# JEE MAIN + ADVANCED 

## MATHEMATICS

# TOPIC NAME <br> MEASURE OF CENTRAL TENDENCY AND DISPERSION 

(PRACTICE SHEET)

## LEVEL- 1

## Question based on

## Arithmetic Mean

Q. 1 Mean of first n natural numbers is-
(A) $\frac{\mathrm{n}(\mathrm{n}-1)}{2}$
(B) $\frac{\mathrm{n}(\mathrm{n}+1)}{2}$
(C) $\frac{(n+1)}{2 n}$
(D) $\frac{\mathrm{n}+1}{2}$
Q. 2 Following table shows the weight of 12 students:

| Weight (in kgs.) | 67 | 70 | 72 | 73 | 75 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| No. of students | 4 | 3 | 2 | 2 | 1 |

then mean weight is-
(A) 70.25 kg .
(B) 70.50 kg .
(C) 70.75 kg .
(D) None of these
Q. 3 A factory employs 100 workers of whom 60 work in the first shift and 40 work in the second shift. The average wage of all the 100 workers is Rs. 38 . If the average wage of 60 workers of the first shift is Rs. 40 , then the average wage of the remaining 40 workers of the second shift is-
(A) 35
(B) 40
(C) 45
(D) None of these
Q. 4 If $\bar{x}$ is the mean of a set of $n$ observations $x_{1}, x_{2}, x_{3}, \ldots ., x_{n}$ then $\sum_{i=1}^{n}\left(x_{i}-\bar{x}\right)$ is equal to
(A) M.D. about mean
(B) S.D.
(C) 0
(D) None of these
Q. 5 If the mean of 3, 4, $x, 7,10$ is 6 , then the value of x is-
(A) 4
(B) 5
(C) 6
(D) 7
Q. 6 Weighted mean is computed by the formula
(A) $\frac{\sum \mathrm{x}_{\mathrm{i}}}{\sum \mathrm{w}_{\mathrm{i}}}$
(B) $\frac{\sum \mathrm{w}_{\mathrm{i}}}{\sum \mathrm{x}_{\mathrm{i}}}$
(C) $\frac{\sum \mathrm{x}_{\mathrm{i}} \mathrm{w}_{\mathrm{i}}}{\sum \mathrm{w}_{\mathrm{i}}}$
(D) $\frac{\sum \mathrm{w}_{\mathrm{i}} \mathrm{x}_{\mathrm{i}}}{\sum \mathrm{x}_{\mathrm{i}}}$

The mean of a set of numbers is $\bar{x}$. If each number is increased by $\lambda$, the mean of the net set is-
(A) $\bar{x}$
(B) $\bar{x}+\lambda$
(C) $\lambda \bar{x}$
(D) None of these
Q. 8 The mean of a set of numbers is $\bar{x}$. If such number is multiplied by $\lambda$, then the mean of the new set is-
(A) $\overline{\mathrm{x}}$
(B) $\lambda+\bar{x}$
(C) $\lambda \bar{x}$
(D) None of these
Q. 9 The mean of the squares of first $n$ natural numbers is-
(A) $\frac{1}{2} n^{2}$
(B) $\frac{1}{8} \mathrm{n}(\mathrm{n}+1)$
(C) $\frac{1}{6} \mathrm{n}(2 \mathrm{n}+1)$
(D) $\frac{1}{6}(\mathrm{n}+1)(2 \mathrm{n}+1)$
Q. 10 For a continuous series the mean is computed by the following formula-
(A) Mean $=A+\frac{\sum f}{n}$
(B) Mean $=A+\frac{\sum \mathrm{d}}{\sum \mathrm{f}}$
(C) Mean $=\mathrm{A}+\frac{\sum \mathrm{f}}{\sum \mathrm{d}}$
(D) Mean $=\mathrm{A}+\frac{\sum \mathrm{fd}}{\sum \mathrm{f}}$
Q. 11 If the mean of first n natural numbers is equal to $\frac{\mathrm{n}+7}{3}$, then n is equal to-
(A) 10
(B) 11
(C) 12
(D) None of these
Q. 12 The mean of discrete observations $y_{1}, y_{2}, \ldots y_{n}$ is given by-
(A) $\frac{\sum_{i=1}^{n} y_{i}}{n}$
(B) $\frac{\sum_{i=1}^{n} y_{i}}{\sum_{i=1}^{n} i}$
(C) $\frac{\sum_{i=1}^{n} y_{i} f_{i}}{n}$
(D) $\frac{\sum_{i=1}^{n} y_{i} f_{i}}{\sum_{i=1}^{n} f_{i}}$
Q. 13 If the mean of numbers $27,31,89,107,156$ is 82 , then the mean of $130,126,68,50,1$ is-
(A) 75
(B) 157
(C) 82
(D) 80
Q. 14 If $d_{i}$ is the deviation of a class mark $y_{i}$ from ' $a$ ', the 'assumed mean' and $f_{i}$ is the frequency, then $M_{g}=x+\frac{1}{\sum \mathrm{f}_{\mathrm{i}}}\left(\sum \mathrm{f}_{\mathrm{i}} \mathrm{d}_{\mathrm{i}}\right)$, then x is-
(A) lower limit
(B) assumed mean
(C) number of observations
(D) class size
Q. 15 The mean of first three terms is 14 and mean of next two terms is 18 . The mean of all the five terms is-
(A) 14.5
(B) 15.0
(C) 15.2
(D) 15.6

## Question

 based on
## Geometric Mean \& Harmonic Mean

Q. 16 Geometric mean of 3, 9 and 27 is-
(A) 18
(B) 6
(C) 9
(D) None of these
Q. 17 Geometric mean of the numbers $2,2^{2}, 2^{3}, \ldots ., 2^{n}$ is
(A) $2^{2 / n}$
(B) $2^{n / 2}$
(C) $2^{\frac{n-1}{2}}$
(D) $2^{\frac{n+1}{2}}$
Q. 18 The geometric mean of $n$ observations $\mathrm{x}_{1}, \mathrm{x}_{2}, \mathrm{x}_{3}, \ldots \ldots, \mathrm{x}_{\mathrm{n}}$ is
(A) $\frac{\sum_{i=1}^{n} x_{i}}{n}$
(B) $\frac{\mathrm{n}}{\sum_{\mathrm{i}=1}^{\mathrm{n}}\left(\frac{1}{\mathrm{x}_{\mathrm{i}}}\right)}$
(C) $\left(\mathrm{x}_{1} \mathrm{x}_{2} \mathrm{x}_{3} \ldots . . \mathrm{x}_{\mathrm{n}}\right)^{1 / n}$
(D) None of these
Q. 19 The geometric mean of the numbers 4, 8, 16 is-
(A) $\frac{28}{3}$
(B) 8
(C) $\frac{48}{7}$
(D) None
Q. 20 The harmonic mean of $4,8,16$ is-
(A) 6.4
(B) 6.7
(C) 6.85
(D) 7.8
(A) $\frac{3+7+8+10+14}{5}$
(B) $\frac{1}{3}+\frac{1}{7}+\frac{1}{8}+\frac{1}{10}+\frac{1}{14}$
(C) $\frac{\frac{1}{3}+\frac{1}{7}+\frac{1}{8}+\frac{1}{10}+\frac{1}{14}}{5}$
(D) $\frac{5}{\frac{1}{3}+\frac{1}{7}+\frac{1}{8}+\frac{1}{10}+\frac{1}{14}}$

## Question based on

## Median

Q. 22 In an arranged series of $n$ observations ( $n$ being an odd number), the median is the value of -
(A) $\left(\frac{n}{2}\right)$ th term
(B) $\left(\frac{\mathrm{n}+1}{2}\right)$ th term
(C) $\left(\frac{\mathrm{n}}{2}+1\right)$ th term
(D) $\left(\mathrm{n}+\frac{1}{2}\right)$ th term
Q. 23 The median of $10,14,11,9,8,12,6$ is
(A) 10
(B) 12
(C) 14
(D) 11
Q. 24 If a variable takes the discrete values $\alpha+4$, $\alpha-\frac{7}{2}, \alpha-\frac{5}{2}, \alpha-3, \alpha-2, \alpha+\frac{1}{2}, \alpha-\frac{1}{2}$, $\alpha+5(\alpha>0)$, then the median is-
(A) $\alpha-\frac{5}{4}$
(B) $\alpha-\frac{1}{2}$
(C) $\alpha-2$
(D) $\alpha+\frac{5}{4}$
Q. 25 In an arranged discrete series in which total number of observations ' $n$ ' is even, median is
(A) $\frac{n}{2}$ th term
(B) $\left(\frac{n}{2}+1\right)$ th term
(C) the mean of $\frac{n}{2}$ th and $\left(\frac{n}{2}+1\right)$ th term
(D) None of these
Q. 26 The median of the items 6, 10, 4, 3, 9, 11, 22, 18 is-
(A) 9
(B) 10
(C) 9.5
(D) 11
Q. 21 The harmonic mean of $3,7,8,10,14$ is-

Question
based on
based on

## Mode

Q. 27 The mode of the following items is $0,1,6,7,2,3$, $7,6,6,2,6,0,5,6,0$ is-
(A) 0
(B) 5
(C) 6
(D) 2
Q. 28 Mode of the distribution

| Marks | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | $\mathbf{7}$ | $\mathbf{8}$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| No.of Students | 3 | 5 | 10 | 6 | 1 | is

(A) 6
(B) 10
(C) 8
(D) None of these
Q. 29 For a normal distribution, we have
(A) mean = median
(B) median $=$ mode
(C) mode $=$ mean
(D) mean $=$ median $=$ mode
Q. 30 If median $=($ mode +2 mean $) \mathrm{M}$, then M is equal to-
(A) 3
(B) $1 / 3$
(C) 2
(D) None of these
Q. 31 The relationship between mean, median and mode for a moderately skewed distribution is-
(A) mode $=$ median -2 mean
(B) mode $=2$ median - mean
(C) mode $=2$ median -3 mean
(D) mode $=3$ median -2 mean
Q. 32 If the mode of a data is 18 and the mean is 24 , then median is-
(A) 18
(B) 24
(C) 22
(D) 21

## Question based on

## Dispersion

Q. 33 The scores of a batsman in ten innings are: $38,70,48,34,42,55,63,46,54,44$, then mean deviation about the median is:
(A) 8.4
(B) 8.5
(C) 8.6
(D) 8.8
Q. 34 If the Standard Deviation of a variate is $\sigma$, then the S.D. of $3 x+2$ is:
(A) $\sigma$
(B) $3 \sigma$
(C) $3 \sigma+2$
(D) None of these
Q. 35 For a frequency distribution, the mean deviation about mean is computed by
(A) M.D. $=\frac{\sum \mathrm{d}_{\mathrm{i}}}{\sum \mathrm{f}_{\mathrm{i}}}$
(B) M.D. $=\frac{\sum \mathrm{f}_{\mathrm{i}} \mathrm{d}_{\mathrm{i}}}{\sum \mathrm{f}_{\mathrm{i}}}$
(C) M.D. $=\frac{\sum \mathrm{f}_{\mathrm{i}}\left|\mathrm{d}_{\mathrm{i}}\right|}{\sum \mathrm{f}_{\mathrm{i}}}$
(D) M.D. $=\frac{\sum \mathrm{f}_{\mathrm{i}}}{\sum \mathrm{f}_{\mathrm{i}}\left|\mathrm{d}_{\mathrm{i}}\right|}$
Q. 36 Mean deviation from the mean for the observations $-1,0,4$ is
(A) $\sqrt{\frac{14}{3}}$
(B) $\frac{2}{3}$
(C) 2
(D) None of these
Q. 37 The variance of $2,4,6,8,10$ is
(A) 8
(B) $\sqrt{8}$
(C) 6
(D) None of these
Q. 38 The S.D. of 7 scores $1,2,3,4,5,6,7$ is
(A) 4
(B) 2
(C) $\sqrt{7}$
(D) None of these
Q. 39 If the standard deviation of $1,2,3,4, \ldots . ., 10$ is $\sigma$, then the standard deviation of $11,12,13,14, \ldots ., 20$ is
(A) $\sigma+10$
(B) $10 \sigma$
(C) $\sigma$
(D) None of these
Q. 40 S.D. of $n$ observations $a_{1}, a_{2}, a_{3}, \ldots, a_{n}$ is $\sigma$, then the S.D. of the observations $\lambda \mathrm{a}_{1}, \lambda \mathrm{a}_{2}, \lambda \mathrm{a}_{3}, \lambda \mathrm{a}_{\mathrm{n}}$ is-
(A) $\lambda \sigma$
(B) $-\lambda \sigma$
(C) $|\lambda| \sigma$
(D) $\sigma$
Q. 41 If each observation of a raw data whose variance is $\sigma^{2}$, is increased by $\lambda$, then the variance of the new set is-
(A) $\sigma^{2}$
(B) $\lambda^{2} \sigma^{2}$
(C) $\lambda+\sigma^{2}$
(D) $\lambda^{2}+\sigma^{2}$
Q. 42 Let $\sigma$ be the standard deviation of $n$ observations. Each of the n observations is multiplied by a constant $c$. Then the standard deviation of the resulting numbers is-
(A) $\sigma$
(B) $|\mathrm{c}| \cdot \sigma$
(C) $\sigma \sqrt{c}$
(D) None of these
Q. 43 For a frequency distribution standard deviation is computed by-
(A) $\sigma=\frac{\sum \mathrm{f}(\mathrm{x}-\overline{\mathrm{x}})}{\sum \mathrm{f}}$
(B) $\sigma=\frac{\sqrt{\sum \mathrm{f}(\mathrm{x}-\overline{\mathrm{x}})^{2}}}{\sum \mathrm{f}}$
(C) $\sigma=\sqrt{\frac{\sum \mathrm{f}(\mathrm{x}-\overline{\mathrm{x}})^{2}}{\sum \mathrm{f}}}$
(D) $\sigma=\sqrt{\frac{\sum \mathrm{f}(\mathrm{x}-\overline{\mathrm{x}})}{\sum \mathrm{f}}}$

## LEVEL- 2

Q. 1 Which of the following is not a measure of central tendency:
(A) Mean
(B) Median
(C) Mode
(D) Range
Q. 2 If the mean of the first n odd natural numbers be n itself, then n is-
(A) 1
(B) 2
(C) 3
(D) any natural number
Q. 3 The A.M. of the series $1,2,4,8,16, \ldots ., 2^{n}$ is-
(A) $\frac{2^{n}-1}{n}$
(B) $\frac{2^{n+1}-1}{n+1}$
(C) $\frac{2^{n}+1}{n}$
(D) $\frac{2^{n}-1}{n+1}$
Q. 4 If the mean of the set of numbers $x_{1}, x_{2}, x_{3}, \ldots, x_{n}$ is $\bar{x}$, then the mean of the numbers $\mathrm{x}_{\mathrm{i}}+2 \mathrm{i}, 1 \leq \mathrm{i} \leq \mathrm{n}$, is-
(A) $\bar{x}+2 n$
(B) $\overline{\mathrm{x}}+\mathrm{n}+1$
(C) $\bar{x}+2$
(D) $\overline{\mathrm{x}}+\mathrm{n}$
Q. 5 Mean of the first $n$ terms of the A.P. $a+(a+d)+(a+2 d)+\ldots \ldots$. is
(A) $a+\frac{n d}{2}$
(B) $a+\frac{(n-1) d}{2}$
(C) $a+(n-1) d$
(D) $a+n d$
Q. 6 If $\mu$ is the mean of a distribution, then $\sum f_{i}\left(y_{i}-\mu\right)$ is equal to
(A) M.D.
(B) S.D.
(C) 0
(D) None of these
Q. 7 If the mean of $n$ observations $1^{2}, 2^{2}, 3^{2}, \ldots ., n^{2}$ is $\frac{46 n}{11}$, then $n$ is equal to
(A) 11
(B) 12
(C) 23
(D) 22
Q. 8 The mean of 50 observations is 36 . If two observations 30 and 42 are deleted, then the mean of the remaining observations is-
(A) 48
(B) 36
(C) 38
(D) None of these
Q. 9 The weighted mean of first n natural numbers, whose weights are equal to the squares of corresponding numbers, is
(A) $\frac{\mathrm{n}+1}{2}$
(B) $\frac{3 \mathrm{n}(\mathrm{n}+1)}{2(2 \mathrm{n}+1)}$
(C) $\frac{(\mathrm{n}+1)(2 \mathrm{n}+1)}{6}$
(D) $\frac{\mathrm{n}(\mathrm{n}+1)}{2}$
Q. 10 A group of 10 items has mean 6. If the mean of 4 of these items is 7.5 , then the mean of the remaining items is-
(A) 6.5
(B) 5.5
(C) 4.5
(D) 5.0
Q. 11 The mean of a set of observations is $\bar{x}$. If each observation is divided by $\alpha, \alpha \neq 0$, and then is increased by 10 then the mean of the new set is-
(A) $\frac{\bar{x}}{\alpha}$
(B) $\frac{\bar{x}+10}{\alpha}$
(C) $\frac{\overline{\mathrm{x}}+10 \alpha}{\alpha}$
(D) $a \bar{x}+10$
Q. 12 The geometric mean of the first $n$ terms of the G.P. $\mathrm{a}+\mathrm{ar}+\mathrm{ar}^{2}+\ldots$ is-
(A) $a r^{n / 2}$
(B) $a r^{n}$
(C) $\operatorname{ar}^{(\mathrm{n}-1) / 2}$
(D) $a r^{n-1}$
Q. 13 The geometric mean of the observations 2, 4, 8, $16,32,64$ is-
(A) $2^{5 / 2}$
(B) $2^{7 / 2}$
(C) 33
(D) None of these
Q. 14 A boy goes to school from his home at a speed of $x \mathrm{~km} / \mathrm{hr}$. and comes back at a speed of y km/ hr. then the average speed of the boy is given by-
(A) $\frac{x+y}{2} \mathrm{~km} / \mathrm{hr}$.
(B) $\sqrt{\mathrm{xy}} \mathrm{km} / \mathrm{hr}$
(C) $\frac{2 x y}{x+y} \mathrm{~km} / \mathrm{hr}$.
(D) Any of these
Q. 15 Ram spends equal amounts on purchasing three kinds of pens being sold at Rs.5, Rs. 10 and Rs. 15 per piece. Average cost of each pen is-
(A) Rs. 10
(B) Rs. $\frac{90}{11}$
(C) Rs. 9
(D) None of these
Q. 16 An automobile driver travels from plain to a hill station 120 km distant at an average speed of 30 km .per hour. He then makes the return trip at an average speed of 25 km . per hour. He covers another 120 km . distance on plane at an average speed of 50 km . per hour. His average speed over the entire distance of 360 km . will be-
(A) $\frac{30+25+50}{3} \mathrm{~km} / \mathrm{hr}$.
(B) $(30 \times 25 \times 50)^{1 / 3}$
(C) $\frac{3}{\frac{1}{30}+\frac{1}{25}+\frac{1}{50}} \mathrm{~km} / \mathrm{hr}$.
(D) None of these
Q. 17 If a, b, c are any three positive numbers, then the least value of $(a+b+c)\left(\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right)$ is-
(A) 3
(B) 6
(C) 9
(D) None of these
Q. 18 Product of $n$ positive numbers is unity. The sum of these numbers can not be less than-
(A) 1
(B) n
(C) $n^{2}$
(D) None of these
Q. 19 The median of the data $13,14,16,18,20,22$ is-
(A) 17
(B) 16
(C) 18
(D) None of these
Q. 20 For a continuous series, the mode is computed by the formula
(A) $\ell+\frac{\mathrm{f}_{\mathrm{m}-1}}{\mathrm{f}_{\mathrm{m}}-\mathrm{f}_{\mathrm{m}-1}-\mathrm{f}_{\mathrm{m}+1}} \times \mathrm{c}$
(B) $\ell+\frac{f_{m}-f_{m-1}}{f_{m}-f_{m-1}-f_{m+1}} \times c$
(C) $\ell+\frac{\mathrm{f}_{\mathrm{m}}-\mathrm{f}_{\mathrm{m}-1}}{2 \mathrm{f}_{\mathrm{m}}-\mathrm{f}_{\mathrm{m}-1}-\mathrm{f}_{\mathrm{m}+1}} \times \mathrm{c}$
(D) $\ell+\frac{2 \mathrm{f}_{\mathrm{m}}-\mathrm{f}_{\mathrm{m}-1}}{\mathrm{f}_{\mathrm{m}}-\mathrm{f}_{\mathrm{m}-1}-\mathrm{f}_{\mathrm{m}-2}} \times \mathrm{c}$
Q. 21 If mean $=(3$ median - mode $) x$, then the value of x is-
(A) 1
(B) 2
(C) $1 / 2$
(D) $3 / 2$
Q. 22 Which of the following is not a measure of dispersion?
(A) variance
(B) mean deviation
(C) standard deviation
(D) mode
Q. 23 Which of the following is not a measure of dispersion?
(A) Mean
(B) Variance
(C) Mean deviation
(D) Range
Q. 24 The standard deviation of a variate x is $\sigma$. The standard deviation of the variable $\frac{a x+b}{c} ; a, b, c$ are constants, is-
(A) $\left(\frac{\mathrm{a}}{\mathrm{c}}\right) \sigma$
(B) $\left|\frac{\mathrm{a}}{\mathrm{c}}\right| \sigma$
(C) $\left(\frac{\mathrm{a}^{2}}{\mathrm{c}^{2}}\right) \sigma$
(D) None of these
Q. 25 The S.D. of 15 items is 6 and if each item is decreased by 1 , then standard deviation will be-
(A) 5
(B) 7
(C) $91 / 25$
(D) 6
Q. 26 The S.D of the first n natural numbers is-
(A) $\frac{\mathrm{n}+1}{2}$
(B) $\sqrt{\frac{\mathrm{n}(\mathrm{n}+1)}{2}}$
(C) $\sqrt{\frac{\mathrm{n}^{2}-1}{12}}$
(D) None of these

## LEVEL- 3

## Questions based on statements (Q. 1-5)

Each of the questions given below consists of Statement - I and Statement - II. Use the following Key to choose the appropriate answer.
(A) If both Statement-I and Statement-II are true, and Statement-II is the correct explanation of Statement- I.
(B) If both Statement-I and Statement-II are true but Statement-II is not the correct explanation of Statement-I.
(C) If Statement-I is true but Statement-II is false.
(D) If Statement-I is false but Statement-II is true.
Q. 1 Statement I : The median from the following data $45,25,50,60,70,80,92$ is 60 .

Statement II: Arrange the data either in increasing or decreasing order of magnitude so the middle observation is called medium.
Q. 2 Statement I: The mean of first $n$ natural numbers is $\frac{\mathrm{n}+1}{2}$.
Statement II: If we increase or decrease in every observation by a non zero number then mean will remain same.
Q. 3 Statement I: The mean of group of 8 observations is 9 . Two new observations 10 and 13 are added to the group. So the mean of 10 observations is 9.5
Statement II: It cannot be computed unless all the items are known.
Q. 4 Statement I: The mean deviation by mean of $2,3,5,6,9$ is 3 .

Statement II: Mean deviation calculated by
$\frac{1}{n} \sum_{\mathrm{i}=1}^{\mathrm{n}}\left|\mathrm{x}_{\mathrm{i}}-\overline{\mathrm{x}}\right|$.
Q. 5 Statement I: Standard deviation of 15, 22, 27, $11,9,21,14,9$ is 6.22

Statement II- Standard deviation $=$ Variance

## Passage based Questions (Q. 6-8)

A frequency distribution is given :
Marks :
$\begin{array}{lllll}4 & 5 & 6 & 7 & 8\end{array}$
No. of students : $\quad \begin{array}{llllll}6 & 7 & 10 & 8 & 3\end{array}$
Q. 6 Mode of the given distribution is:
(A) 5
(B) 6
(C) 8
(D) 10
Q. 7 Mean of the given distribution is :
(A) $\frac{190}{34}$
(B) $\frac{198}{34}$
(C) $\frac{199}{34}$
(D) None of these
Q. 8 Mean deviation from median is :
(A) $\frac{30}{34}$
(B) $\frac{33}{34}$
(C) $\frac{35}{34}$
(D) None of these

## LEVEL- 4

(Question asked in previous AIEEE and IIT-JEE)

## SECTION -A

Q. 1 If $G_{1}, G_{2}$ are the geometric means of two series of observations and $G$ is the geometric mean of the ratios of the corresponding observations, then the value of G-
[AIEEE-2002]
(A) $\frac{\mathrm{G}_{1}}{\mathrm{G}_{2}}$
(B) $\frac{\log G_{1}}{\log G_{2}}$
(C) $\log \left(G_{1} \cdot G_{2}\right)$
(D) $\log G_{1}-\log G_{2}$
Q. 2 The median of a set of 9 distinct observations is 20.5 If each of the largest 4 observations of the set is increased by 2 , then the median of the new set -
[AIEEE 2003]
(A) remains the same as that of the original set
(B) is increased by 2
(C) is decreased by 2
(D) is two times the original median
Q. 3 In an experiment with 15 observations on $x$, the following results were available:
[AIEEE 2003]

$$
\sum \mathrm{x}^{2}=2830, \sum \mathrm{x}=170
$$

One observation that was 20 was found to be wrong and was replaced by the correct value 30 . Then the corrected variance is
(A) 8.33
(B) 78.00
(C) 188.66
(D) 177.33
Q. 4 Consider the following statements:
[AIEEE 2004]
(a) Mode can be computed from histogram
(b) Median is not independent of change of scale
(c) Variance is independent of change of origin and scale.
Which of these is/ are correct?
(A) only (a)
(B) only (b)
(C) only (a) and (b)
(D) (a), (b) and (c)
Q. 5 In a series of 2 n observations, half of them equal $a$ and remaining half equal -a . If the standard deviation of the observations is 2 , then $|a|$ equals-
[AIEEE 2004]
(A) $1 / \mathrm{n}$
(B) $\sqrt{2}$
(C) 2
(D) $\frac{\sqrt{2}}{\mathrm{n}}$
Q. 6 If in a frequency distribution, the mean and median are 21 and 22 respectively, then its mode is approximately
[AIEEE-2005]
(A) 22.0
(B) 20.5
(C) 25.5
(D) 24.0
Q. 7 Let $x_{1}, x_{2}, \ldots . x_{n}$ be $n$ observations such that $\sum x_{i}^{2}=400$ and $\sum x_{i}=80$. Then a possible value of $n$ among the following is -
[AIEEE-2005]
(A) 15
(B) 18
(C) 9
(D) 12
Q. 8 Suppose a population A has 100 observations $101,102, \ldots .200$, and another population $B$ has 100 observations $151,152, \ldots . .250$. If $\mathrm{V}_{\mathrm{A}}$ and $\mathrm{V}_{\mathrm{B}}$ represent the variances of the two populations, respectively, then $\frac{V_{A}}{V_{B}}$ is-
[AIEEE 2006]
(A) $\frac{9}{4}$
(B) $\frac{4}{9}$
(C) 2
(D) 1
Q. 9 The average marks of boys in a class is 52 and that of girls is 42 . The average marks of boys and girls combined is 50 . The percentage of boys in the class is-
[AIEEE 2007]
(A) 40
(B) 20
(C) 80
(D) 60
Q. 10 The mean of the numbers $\mathrm{a}, \mathrm{b}, 8,5,10$ is 6 and the variance is 6.80 . Then which one of the following gives possible values of $a$ and $b$ ?
[AIEEE 2008]
(A) $a=5, b=2$
(B) $a=1, b=6$
(C) $a=3, b=4$
(D) $a=0, b=7$
Q. 11 If the mean deviation of the numbers $1,1+\mathrm{d}$, $1+2 \mathrm{~d}, \ldots . .1+100 \mathrm{~d}$ from their mean is 255 , then the $d$ is equal to -
[AIEEE 2009]
(A) 10.0
(B) 20.0
(C) 10.1
(D) 20.2

## Q. 12 Statement - 1 :

The variance of first $n$ even natural numbers is
$\frac{n^{2}-1}{4}$
Statement-2 :
The sum of first $n$ natural numbers is $\frac{n(n+1)}{2}$ and the sum of squares of first $n$ natural numbers
is $\frac{n(n+1)(2 n+1)}{6}$
[AIEEE 2009]
(A) Statement -1 is true, Statement -2 is true; Statement -2 is a correct explanation for Statement -1
(B) Statement -1 is true, Statement -2 is true; Statement -2 is not a correct explanation for Statement 1 .
(C) Statement -1 is true, Statement -2 is false.
(D) Statement -1 is false, Statement -2 is true.
Q. 13 For two data sets, each of size 5, the variances are given to be 4 and 5 and the corresponding means are given to be 2 and 4 , respectively.

The variance of the combined data set is -
[AIEEE 2010]
(A) $\frac{5}{2}$
(B) $\frac{11}{2}$
(C) 6
(D) $\frac{13}{2}$
Q. 14 If the mean deviation about the median of the numbers a, $2 \mathrm{a}, \ldots . . .50 \mathrm{a}$ is 50 , then $|\mathrm{a}|$ equals :
[AIEEE 2011]
(A) 2
(B) 3
(C) 4
(D) 6
Q. 15 All the students of a class performed poorly in Mathematics. The teacher decided to give grace marks of 10 to each of the students. Which of the following statistical measures will not change even after the grace marks were given ?
[JEE Main- 2013]
(A) mode
(B) variance
(C) mean
(D) median

LEVEL- 1

| Q.No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ans. | D | A | A | C | C | C | B | C | D | D | B | A | A | B | D | C | D | C | B | C |
| Q.No. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| Ans. | D | B | A | A | C | C | C | A | D | B | D | C | C | B | C | C | A | B | C | C |
| Q.No. | 41 | 42 | 43 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ans. | A | B | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

LEVEL- 2

| Q.No. | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | $\mathbf{7}$ | $\mathbf{8}$ | $\mathbf{9}$ | $\mathbf{1 0}$ | $\mathbf{1 1}$ | $\mathbf{1 2}$ | $\mathbf{1 3}$ | $\mathbf{1 4}$ | $\mathbf{1 5}$ | $\mathbf{1 6}$ | $\mathbf{1 7}$ | $\mathbf{1 8}$ | $\mathbf{1 9}$ | $\mathbf{2 0}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ans. | D | D | B | B | B | C | A | B | B | D | C | C | B | C | B | C | C | B | A | C |
| Q.No. | $\mathbf{2 1}$ | $\mathbf{2 2}$ | $\mathbf{2 3}$ | $\mathbf{2 4}$ | $\mathbf{2 5}$ | $\mathbf{2 6}$ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ans. | C | D | A | B | D | C |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

LEVEL- 3

| Q.No. | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | $\mathbf{7}$ | $\mathbf{8}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ans. | A | C | C | D | C | B | C | B |

LEVEL- 4
SECTION-A

| Q.No. | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | $\mathbf{7}$ | $\mathbf{8}$ | $\mathbf{9}$ | $\mathbf{1 0}$ | $\mathbf{1 1}$ | $\mathbf{1 2}$ | $\mathbf{1 3}$ | $\mathbf{1 4}$ | $\mathbf{1 5}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Ans. | A | A | B | C | C | D | B | D | C | C | C | D | B | C | B |

