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Class: 10
Subject: Mathematics
Topic: ASK1510UT03
No. of Questions: 30

Q1. The abscissa of the point of intersection of the less than type and of the more than type 'ogive' gives its:
(a) Mean
(b) Median
(c) Mode
(d) Mean, mode and median

Sol. (b)

Q2. Construction of cumulative frequency table is useful in determining the:
(a) Mean
(b) Median
(c) Mode
(d) All of these

Sol. (b)

Q3. In the formula $\bar{x} = a + \frac{\sum f_i d_i}{\sum f_i}$, for finding the mean of the grouped data, d_i' s are derivation from assumed mean 'a' of :
(a) Lower limits of classes
(b) Upper limit of classes
(c) Class marks
(d) Frequencies of the classes

Sol. (c)

Q4. The mean of the first 10 prime numbers is:
(a) 12.6
(b) 12.7
(c) 12.8
(d) 12.9

Sol. (d)

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Q5. The empirical relationship between the three measures of central tendency is:
(a) 3 Median = Mode + 2 Mean
(b) 3 Median = Mean + 2 Mode
(c) 2 Median = Mean + 3 Mode
(d) 2 Median = Mode + 3 Mean

Sol. (a)

Q6. The median and mode of a distribution are 20 and 18, and then the mean is:
(a) 20
(b) 21
(c) 24
(d) 26

Sol. (b)

Q7. In the formula $\bar{x} = a + \frac{\sum f_{u_i} i}{\sum f_i}, h,$ for finding the mean of grouped frequency distribution, u_i is:
(a) $(x_i + a)/h$
(b) $h(x_1 - a)$
(c) $(x_i - a)/h$
(d) $(a - x_i)/h$

Sol. (c)

Q8. For the following distribution:

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No. of Students	8	17	32	62	80

The modal class is:
(a) 10 – 20
(b) 20 – 30
(c) 30 – 40
(d) 40 – 50

Sol. (c)

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Q9. If one root of $2x^2 + kx + 1 = 0$ *is* $-\frac{1}{2}$, *then the value of* $'k'$ *is*

(a) 3
(b) -3
(c) 5
(d) -5

Sol. (a)

Q10. The sum of the roots of the quadratic $5x^2 - 6x + 1 = 0$ is

(a) 6/5
(b) 1/5
(c) -5/6
(d) -1/5

Sol. (a)

Q11. The product of the roots of the quadratic equation $2x^2 + x - 7 = 0$ is

(a) 5/2
(b) -7/2
(c) -5/2
(d) 7/2

Sol. (b)

Q12. If the roots of the quadratic $2x^2 + kx + 2 = 0$ are equal then the value of 'k' is

(a) 4
(b) -4
(c) ± 4
(d) ± 16

Sol. (c)

Q13. If the roots of $4x^2 + 3px + 9 = 0$ are real and distinct then, the value of p is

(a) $p \geq -4$ *or* $p \leq 4$
(b) $p < -4$ *or* > 4
(c) $p \leq -4$ *or* $p \leq 4$
(d) $p \leq -4$ *or* $p \geq 4$

Sol. (b)

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Q14. If the sum and product of roots of quadratic equation are $-\frac{7}{2}$ and $\frac{5}{2}$ respectively, then the equation is

(a) $2x^2 + 7x + 5 = 0$
(b) $2x^2 - 7x + 5 = 0$
(c) $2x^2 - 7x - 5 = 0$
(d) $2x^2 + 7x - 5 = 0$

Sol. (a)

Q15. Which constant must be added or subtracted to solve the equation $9x^2 + \frac{3}{4}x - \sqrt{2} = 0$ by the method of completing the square

(a) 1/8
(b) 1/64
(c) 1/16
(d) None

Sol. (a)

Q16. Numbers of solution of a quadratic equation are:

(a) 0
(b) 1
(c) 2
(d) 3

Sol. (c)

Q17. If the equation $x^2 - (2 + m)x + (-m^2 - 4m - 4) = 0$ has coincident roots then

(a) m = 0, m = 1
(b) m = 2, m = 2
(c) m = -2 , m = -2
(d) m = 6 , m = 1

Sol. (a)

Q18. Discriminant of a quadratic equation $ax^2 + bx + c = 0$ is given by

(a) $\sqrt{b^2 - 4ac}$
(b) $\sqrt{b^2 + 4ac}$
(c) $b^2 - 4ac$
(d) $b^2 + 4ac$

Sol. (c)

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Q19. Which is a quadratic equation?

(a) $x+\frac{1}{x}=2$
(b) $x^2+1=(x+3)^2$
(c) $x(x+2)$
(d) $x+\frac{1}{x}$

Sol. (a)

Q20. If the roots of a quadratic equation are 2 and 3, then the equation is

(a) $x^2+5x+6=0$
(b) $x^2+5x-6=0$
(c) $x^2-5x-6=0$
(d) $x^2-5x+6=0$

Sol. (d)

Q21. Roots of the equation $x^2-3x+2=0$ *are*

(a) 1, -2
(b) -1, 2
(c) -1, -2
(d) 1, 2

Sol. (d)

Q22. In an AP, if d = -4, n = 7, a_n = 4, then a is

(a) 6
(b) 7
(c) 20
(d) 28

Sol. (d)

[Sol^n: $a_n = a + (n - 1)\times d$
$\Rightarrow 4 = a + (7 - 1) \times -4$
$\Rightarrow 4 = a - 24$
$\Rightarrow a = 4 + 24 = 28$]

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Q23. Which term of the A.P. 24, 21, 18…… Is the first negative term?

(a) 8^{th}
(b) 9^{th}
(c) 10^{th}
(d) 12^{th}

Sol. (c)

[Sol^n: $a_n = a + (n - 1) \times d$ where $d = -3$, Let $a_n = 0$
$\Rightarrow 0 = 24 + (n - 1) \times -3$
$\Rightarrow 0 = 24 - 3n + 3$
$\Rightarrow 3n = 27$
$\Rightarrow n = 9$
$\Rightarrow$ 10th term will be negative (-ve).

Q24. The sun of first five multiples of 3 is :

(a) 45
(b) 65
(c) 75
(d) 90

Sol. (a)

[Sol^n: $S_n = [2a + (n - 1)d] \times n/2$
$\Rightarrow S_5 = [2 \times 3 + (5 - 1)3)] \times 5/2$
$\Rightarrow S_5 = [6 + 12] \times 5/2 = 18 \times 5/2 = 9 \times 5 = 45$

Q25. For an A.P. if $a_{25} - a_{20} = 45, then\ d\ equals\ to$:

(a) 9
(b) -9
(c) 18
(d) 23

Sol. (a)

[Sol^n: $a_n = a + (n - 1) \times d$
$\Rightarrow a_{25} = a + 24d$
and $a_{20} = a + 19d$
$a_{25} - a_{20} = 45$
$\Rightarrow a + 24d - a - 19d = 45$
$\Rightarrow 5d = 45$
$\Rightarrow d = 9$]

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Q26. If $a+1, 2a+1, 4a-1$ *are in A.P., then the value of* a *is* :
(a) 1
(b) 2
(c) 3
(d) 4

Sol. (b)
[Sol^n: Let 1st term = x = a + 1, 2nd term = y = 2a + 1 and 3rd term = z = 4a - 1
⇒ y - x = z -y
⇒ 2y = x + z
⇒ 2(2a + 1) = a + 1 + 4a -1
⇒ 4a + 2 = 5a
⇒ a = 2]

Q27. 15th term of the A.P. $x-7, x-2, x-3$ ..... is
(a) $x+63$
(b) $x+73$
(c) $x+83$
(d) $x+53$

Sol. (a)
[Sol^n: $a_n = a + (n-1)\times d$
where d = x – 2 - x + 7 = 5, a = x - 7
⇒a_{15} =(x - 7) + (15 - 1) ×5 = (x - 7) + 14 ×5
⇒a_{15} = x - 7 + 70 = x + 63]

Q28. $(1)+(1+1)+(1+1+1)+\cdots+(1+1+1+\cdots n-1\ times)=\cdots$
(a) $n(n+1)/2$
(b) $(n-1)n/2$
(c) n^2
(d) n

Sol. (b)
[Sol^n: $S_n = [2a + (n-1)d]\times n/2$
Here, d = 1, a = 1, and n -1 terms,
⇒ $S_{n-1} = [2 + (n - 1 -1)] \times (n-1)/2$
⇒ $S_{n-1} = [2 + n - 2] \times (n-1)/2 = n(n-1)/2$

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Q29. For AP. $T_{18} - T_8 =$ .....
(a) d
(b) 10d
(c) 26d
(d) 2d

Sol. (b)
[Sol^n: $T_n = a + (n - 1) \times d$
$T_{18} = a + 17d$
$T_8 = a + 7d$
$T_{18} - T_8 = 17d - 7d = 10d$]

Q30. Which term of the A.P. 92, 88, 84, 80 ..... is 0?
(a) 23
(b) 32
(c) 22
(d) 24

Sol. (d)
[Sol^n: $a_n = a + (n - 1) \times d$ where $d = -4$, Let $a_n = 0$
$\Rightarrow 0 = 92 + (n - 1) \times -4$
$\Rightarrow 0 = 92 - 4n + 4$
$\Rightarrow 4n = 96$
$\Rightarrow n = 24$

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