

MATHS, STATS & REASONING

All Questions is compulsory.

- (1) A is a square matrix of order 3 and $|A|=7$ then the value of $|\text{adj}A|$ is:-
 - (a) 343
 - (b) 7
 - (c) 49
 - (d) 21
- (2) If $A = \begin{bmatrix} 5 & x \\ y & 0 \end{bmatrix}$ and $A = A^T$, then
 - (a) $x=0, y=5$
 - (b) $x + y = 5$
 - (c) $x = y$
 - (d) None of the above
- (3) Let A^T be the transpose of matrix A having order $m \times n$, then $A^T A$ is a matrix of order-
 - (a) $m \times m$
 - (b) $n \times n$
 - (c) $m \times n$
 - (d) $n \times m$
- (4) A sum was invested for 3 years as per C.I and the rate of interest for first year is 9%, 2nd year is 6% and 3rd year is 3% p.a. respectively. Find the sum if the amount in three years is Rs. 550?
 - (a) Rs. 250
 - (b) Rs. 300
 - (c) Rs. 462.16
 - (d) Rs. 350
- (5) If three observations are 40, 50 and x and Geometric Mean is 10 find the value of x .
 - (a) 2
 - (b) 4
 - (c) $1/2$
 - (d) None of these
- (6) Average of first three observation is 14 and average of next two observation is 18 find average of are five observations.
 - (a) 14.5
 - (b) 15
 - (c) 14
 - (d) 15.6
- (7) Which is true from the following.
 - (a) $Q.D < M.D. < S.D$
 - (b) $Q.D > M.D > S.D$
 - (c) $Q.D < S.D < M.D$
 - (d) $Q.D > S.D > M.D$

- (8) The Standard Deviation of first n natural numbers is 2 find the value of n .
- 12
 - 7
 - 9
 - 5
- (9) If $2^{x^2} = 3^{y^2} = 12^{z^2}$ then
- $\frac{1}{x^2} + \frac{1}{y^2} = \frac{1}{z^2}$
 - $\frac{1}{x^2} + \frac{2}{y^2} = \frac{1}{z^2}$
 - $\frac{2}{x^2} + \frac{1}{y^2} = \frac{1}{z^2}$
 - None
- (10) If in two years time a principal of Rs. 100 amounts to Rs. 121 when the interest at the rate of $r\%$ is compounded annually, then the value of r will be :
- 10.5
 - 10
 - 15
 - 14
- (11) A certain sum of money Q was deposited for 5 year and 4 months at 4.5% simple interest and amounted to Rs. 248, then the value of Q is :
- Rs. 200
 - Rs. 210
 - Rs. 220
 - Rs. 240
- (12) Standard Deviation is independent of change of _____.
- Origin
 - Scale
 - Both
 - None of these
- (13) If two variable are uncorrelated then regression lines are .
- Parareel
 - Perpendicular
 - Coincide
 - 45° Angled
- (14) If covariance between two variables is 25
 Variance (x) = 36
 Variance (y) = 25 Find r .
- 0.409
 - 0.419
 - 0.833
 - 0.027

- (15) In simple interest if the principal is Rs. 2,000 and the Rate and time are the Roots of the equation $x^2 - 11x + 30 = 0$ then the simple interest is _____
- Rs. 500
 - Rs. 600
 - Rs. 700
 - Rs. 800
- (16) The Effective Rate of interest does not depend upon
- Amount of Principal
 - Amount of interest
 - Number of Conversion periods
 - None of these
- (17) Determine the present value of perpetuity of Rs. 50,000 per month @ Rate of interest 12% p.a. is _____
- Rs. 45,00,000
 - Rs. 50,00,000
 - Rs. 55,00,000
 - Rs. 60,00,000
- (18) Is x and y are A.M and σ_x, σ_y are SD and b_{xy}, b_{yx} are regression coefficients then intersecting points of two regression lines are
- (\bar{x}, \bar{y})
 - σ_x, σ_y
 - (b_{yx}, b_{xy})
 - (σ_x^2, σ_y^2)
- (19) Correlation coefficient between x and y is equal to _____ of regression coefficients
- A.M
 - G.M
 - H.M
 - None of these
- (20) If two regression lines are $8x - 10y + 66 = 0$ and $40x - 18y = 214$ then find the value of r .
- 1
 - 0.6
 - 0.6
 - 1
- (21) If A and B are two events $P(A) = \frac{1}{2}$, $P(B) = \frac{5}{8}$, $P(A \cup B) = \frac{3}{4}$ find $P(\bar{A} \cap \bar{B})$
- $\frac{3}{4}$
 - $\frac{1}{4}$
 - $\frac{3}{16}$
 - None of these

- (22) If mode is 18 and A.M is 24 find median
 (a) 18
 (b) 24
 (c) 22
 (d) 21
- (23) A person deposited a sum of Rs. 10,000 in a bank. After 2 years, he withdrew Rs. 4,000 and at the end of 5 years, he received an amount of Rs. 7,900; then the rate of simple interest is:
 (a) 6%
 (b) 5%
 (c) 10%
 (d) None of these
- (24) A man invests an amount of Rs. 15,860 in the names of his three Sons A, B and C in such a way that they get the same amount of interest after 2, 3 and 4 years respectively. If the rate of simple interest is 5% p.a., then the ratio of amount invested in the names of A, B and C is :-
 (a) 6 : 4 : 3
 (b) 3 : 4 : 6
 (c) 30 : 12 : 15
 (d) None
- (25) A bag contains 4 red, 3 black and 2 white balls, in how many ways 3 balls can be drawn from this bag so that they include at least one black ball?
 (a) 64
 (b) 46
 (c) 85
 (d) None of the above
- (26) If $A = \{a, b, c, d\}$; $B = \{p, q, r, s\}$ which of the following relation is a function from A to B
 (a) $R_1 = \{(a, p), (b, q), (c, s)\}$
 (b) $R_2 = \{(p, a), (b, r), (d, s)\}$
 (c) $R_3 = \{(b, p), (c, s), (b, r)\}$
 (d) $R_4 = \{(a, p)(b, r)(c, q), (d, s)\}$
- (27) If average of 50 person is 2850 Rs. but later on it was discovered one person salary is wrongly taken as 8000 instead of 7800 find correct mean.
 (a) Rs. 5,854
 (b) Rs. 5,846
 (c) Rs. 5,650
 (d) Rs. 2,846
- (28) Intersecting point of less than ogive and more than ogive curve -
 (a) Mean
 (b) Mode
 (c) Median
 (d) 10th Percentile

- (29) Standard Deviation x is σ find SD of $\frac{ax+b}{c}$ -
- (a) $\left| \frac{a}{c} \right| \sigma$
- (b) $\left| \frac{b}{c} \right| \sigma$
- (c) $\left| \frac{c}{a} \right| \sigma$
- (d) None of these
- (30) If $A = \{1,2,3,4,5,6,7,8,9\}$
 $B = \{1,3,4,5,7,8\}$; $C = \{2,6,8\}$ then find $(A - B) \cup C =$
- (a) $\{2,6\}$
- (b) $\{2,6,8\}$
- (c) $\{2,6,8,9\}$
- (d) None of these
- (31) If ${}^{11}C_x = {}^{11}C_{2x-4}$ and $x \neq 4$ then the value of ${}^7C_x =$
- (a) 20
- (b) 21
- (c) 22
- (d) 23
- (32) If $\log_9^x + \log_3^x = \frac{3}{2}$ then x is
- (a) 0
- (b) 1
- (c) $\frac{9}{4}$
- (d) 3
- (33) If $x+y, y+z, z+x$ are in the ratio 6:7:8 and $x + y + z = 14$ then the value of z is
- (a) 6
- (b) 7
- (c) 8
- (d) 10
- (34) To check the consistency of two data which measure of dispersion will be used-
- (a) QD
- (b) SD
- (c) CV
- (d) None of these
- (35) The Sum of difference between ranks for spearman rank correlation coefficient is -
- (a) 0
- (b) 1
- (c) -1
- (d) +2

- (36) Correlation coefficient between x and y is -0.38 and $3x + 5u = 3$ and $-8y - 7v = 44$ are linear relations between x and u and v and y then find rvu -
- 0.38
 - -0.38
 - 0.40
 - None of these
- (37) $5x - 6y + 9 = 0$ and $15x - 8y + 130 = 0$ find r
- $4/5$
 - $3/4$
 - $2/3$
 - $1/2$
- (38) Odds against to solve a problem for person A is $4 : 3$ and for person B odds favour ratio is $7 : 5$ find probability that problem solved
- $11/21$
 - $16/21$
 - $17/31$
 - $13/21$
- (39) The missing number in the series : $7, 23, 47, 119, 167, ?$
- 211
 - 223
 - 287
 - 319
- (40) Which of the following is odd one :-
- CEHL
 - KMPT
 - OQTX
 - NPSV
- (41) Gopal started walking 2 km straight from his school. Then he turned right and walked 1 km. Again he turned right and walked 1 km to reach his house. If his house is south-east from his school, then in which direction did Gopal start walking from the school ?
- East
 - West
 - South
 - North
- (42) If $f'(x) = 3x^2 + 2$ & $f(0) = 0$ then find $f(2)$.
- 8
 - 10
 - 12
 - None of these
- (43) 5 chairs and 3 tables cost of Rs. 350 . and 3 Chairs and 5 tables cost Rs. 370 . What is the cost of the one table and two chairs?
- Rs. 130
 - Rs. 120
 - Rs. 150
 - Rs. 140

- (44) If $Y = 1 + x + x^2 + \dots \infty$ then $x =$
- $\frac{y-1}{y}$
 - $\frac{y+1}{y}$
 - $\frac{y}{y+1}$
 - $\frac{y}{y-1}$
- (45) The value of N in $\frac{1}{7!} + \frac{1}{8!} = \frac{N}{9!}$ is :
- 81
 - 78
 - 89
 - 64
- (46) $A = \{1, 2, 3, 4, \dots, 10\}$ a relation on A , $R = \{(x, y) / x + y = 10, x \in A, y \in A, X \geq Y\}$ then Domain of R^{-1} is
- $\{1, 2, 3, 4, 5\}$
 - $\{0, 3, 5, 7, 9\}$
 - $\{1, 2, 4, 5, 6, 7\}$
 - $\{6, 7, 8, 9\}$
- (47) If the Cost of function of a commodity is given by $C = 150x - 5x^2 + \frac{x^3}{6}$, where C stands for cost and x stands for output. If the average cost is equal to the marginal cost then the output $x =$ _____
- 5
 - 10
 - 15
 - 20
- (48) A Bag contains 6 Red and some Blue ball is probability of Blue ball is double of Red bare find the number of blue ball in Bag.
- 10
 - 12
 - 14
 - 15
- (49) Two dice are rolled find probability that one dice have multiple of 3 other dice have multiple of 2
- $\frac{2}{3}$
 - $\frac{1}{6}$
 - $\frac{1}{3}$
 - None of these

- (50) A person facing North 70° clockwise direction moving in clockwise and 300° clockwise direction. Now, in which direction he presently facing.
- North-West
 - South-East
 - North-East
 - Sought-West
- (51) Next term of the series :
7, 11, 13, 17, 19, 23, 25, 29, ?
- 30
 - 31
 - 32
 - 33
- (52) If an examination a candidate was to pass in each of the 4 papers. In how many different ways can be failed?
- 14
 - 16
 - 17
 - 15
- (53) If a, b, c are in A.P. then (b+c), (c+a), (a+b) are in _____
- AP
 - GP
 - HP
 - None
- (54) If $x^{2a-3}y^{2a} = x^{6-a}y^{5a}$ then the value of $a \log \frac{x}{y}$ is :
- $\log x$
 - $3 \log x$
 - $6 \log x$
 - $4 \log x$
- (55)
- | | | | | | |
|---|------|-----|-----|------|------|
| x | -20 | -10 | 30 | 75 | 80 |
| p | 3/20 | 1/5 | 1/2 | 1/10 | 1/20 |
- Find expected value of probability distribution
- 20.5
 - 22.5
 - 21.5
 - 4.5
- (56) x varies poison distribution and $E(x^2) = 30$ find the variance of distribution
- 7
 - 5
 - 30
 - 20
- (57) For normal distribution
- First and second Quartile have same distance from median
 - Second and third Quartile have same distance from median
 - First and third Quartile have same distance from median
 - None of these

- (58) In how many ways 6 men can sit at a round table so that all shall not have the same neighbour in any two occasions?
- 5!
 - $5! \div 2$
 - $(7!)^2$
 - 7!
- (59) Ravi's father has a son Rohit who has an aunt Laxmi who has a husband Rao whose father-in-law is Mohan. What is the relation of Mohan to Ravi ?
- Nephew
 - Grandfather
 - Son
 - Uncle
- (60) Six persons M, N, O, P, Q and R are sitting in two row with three persons in each row, Both the row are in front of each other. Q is not at the end of any row. P is second the left of R. O is the neighbour of Q and diagonally opposite to P. N is the neighbour of R. Who is in front N ?
- R
 - Q
 - P
 - M
- (61) Madhuri moved a distance of 75 meters toward north. She then turned to the left and walking for about 25m, turned left again and walks 80m, finally she turned to the right at an angle of 45° . In which direction was she moving finally?
- South – East
 - South – West
 - North – west
 - North – East
- (62) A man deposited Rs. 8,000 in a bank for 3 years at 5% per annum compound interest, after 3 years he will get :
- Rs. 8,800
 - Rs. 9,261
 - Rs. 9,200
 - Rs. 9,000
- (63) In a G.P. If the fourth term is '3' then the product of first seven terms is
- 3^5
 - 3^7
 - 3^6
 - 3^8
- (64) Binomial distribution tends to poison distribution with two parameters n and p as
- $n \rightarrow \infty, p \rightarrow 0$
 - $p \rightarrow 0, np \rightarrow \lambda$
 - $n \rightarrow \infty, np \rightarrow \lambda$
 - $n \rightarrow \infty, p \rightarrow 0, np \rightarrow \lambda$

- (65) in normal distribution $QD=6$ find SD
- 4
 - 9
 - 7
 - 6
- (66) A worker earn monthly 3000. The consumer price index of 1985 based on 1980 is 250 find the dearness allowance :
- Rs. 4,000
 - Rs. 4,800
 - Rs. 5,500
 - Rs. 4,500
- (67) Fisher = 150
Paache = 140
Find Laspayres
- 147.77
 - 156.25
 - 140.17
 - 138.08
- (68) A card is drawn from playing cards find the probability that it would be Red or King.
- $1/4$
 - $4/13$
 - $7/13$
 - $1/2$

(Directions Q 69 to 72) Two or Three statements are followed by two conclusions I and II, you have to take the two given statements to be true, disregarding the commonly known facts and then decide which of the given conclusions logically follows from the two given statements?

- (69) **Statement:** All students are boys.
No boy is dull
- Conclusions:** I. There are no girls in the class
II. No student is dull.
- Only I follows
 - Only II follows
 - Both I and II follows
 - Neither I nor II follows
- (70) **Statement:** All tables are rats
Some Rats are chairs.
- Conclusions:** I. All rats are tables
II. Some chairs are not rats.
- Only I follows
 - Only II follows
 - Either I or II follows
 - Neither I nor II follows

- (71) **Statement:** Some trees are monkeys.
Some ships are trees.
- Conclusions:** I. Some Monkeys are ships.
II. Some trees are neither ships nor monkeys.
- (a) Only conclusion I follows.
(b) Only conclusion II follows.
(c) Neither I nor II follows.
(d) Both conclusion I and II follows.
- (72) **Statement:** Only dogs are animals.
No historian is an animal.
- Conclusions:** I. Some dogs are not historians.
II. Some historians are not dogs.
- (a) Only conclusion I follows.
(b) Only conclusion II follows.
(c) Both conclusions are correct.
(d) Neither I nor II follows.
- (73) If a coin tossed two times it two heads comes person receive 5 Rs. it one head appear person receive 2 Rs. and if no head appear receive 1 Rs. then expected income is :-
- (a) 3.5
(b) 2.5
(c) 4.5
(d) 5.5
- (74) The probability of Arun selected in exam is $\frac{1}{3}$ and Tarun selected probability is $\frac{1}{5}$
find the probability that only one of them selected :
- (a) $\frac{2}{5}$
(b) $\frac{4}{5}$
(c) $\frac{6}{5}$
(d) $\frac{8}{15}$
- (75) For Binomial distribution
- (a) Variance < Mean
(b) Variance > Mean
(c) Variance = Mean
(d) None of these
- (76) If x is a poison variate and $E(x)=1$ $P(x>1)$
- (a) $1 - \frac{e^{-1}}{2}$
(b) $1 - e^{-1}$
(c) $1 - 2e^{-1}$
(d) $1 - \frac{5}{2}e^{-1}$

(77) If a random variable x have probability density function $= \frac{e^{-(x-4)^2}}{\sqrt{\pi}}, -\infty < x < \infty$ Find

Mean and Variance

- (a) $4, 1/2$
- (b) $4, 1/\sqrt{2}$
- (c) $2, 2$
- (d) $2, 1/2$

(78) If $f(x) = x^2$ and $g(x) = \sqrt{x}$ then

- (a) $g \circ f(3) = 3$
- (b) $g \circ f(-3) = 9$
- (c) $g \circ f(9) = 3$
- (d) $g \circ f(-9) = 3$

(79) $\int_2^3 \frac{\sqrt{x}}{\sqrt{5-x} + \sqrt{x}} dx =$

- (a) 1
- (b) 2
- (c) $1/2$
- (d) $3/2$

(80) $[1 \ 2 \ 3] \begin{bmatrix} \log_{10} 2 \\ \log_{10} 3 \\ \log_{10} 4 \end{bmatrix} =$

- (a) $\log_{10} (1521)$
- (b) $\log_{10} (1152)$
- (c) $\log_{10} (5211)$
- (d) $\log_{10} (2151)$

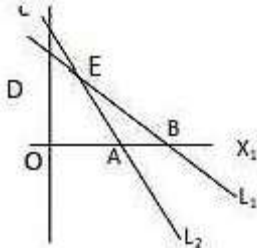
(81) Let α and β be the roots of $x^2 + 7x + 12 = 0$. Then the value of $(\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha})$ will be

- (a) $\frac{7}{12} + \frac{12}{7}$
- (b) $\frac{49}{144} + \frac{144}{49}$
- (c) $-\frac{91}{12}$
- (d) None of the above

(82) The solution set of the in equation $x + 2 > 0$ and $2x - 6 > 0$ is

- (a) $(-2, \infty)$
- (b) $(3, \infty)$
- (c) $(-\infty, -2)$
- (d) $(-\infty, -3)$

- (83) The common region represented by the following inequalities
 $L_1 = X_1 + X_2 \leq 4$; $L_2 = 2X_1 + X_2 \geq 6$



- (a) OABC
 (b) Outside of OAB
 (c) $\triangle BCE$
 (d) $\triangle ABE$
- (84) The number of diagonals in a polygon of 6 sides :
 (a) 9
 (b) 8
 (c) 6
 (d) 12
- (85) Find the next term of the series BKS, DJT, FIU, HHV, ?
 (a) GWJ
 (b) JGW
 (c) GJW
 (d) None
- (86) If PLAY is coded as 8123 and RHYME is coded as 49367. What will be code of MALE ?
 (a) 6217
 (b) 6198
 (c) 6395
 (d) 6285
- (87) Six, children A, B, C, D, E and F are standing in a row. B is between F and D. E is between A and C. A does not stand next to F or D. C does not stand next to D. F is between which of the following pairs of children?
 (a) B and E
 (b) B and C
 (c) B and D
 (d) B and A
- (88) Find odd One out :
 4, 12, 44, 176, 890
 (a) 4
 (b) 12
 (c) 44
 (d) 176
- (89) In a certain code DESIGN is written as FCUGIL, how is REPORT written in that code?
 (a) TCRMPR
 (b) TCRMTR
 (c) TCTMPR
 (d) TCTNTR

- (90) Certain sum of money borrowed at simple interest amount to Rs. 2688 in three years and to Rs. 2784 in four years at the rate per annum equal to :
- 6%
 - 7%
 - 5%
 - 4%
- (91) If $y^3 \cdot x^5 = (x+y)^8$, $\frac{dy}{dx}$ is :
- $\frac{y}{x}$
 - $\frac{-y}{x}$
 - $\frac{y^5}{x^3}$
 - None of these
- (92) If $A = \{1, 2, 3, 4, 5\}$ and $B = \{6, 7, 8\}$, then cardinal number of $A \times B$ is:
- 15
 - 5
 - 3
 - 8
- (93) P, Q, R, S, T, U are 6 members of a family in which there are two married couples. T, a teacher is married to a doctor who is mother of R and U. Q the lawyer is married to P. P has one son and one grandson of the two married ladies one is housewife. There is also one student and one male engineer in the family. Which of the following is true about the grand-daughter of the family?
- She is a lawyer
 - She is an engineer
 - She is a student
 - She is a doctor
- (94) Six members of a family namely A, B, C, D, E and F are travelling together. 'B' is the son of C but C is not the mother of B. A and C are married couple. E is the brother of C, D is the daughter of A. F is the brother of B. How many male members are there in the family ?
- 3
 - 2
 - 4
 - 1
- (95) R and S are brothers. X is the sister of Y and X is mother of R. What is Y to S ?
- Uncle
 - Brother
 - Father
 - Mother

- (96) Random Variable can be
 (a) Positive
 (b) Negative
 (c) Zero
 (d) All of these
- (97) Skewness of normal distribution is
 (a) Positive
 (b) Negative
 (c) Zero
 (d) None of these
- (98) 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 find coefficient of variation :
 (a) 54.23
 (b) 4.69
 (c) 8.5
 (d) None of these
- (99) $f(x) = \frac{1}{\sqrt{2\pi}} \times e^{-\frac{z^2}{2}}$ $-\infty < z < \infty$ Z refers to
 (a) Poison Variate
 (b) Normal Variate
 (c) Standard Normal Variate
 (d) Biometric Table
- (100) Time Series is a set of data which is arranged in a chronological order definition is given by :-
 (a) Ya lun chou
 (b) Kenny and Keeping
 (c) Crowxton and Cowden
 (d) Spigel

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