ISBN - 978-93-5586-313-3

Scanner Appendix

CMA Foundation (2022 Syllabus)
(Questions and Answers of December - 2023)

Paper - 3 : Fundamentals of Business Mathematics and Statistics

Section A : Fundamentals of Business Mathematics

Chapter - 1 : Arithmetic

2023 - Dec [1] The age of two persons are in the ratio 4:3. If the age of the younger person is 8 years less than the other, then the age of the elder person is:
(a) 40
(b) 32
(c) 44
(d) 36
Answer: **(2 marks)**
(b) 32

2023 - Dec [2] If 15 men working 8 hours a day can complete a piece of work in 25 days, find how many days will be taken by 12 men working 10 hours a day to complete it.
(a) 20
(b) 30
(c) 25
(d) 15
Answer: **(2 marks)**
(c) 25

2023 - Dec [3] Mean proportional between 0.20 and 0.05 is:
(a) 0.1
(b) 0.2
(c) 0.3
(d) 0.12
Answer: **(2 marks)**
(a) 0.1

2023 - Dec [4] A person deposited ₹ 1,000 in a bank at 4% p.a. simple interest. What will be the amount after 10 years?
(a) ₹ 1,500
(b) ₹ 1,400
(c) ₹ 1,300
(d) ₹ 1,600
Answer: **(2 marks)**
(b) ₹ 1,400

2023 - Dec [5] A sum of ₹ 10,000 deposited C.I. becomes double after 5 years. After 20 years it will become:
(a) ₹ 1,20,000
(b) ₹ 2,00,000
(c) ₹ 1,50,000
(d) ₹ 1,60,000
Answer: **(2 marks)**
(d) ₹ 1,60,000

2023 - Dec [6] The 7th term of an A.P. 2, 5, 8, 11, ... is:
(a) 18
(b) 14
(c) 20
(d) 15
Answer: **(2 marks)**
(c) 20

2023 - Dec [7] Find 8th term of the series, 128, 64, 32, ...

(a) $\frac{1}{4}$

(b) -1

(c) $-\frac{1}{2}$

(d) 1 **(2 marks)**

Answer:

(d) 1

2023 - Dec [8] A takes 4 hours to cover a distance 80 km and B takes 5 hours to cover the same distance. How much distance would A cover more than B in 15 hours?

(a) 40 km

(b) 60 km

(c) 55 km

(d) 45 km **(2 marks)**

Answer:

(b) 60 km

Chapter - 2 : Algebra

2023 - Dec [9] If P and Q are two sets then P ∆ Q is equal to:

(a) $P \cap Q$

(b) P - Q

(c) $(P - Q) \cup (Q - P)$

(d) $(P - Q) \cap (Q - P)$ **(2 marks)**

Answer:

(c) $(P - Q) \cup (Q - P)$

2023 - Dec [10] If the sets A = {2, 4, 6}, B = {2, 3, 5} and C = {1, 2, 5, 6}, then $A \cup (B \cap C)$ is:

(a) {2, 4, 5, 6} (b) {2, 5}

(c) {2} (d) {1, 2, 3, 4, 5, 6} **(2 marks)**

Answer:

(a) {2, 4, 5, 6}

2023 - Dec [11] If $3^{2x+4} = 3^{3x}$, then the value of x is:

(a) 1

(b) 2

(c) 3

(d) 4 **(2 marks)**

Answer:

(d) 4

2023 - Dec [12] If $\log_{10} 7 = a$, then $\log_{10} \frac{1}{70}$ is equal to:

(a) $\frac{a}{10}$

(b) $\frac{1}{10a}$

(c) $-(1 + a)$

(d) $(1 + a)-1$ **(2 marks)**

Answer:

(c) $-(1 + a)$

2023 - Dec [13] If $\log_2 (\log_3 (\log_2 x)) = 1$, find the value of x.

(a) 512

(b) 624

(c) 484

(d) 496 **(2 marks)**

Answer:

(a) 512

2023 - Dec [14] If ${}^{10}p_r$ is 720, then the value of r is:

(a) 3

(b) 4

(c) 5

(d) 6 **(2 marks)**

Answer:

(a) 3

2023 - Dec [15] In how many ways can the colours of the rainbow be arranged so that the red and blue colours are always separated?
(a) 3000
(b) 4000
(c) 4200
(d) 3600
(2 marks)
Answer:
(d) 3600

2023 - Dec [16] There are 7 questions in an examination, out of which 2 are difficult. In how many ways a student can select 4 questions so that 2 difficult questions are included?
(a) 5
(b) 10
(c) 35
(d) 20
(2 marks)
Answer:
(b) 10

2023 - Dec [17] The roots of the equation $x^2 - 5x + 6 = 0$ are:
(a) (6, -1)
(b) (-2, 3)
(c) (1, -6)
(d) (2, 3)
(2 marks)
Answer:
(d) (2, 3)

2023 - Dec [18] If the sum of two roots of the quadratic equation $(a+1)x^2 + (2a + 3)x + (3a + 7) = 0$ be -1, then the value of a is:
(a) 0
(b) 1
(c) -2
(d) -3
(2 marks)
Answer:
(c) -2

Chapter - 3 : Calculus -Application in Business

2023 - Dec [19] If $y = xe^x$, then $\frac{dy}{dx}$ is:
(a) e^x
(b) $(x + 1)e^x$
(c) $x + e^x$
(d) $1 + e^x$
(2 marks)
Answer:
(b) $(x + 1)e^x$

2023 - Dec [20] If C(x) and R(x) be the cost function and the revenue function respectively, the break-even point can be found out when (x being the output)
(a) C(x) = R(x)
(b) C(x) > R(x)
(c) C(x) < R(x)
(d) R(x) = 0
(2 marks)
Answer:
(a) C(x) = R(x)

Section B : Fundamentals of Business Statistics

Chapter - 4 : Statistical Representation of Data

2023 - Dec [21] Fill in the gap :
The _____ of a class is the frequency obtained by adding the frequencies of all classes preceding the given class.
(a) relative frequency
(b) cumulative frequency (greater than)
(c) average frequency
(d) cumulative frequency (less than)
(2 marks)
Answer:
(b) cumulative frequency (greater than)

2023 - Dec [22] The numbers of Science, Arts and Commerce graduates in a company are 30, 70 and 50 respectively. If these figures are represented by a pie-chart, then what is the angle corresponding to Science graduates?

(a) 36°
(b) 72°
(c) 120°
(d) 168° **(2 marks)**

Answer:
(b) 72°

Chapter - 5 : Measures of Central Tendency and Dispersion

2023 - Dec [23] The arithmetic mean for the series 2, 3, 5, 7, 9, 4 is:
(a) 4
(b) 9
(c) 5
(d) 7 **(2 marks)**

Answer:
(c) 5

2023 - Dec [24] The median of the data 13, 16, 19, 15, 20, 17 is:
(a) 16.5
(b) 16
(c) 15.5
(d) 17 **(2 marks)**

Answer:
(a) 16.5

2023 - Dec [25] If the mean and median of a certain set of observations be ₹ 26.25 and ₹ 32.50 respectively, then the approximate value of mode is:
(a) ₹ 45.50 (b) ₹ 44
(c) ₹ 45 (d) ₹ 46 **(2 marks)**

Answer:
(c) ₹ 45

2023 - Dec [26] The sum of deviations of 24 observations measured from 4 is 276. Mean of the observations is:
(a) 12.8 (b) 15.5
(c) 12 (d) 14 **(2 marks)**

Answer:
(b) 15.5

2023 - Dec [27] The A.M. of 100 observations is 40. Later on, it was found that the two observations 52 and 28 were wrongly copied as 44 and 86. Find the correct mean.
(a) 39.5
(b) 40.2
(c) 39.7
(d) 40.6 **(2 marks)**

Answer:
(a) 39.5

2023 - Dec [28] The mean deviation of the numbers 95, 33, 88, 68, 32, 80, 48, 70 from the median is:
(a) 21
(b) 24
(c) 19
(d) 16 **(2 marks)**

Answer:
(c) 19

2023 - Dec [29] For a skewed distribution mean = 100, median = 98.5 and s.d. = 9. Then the coefficient of skewness is:
(a) -0.50
(b) 0.17
(c) 0.33
(d) 0.50 **(2 marks)**

Answer:
(d) 0.50

2023 - Dec [30] If the sum of squares of the deviations of 10 observations taken from mean 50 is 250, then C.V. is:
(a) 10%
(b) 12%
(c) 20%
(d) 15% **(2 marks)**

Answer:
(a) 10%

Chapter - 6 : Correlation and Regression

2023 - Dec [31] If var (x) = 6.25, var (y) = 4 and cov (x, y) = 0.9, then the coefficient of correlation between x and y is:

(a) 0.25
(b) 0.18
(c) 0.32
(d) 0.29 **(2 marks)**

Answer:

(b) 0.18

2023 - Dec [32] For 10 sets of ranks of two variables x and y the sum of squares of differences between the ranks is 30. Find the rank correlation coefficient.

(a) $\frac{7}{13}$

(b) $\frac{9}{17}$

(c) $\frac{5}{7}$

(d) $\frac{9}{11}$ **(2 marks)**

Answer:

(d) $\frac{9}{11}$

2023 - Dec [33] If the two regression lines corresponding to two variables x and y meet at a point (2, 3), var(x)=4, var(y)=1 and correlation coefficient between x and y is $\frac{1}{2}$, find the estimated value of y for x = 6.

(a) 8
(b) 10
(c) 4
(d) 12 **(2 marks)**

Answer:

(b) 10

2023 - Dec [34] If the regression lines are perpendicular to each other, then the correlation coefficient between the variables is:

(a) 0
(b) -1
(c) 1
(d) 0.5 **(2 marks)**

Answer:

(a) 0

2023 - Dec [35] Which one of the following statements is TRUE?

(a) The scatter diagram gives precise degree of correlation.
(b) The scatter diagram is amenable to further mathematical treatment.
(c) The scatter diagram is the graphical representation of the relation between two variables.
(d) All points in a scatter diagram lie on a straight line when the correlation coefficient is zero. **(2 marks)**

Answer:

(c) The scatter diagram is the graphical representation of the relation between two variables.

2023 - Dec [36] The slope of the regression line y on x is:

(a) b_{xy}
(b) b_{xx}
(c) b_{yy}
(d) b_{yx} **(2 marks)**

Answer:

(d) b_{yx}

2023 - Dec [37] The correlation coefficient between two variables lies between:

(a) 0 and 1
(b) -1 and 1
(c) -1 and 0
(d) 0 and 0.5 **(2 marks)**

Answer:

(b) -1 and 1

Chapter - 7 : Probability

2023 - Dec [38] What is the probability of getting a sum 3 if two dice are thrown together?

(a) $\frac{1}{18}$

(b) $\frac{1}{9}$

(c) $\frac{2}{3}$

(d) $\frac{1}{36}$ **(2 marks)**

Answer:

(a) $\frac{1}{18}$

2023 - Dec [39] Two unbiased coins are tossed. The probability of getting at most one head is:

(a) $\frac{1}{2}$

(b) $\frac{1}{3}$

(c) $\frac{3}{4}$

(d) $\frac{1}{6}$ **(2 marks)**

Answer:

(c) $\frac{3}{4}$

2023 - Dec [40] The probability of A hitting the target is $\frac{1}{5}$ and the probability of B not hitting the target is $\frac{3}{4}$. The probability of hitting the target is:

(a) $\frac{3}{5}$

(b) $\frac{2}{3}$

(c) $\frac{1}{4}$

(d) $\frac{2}{5}$ **(2 marks)**

Answer:

(d) $\frac{2}{5}$

2023 - Dec [41] Two cards are drawn from a well shuffled pack of cards. The probability of getting two hearts is:

(a) $\frac{2}{17}$

(b) $\frac{1}{17}$

(c) $\frac{3}{17}$

(d) $\frac{5}{17}$ **(2 marks)**

Answer:

(b) $\frac{1}{17}$

2023 - Dec [42] Given $P(B) = \frac{1}{3}$, $P(AB) = \frac{1}{4}$, then $P(A|B)$ is:

(a) $\frac{1}{2}$

(b) $\frac{3}{4}$

(c) $\frac{1}{4}$

(d) $\frac{1}{3}$ **(2 marks)**

Answer:

(c) $\frac{1}{4}$

2023 - Dec [43] The probability of an impossible event is:
(a) -1
(b) 1
(c) 0.5
(d) 0 **(2 marks)**
Answer:
(d) 0

2023 - Dec [44] If X and Y be two independent events, then P(XY) is equal to:
(a) P(X)P(Y)
(b) P(X) + P(Y)
(c) P(X) - P(Y)
(d) P(X)/P(Y) **(2 marks)**
Answer:
(b) P(X) + P(Y)

2023 - Dec [45] The chances of getting a defective screw from two boxes A and B are $\frac{1}{5}$ and $\frac{1}{6}$ respectively. A box is selected at random and a screw is drawn at random from the selected box. It is found to be defective. Find the probability that it came from box A.
(a) $\frac{5}{11}$
(b) $\frac{2}{11}$
(c) $\frac{6}{11}$
(d) $\frac{4}{11}$ **(2 marks)**
Answer:
(b) $\frac{2}{11}$

Chapter - 8 : Index Numbers and Time Series

2023 - Dec [46] Given $\sum p_1q_0 = 162.6$, $\sum p_0q_0 = 110.4$, $\sum p_1q_1 = 140.4$. Find the Laspeyres' price index number.
(a) 147.28
(b) 86.34
(c) 127.17
(d) 115.81 **(2 marks)**
Answer:
(c) 127.17

2023 - Dec [47] Consider the following:

Year	2001	2002	2003	2004	2005	2006
Annual sales (₹ '0000)	3.6	4.3	4.3	3.4	4.4	5.4

5-year moving average for the year 2004 is:
(a) 3.80
(b) 4.36
(c) 4.00
(d) 4.18 **(2 marks)**
Answer:
(b) 4.36

2023 - Dec [48] Given: Laspeyres' quantity index number = 120.69 and Paasche's quantity index number = 120.62. The Fisher's quantity index number is:
(a) 100.05
(b) 99.94
(c) 145.57
(d) 120.65 **(2 marks)**
Answer:
(d) 120.65

2023 - Dec [49] The prices of a commodity in the year 2010 and 2020 were ₹ 40 and ₹ 50 respectively. Find the price relative of 2020 taking 2010 as base year.

(a) 80
(b) 120
(c) 125
(d) 100 **(2 marks)**

Answer:

(a) 80

2023 - Dec [50] The component of a time series associated with the "long term increase in sale of TV sets" is:

(a) secular trend
(b) seasonal variation
(c) cyclical fluctuation
(d) irregular component **(2 marks)**

Answer:

(a) secular trend

Shuchita Prakashan (P) Ltd.
B-45/141, Street No. 5,
Guru Nanak Pura Laxmi Nagar,
Delhi - 110092
Visit us : www.scanneradda.com

FOR NOTE