 3 times. Find probability of getting atleast one even digit is

(a) $\frac{5}{8}$ (b) $\frac{7}{8}$ (c) $\frac{1}{3}$ (d)   None

23. One card is drawn at random from a pack of 52 playing cards. Find the probability that the card is not an spade card.

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) $\frac{3}{4}$ (d)   None

24. Cost of Living Index number (C.L.I.) is expressed in terms of :

(a) $\frac{\Sigma P_n q_o}{\Sigma P_o q_o} \times 100$ (b) $\frac{\Sigma P_n q_n}{\Sigma P_o q_o}$

(c) $\frac{\Sigma P_n q_n}{\Sigma P_n q_n} \times 100$ (d)   None of these

25. The number of methods of fitting the normal curve is :

(a)   4   (b)   3   (c)   2   (d)   1

26. In Poisson Distribution, probability of success is very close to :

(a) -1 (b)   0   (c)   1   (d)   None

27. If the points of inflexion of a normal curve are 6 and 14 then standard deviation is

(a)   4   (b)   8   (c)   16   (d)   32

28. Expected value of a random variable

(a)   is always positive   (b)   may be positive or negative

(c)   may be positive or negative or zero   (d)   can never be zero

29. If $P(A - B) = \frac{1}{5}$; $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{2}$

What is the probability that out of the two events A and B, only B would occur ?

(a) $\frac{1}{3}$ (b) $\frac{23}{30}$ (c) $\frac{11}{30}$ (d)   None

30. For regression 5X + 10Y − 145 = 0; 14Y + 8X − 208 = 0. The mean values $(\bar{X}, \bar{Y})$ is :

(a)   (5, 12)   (b)   (12, 5)   (c)   (12, 3)   (d)   None

31. A complete cycle consists of a period of :

(a)   Prosperity and depression   (b)   Prosperity and recovery

(c)   Prosperity and recession   (d)   None

32. If scatter diagram from a line move from lower left to upper right corner then the correlation is

(a)   Perfect positive   (b)   Perfect negative

(c)   Simple positive   (d)   No correlation

33.   What is the chance of getting at least one defective item if 3 items are drawn randomly from a lot containing 6 items of which 2 are defective item ?

(a)   0.30   (b)   0.20   (c)   0.80   (d)   0.50

34.   For a certain normal variate X, the mean is 12 and S.D. is 4. Find $P(X \geq 20)$: [Area under the normal curve from $z = 0$ to $z = 2$ is 0.4772]

(a)   0.5238   (b)   0.0472   (c)   0.7272   (d)   0.0228

35.   A experiment succeeds twice as many times as it fails. Find the chance that in 6 trials, there will be atleast 5 successes.

(a) $\dfrac{37}{729}$ (b) $\dfrac{256}{729}$ (c) $\dfrac{87}{729}$ (d)   None

36.   If 5% of the families in Kolkata do not use gas as a fuel, what will be the probability of selecting 10 families in a random sample of 100 families who do not use gas as fuel? ?   [Given : $e^{-5} = 0.0067$]

(a)   0.038   (b)   0.028   (c)   0.048   (d)   0.018

37.   If $u + 5x = 6$ and $3y - 7v = 20$ and correlation coefficient between x and y is 0.58 ,then what be the correlation coefficient between u and v ?

(a)   0.58   (b) $- 0.58$ (c) $- 0.84$ (d)   0.84

38.   The regression coefficients are zero if r is equal to :

(a)   0   (b) ± 1 (c) -1 (d)   1

39.   In straight trend line equation $Y = a + bX$; a is called _____

(a)   X – intercept   (b)   Y – intercept

(c)   Slope   (d)   None of them

40.   If a random variable x assumes the values 0, 1 and 2 with probabilities 0.30, 0.50 and 0.20, then its expected value is

(a)   1.50   (b)   3   (c)   0.90   (d)   1

41.   If $P(A) = 2/3$, $P(B) = ¾$, $P(A/B) = 2/3$, then what is $P(B /A)$?

(a)   1/3   (b)   2/3   (c)   3/4   (d)   1/2

42.   An important continuous probability distribution

(a)   Binomial distribution   (b)   Poisson distribution

(c)   Geometric distribution   (d)   Normal distribution

43.   Purchasing Power of Money is

(a)   Reciprocal of price index number   (b)   Equal to price index number

(c)   Unequal to price index number   (d)   None of these

44.   If y = 3x + 4 is the regression line y on x and the arithmetic mean of x is −1, what is the arithmetic mean of y

(a)   1   (b)   − 1   (c)   7   (d)   none of these

45.   Which one is not a condition of Poisson model ?

(a)   the probability of having success in a small time interval is constant.

(b)   the probability of having success more than one in a small time interval is very small.

(c)   the probability of having success in a small interval is independent of time and also of earlier success.

(d)   the probability of having success in a small time interval (t, t + dt) is kt for a positive constant k.

46.   46.   Consider to regression line 3x + 2y = 26, 6x + y = 31. Find the correlation coefficient between x and y

(a)   0.5   (b)   − 0.5   (c)   0.25   (d)   − 0. 25

47.   If x is a binomial variate with parameter 15 and 1/3, what is the value of mode of the distribution ?

(a)   5 and 6   (b)   5   (c)   5.50   (d)   6

48.   In 1996 the average price of a commodity was 20% more than in 1995 but 20% less than in 1994; and more over it was 50% more than in 1997 to price relatives using 1995 as base (1995 price relative 100). Reduce the data is :

(a)   150, 100, 120, 80 for (1994 – 97)   (b)   135, 100, 125, 87 for (1994 – 97)

(c)   140, 100, 120, 80 for (1994 – 97)   (d)   None of these

49.   What is the standard deviation of the number of recoveries among 48 patients when the probability of recovering is 0.75 ?

(a)   36   (b)   81   (c)   9   (d)   3

50.   If r = 0.4, N = 10, then the probable error of r is :

(a)   0.194   (b)   0.174   (c)   0.18   (d)   0.124