

1/6/2020

Ln: 1. Relation & Functions.

Choose the correct Answer:-

1. The function $f: \mathbb{N} \rightarrow \mathbb{R}$ is defined by $f(x) = 2^n$. The range of the function is
 A) The set of all even positive integers
 B) \mathbb{N} C) \mathbb{R} (D) a subset of all even positive integers.
2. Let f be a function $f: \mathbb{N} \rightarrow \mathbb{N}$ be defined $f(x) = 3x + 2$, $x \in \mathbb{N}$, The preimage of 29 is
 A) 89 B) 87 (C) 9 (D) $\frac{3}{3}$
3. If $\{(7, 11), (5, a), (3, b)\}$ represent a constant function then (a, b) is
 A) (5, 3) (B) (3, 5) (C) (11, 11) (D) (7, 7)
4. The domain of a function $f(x) = \frac{1}{x(x+1)}$
 A) $[0, -1]$ (B) $\mathbb{R} - [0, 1]$ (C) $\mathbb{R} - \{0\}$ (D) $\mathbb{R} - \{-1\}$
5. If $A \times B = \{(3, 2), (3, 4), (5, 2), (5, 4)\}$ then A is
 A) $\{3, 5\}$ (B) $\{2, 4\}$ (C) $\{2, 3, 4, 5\}$ (D) $\{ \}$
6. If $f(x) = x^2 - x$ then $f(x-1) - f(x+1)$ is —
 A) $4x$ (B) $4x+2$ (C) $2-4x$ (D) $4x-2$
7. If $f(x) = \frac{1}{x}$ and $g(x) = -\frac{1}{x}$ then $f \circ g = ?$
 A) $-x$ (B) $\frac{1}{x}$ (C) $-\frac{1}{x}$ (D) x
8. If there are 28 relations from a set $A = \{2, 4, 6, 8\}$ to a set B , then the number of elements in B is
 A) 7 B) 14 (C) 5 4) 4
9. A function $f: A \rightarrow B$ is said to be a bijective function if f is — function.
 A) Not onto (B) onto but not 1-1
 (C) both 1-1 and onto (D) one-one and into.

10. Composition of function is associative
 A) always true B) Never true
 C) sometimes true D) Not defined.
11. If $f: A \rightarrow B$ is a bijective function and if $n(B) = 5$ then $n(A)$ is equal to
 A) 5 B) 7 C) 10 D) 15
12. If $f: A \rightarrow B$ is a constant function, then the range of f will have — elements.
 A) Unique B) two C) Many D) None.
13. If $n(A) = n(B)$, then f is — from A to B .
 A) 1-1 B) onto C) bijective D) into
14. If $f(x) = 2x^2$ and $g(x) = \frac{1}{3}x$ then $f \circ g$ is
 A) $\frac{3}{2x^2}$ B) $\frac{2}{3x^2}$ C) $\frac{2}{9x^2}$ D) $\frac{1}{6x^2}$
15. Let $f(x) = \sqrt{1+x^2}$ then
 A) $f(xy) = f(x) \cdot f(y)$ B) $f(xy) \geq f(x) \cdot f(y)$
 C) $f(xy) \leq f(x) \cdot f(y)$ D) None of these.
16. A function $f: A \rightarrow B$ is called a real valued function, if the range of f is
 A) \mathbb{N} B) \mathbb{W} C) \mathbb{R} D) \mathbb{Z}
17. If $n(A \times B) = 20$ and $n(A) = 5$ then $n(B) =$ —
 A) 4 B) 5 C) 10 D) 20
18. Any equation represented in a graph is usually called a —
 A) line B) curve C) circle D) sphere.
19. The range of $f(x) = 3x + 2$, $x \in \mathbb{N}$, $x = 1, 2, 3$ is
 A) $\{5, 8, 11\}$ B) $\{11, 13, 17\}$ C) $\{1, 2, 3\}$ D) $\{4, 6, 8\}$
20. The domain of $g(x) = \sqrt{x-2}$ is
 A) $\{2\}$ B) $\{2, \infty\}$ C) $\{0, \infty\}$ D) $[-\infty, \infty\}$

3/6/2020

Ln: 2 Numbers & Sequences.

Choose the correct answer:

- If $55 \equiv k \pmod{11}$ then the value of k is
A) 0 B) 5 C) 10 D) 11
- The p th term of an A.P is $\frac{3p-1}{6}$. The sum of first n terms of the A.P is
A) $n(3n+1)$ B) $\frac{n(3n+1)}{2}$ C) $\frac{n(3n-1)}{2}$ D) $n(3n-1)$
- If m, p, q are consecutive terms of an A.P then p is
A) $\frac{mq}{2}$ B) $\frac{m-q}{2}$ C) $\frac{m^2+q^2}{2}$ D) $\frac{m+q}{2}$
- When $x=2$, the value of $1+x+x^2+\dots+x^9$ is
A) 511 B) 1023 C) 512 D) 1025
- The sequence $a_n = 2n+1$ is an A.P then the common difference is —
A) 5 B) 7 C) 3 D) 2
- Common ratio of the G.P $\sqrt{2}, \frac{1}{\sqrt{2}}, \frac{1}{2\sqrt{2}}, \dots$ is
A) $\frac{1}{\sqrt{2}}$ B) $\sqrt{2}$ C) 2 D) $\frac{1}{2}$
- Number of multiples of 7 between 100 and 300
A) 21 B) 24 C) 28 D) 35
- $a_n = \begin{cases} n^2 & \text{if } n \text{ is odd} \\ 2n & \text{if } n \text{ is even} \end{cases}$ find a_5 and a_6 are —
A) 25, 24 B) 25, 10 C) 25, 12 D) 36, 12
- The n th term of the sequence $\frac{1}{2}, \frac{3}{4}, \frac{5}{6}, \frac{7}{8}, \dots$ is
A) $1 + \frac{1}{2n}$ B) $1 - \frac{1}{2n}$ C) $1 - \frac{1}{n+2}$ D) $\frac{n-1}{n+2}$
- The sequence $\sqrt{11}, \sqrt{55}, 5\sqrt{11}, 5\sqrt{55}, 25\sqrt{11}, \dots$ is
A) A.P B) G.P C) both A.P & G.P
D) neither A.P nor G.P
- If $t_1 = n, t_2 = n+1, t_3 = n+2, \dots$ and so on $t_n = ?$
A) n B) $2n-1$ C) $2n+1$ D) $2n$

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12. The series of the sequence $a_n = 1 + (-1)^n$ is —
 A) $0+2+0+2+\dots$ B) $2+2+2+2+\dots$
 C) $1+1+1+\dots$ D) $1-1+1-1+\dots$
13. First term of the C.P is 1. The sum of 3rd and 5th term is 90 then the common ratio is —
 A) ± 10 B) ± 9 C) ± 5 D) ± 3
14. The value of x such that $8x+4$, $6x-2$ and $2x+7$ will form an AP is
 A) 15 B) 2 C) $\frac{15}{2}$ D) 1
15. 10th term of an A.P is 52, 16th term is 82 then n^{th} term
 A) $n+2$ B) $5n-2$ C) $5n+2$ D) $5n$.
16. Find the sum of the C.P $3+6+12+\dots+1536$ is
 A) 3069 B) 3059 C) 4069 D) 4059
17. Find the rational form of $0.\overline{123}$ is
 A) $\frac{23}{333}$ B) $\frac{123}{100}$ C) $\frac{41}{333}$ D) $\frac{123}{1000}$
18. What is the time 100 hours after 7 a.m is
 A) 7 o'clock B) 4 o'clock C) 11 o'clock D) 5 o'clock.
19. Today is Tuesday, my uncle will come after 45 days. In which day my uncle will be coming?
 A) Monday B) Tuesday C) Friday D) Saturday.
20. A man joined a company as Assistant Manager. The company gave him a starting salary of ₹.60,000 and agreed to increase his salary 5% annually. What will be his salary after 5 years?
 A) ₹. 76577 B) ₹. 66577 C) ₹. 76677 D) ₹. 76000

5/6/2020

Ln: 3 Algebra

Choose the correct Answer

1. Which of the following are linear equation in three variables.
 A) $2x = z$ B) $2\sin x + y\cos y + z\cos z = z$ C) $x + 2y + z = 3$ D) $x - y - z = 7$
2. Graphically an infinite number of solutions represents.
 A) three planes with no point in common
 B) three planes intersecting at a single point
 C) three planes intersecting in a line or coinciding with one another.
 D) None.
3. Which of the following is correct
 A) Every polynomial has finite number of multiples
 B) LCM of two polynomials of degree 2 may be a constant.
 C) HCF of two polynomials may be a constant
 D) Degree of HCF of two polynomials is always less than degree of LCM.
4. The HCF of two polynomials $p(x)$ and $q(x)$ is $2x(x+2)$ and LCM is $24x(x+2)^2(x-2)$ if $p(x) = 8x^3 + 32x^2 + 32x$ then $q(x) =$ —
 A) $4x^3 - 16x$ B) $6x^3 - 24x$ C) $12x^3 + 24x$ D) $12x^3 - 24x$
5. For what set of values $\frac{x^2 + 5x + 6}{x^2 + 8x + 15}$ is undefined.
 A) $-3, -5$ B) -5 C) $-2, -3, -5$ D) $-2, -3$
6. $\frac{x^2 + 7x + 12}{x^2 + 8x + 15} \times \frac{x^2 + 5x}{x^2 + 6x + 8} =$ —
 A) $(x+2)$ B) $\frac{x}{x+2}$ C) $\frac{35x^2 + 60x}{48x^2 + 120}$ D) $\frac{1}{x+2}$
7. If $\frac{p}{q} = a$ then $\frac{p^2 + q^2}{p^2 - q^2} =$ —
 A) $\frac{a^2 + 1}{a^2 - 1}$ B) $\frac{1 + a^2}{1 - a^2}$ C) $\frac{1 - a^2}{1 + a^2}$ D) $\frac{a^2 - 1}{a^2 + 1}$

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8. The square root of $4m^2 - 2m + 36$ is
 A) $4(m-3)$ B) $2(m-3)$ C) $(2m-3)^2$ D) $(m-3)$
9. The real roots of quadratic equation $x^2 - x - 1$ are
 A) $1, 1$ B) $-1, 1$ C) $\frac{1+\sqrt{5}}{2}, \frac{1-\sqrt{5}}{2}$ D) None.
10. The product of the sum and product of roots of equation $(a^2 - b^2)x^2 - (a+b)^2x + (a^3 - b^3) = 0$ is
 A) $\frac{a^2 + ab + b^2}{a - b}$ B) $\frac{a - b}{a + b}$ C) $\frac{a + b}{a - b}$ D) $\frac{a - b}{a^2 + ab + b^2}$
11. A quadratic polynomial whose one zero is 5 and sum of the zeroes is 0 is given by.
 A) $x^2 - 25$ B) $x^2 - 5$ C) $x^2 - 5x$ D) $x^2 - 5x + 5$
12. Axis of symmetry in the term of vertical line separates parabola into —
 A) 3 equal halves B) 5 equal halves
 C) 2 equal halves D) 4 equal halves.
13. The parabola $y = -3x^2$ is
 A) open upward B) open downward
 C) open rightward D) open leftward
14. Choose the correct answer.
 (i) Every scalar matrix is an identity matrix
 (ii) Every identity matrix is a scalar matrix
 (iii) Every diagonal matrix is an identity matrix
 (iv) Every null matrix is a scalar matrix
 A) (i) & (iii) B) (iii) only C) (iv) only D) (ii) & (iv) only.

15. If $2A + 3B = \begin{bmatrix} 2 & -1 & 4 \\ 3 & 2 & 5 \end{bmatrix}$ and $A + 2B = \begin{bmatrix} 5 & 0 & 3 \\ 1 & 6 & 2 \end{bmatrix}$ then B is

A) $\begin{bmatrix} 8 & -1 & -2 \\ -1 & 10 & -1 \end{bmatrix}$ B) $\begin{bmatrix} 8 & -1 & 2 \\ -1 & 10 & -1 \end{bmatrix}$ C) $\begin{bmatrix} 8 & 1 & 2 \\ 1 & 10 & 1 \end{bmatrix}$

D) $\begin{bmatrix} 8 & 1 & 2 \\ -1 & 10 & -1 \end{bmatrix}$

16. If $\begin{bmatrix} 4 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ -2 \\ x \end{bmatrix} = \begin{bmatrix} 6 \end{bmatrix}$ then x is

A) 4 B) 3 C) 2 D) 1

17. If $A = \begin{bmatrix} y & 0 \\ 3 & 4 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then $A^2 = 16I$ for

A) $y = 4$ B) $y = 5$ C) $y = -4$ D) $y = 16$

18. If P and Q are matrices, then which of the following is true?

A) $PQ \neq QP$ B) $(P^T)^T \neq P$ C) $P+Q \neq Q+P$ D) All are true.

19. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$ then which of the following products can be made from these matrices.

(i) A^2 (ii) B^2 (iii) AB (iv) BA

A) (i) only (B) (ii) & (iii) only (C) (iii) & (iv) only

D) All the above.

20. Factorise $x^8 - y^8$ is —

A) $(x^4 + y^4)(x^2 - y^2)$

B) $(x^2 + y^2)(x^2 - y^2)$

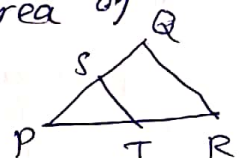
C) $(x^4 + y^4)(x^2 + y^2)(x+y)(x-y)$

D) $(x^6 - y^6)(x^2 - y^2)$

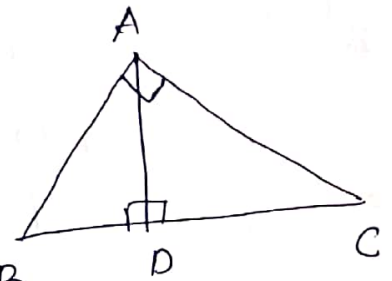
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Choose it. Ln: 4. Geometry.

1. If in triangles ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when
 A) $\angle B = \angle E$ B) $\angle A = \angle D$ C) $\angle B = \angle D$ D) $\angle A = \angle F$
2. In ΔLMN , $\angle L = 60^\circ$, $\angle M = 50^\circ$. If $\Delta LMN \sim \Delta PQR$ then the value of $\angle R$ is
 A) 40° B) 70° C) 30° D) 110°
3. If ΔABC is an isosceles triangle with $\angle C = 90^\circ$ and $AC = 5\text{cm}$ then AB is
 A) 1.2cm B) 5cm C) 10cm D) $5\sqrt{2}\text{cm}$
4. In a given figure $ST \parallel QR$, $PS = 2\text{cm}$ and $SQ = 3\text{cm}$. Then the ratio of the area of ΔPQR to the area of ΔPST is
 A) $25:4$ B) $25:7$ C) $25:11$ D) $25:13$
- 
5. The perimeter of two similar triangles ΔABC and ΔPQR are 36cm and 24cm respectively. If $PQ = 10\text{cm}$ then the length of AB is
 A) $6\frac{2}{3}\text{cm}$ B) $\frac{10\sqrt{6}}{3}\text{cm}$ C) 60cm D) 15cm
6. If ΔABC , $DE \parallel BC$, $AB = 3.6\text{cm}$, $AC = 2.4\text{cm}$ and $AD = 2.1\text{cm}$ then the length of AE is
 A) 1.4cm B) 1.8cm C) 1.2cm D) 1.05cm
7. In a ΔABC , AD is the bisector of $\angle BAC$. If $AB = 8\text{cm}$, $BD = 6\text{cm}$, and $DC = 3\text{cm}$. Then the length of the side AC is —
 A) 6cm B) 4cm C) 3cm D) 8cm

8. In the adjacent figure $\angle BAC = 90^\circ$
and $AD \perp BC$ Then



- A) $BD \cdot CD = BC^2$ B) $AB \cdot AC = BC^2$
C) $BD \cdot CD = AD^2$ D) $AB \cdot AC = AD^2$

9. Two poles of height 6m and 11m stand vertically on a plane ground. If the distance between their feet is 12m, what is the distance between their tops?

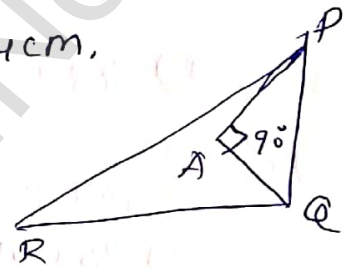
- A) 13m B) 14m C) 15m D) 12m

10. In the given figure, $PR = 26$ cm, $QR = 24$ cm,

$\angle PAQ = 90^\circ$, $PA = 6$ cm and $QA = 8$ cm

Find $\angle PQR$

- A) 80° B) 85° C) 75° D) 90°



11. A tangent is perpendicular to the radius at the
A) centre B) point of contact C) infinity D) chord.

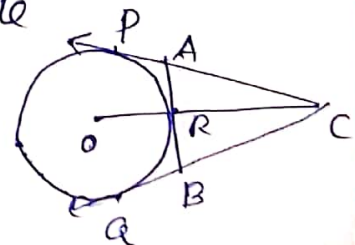
12. How many tangents can be drawn to the circle from an exterior point?

- A) one B) two C) infinite D) zero

13. The two tangents from an external points P to a circle with centre at O are PA and PB. If $\angle APB = 70^\circ$ then the value of $\angle AOB$ is

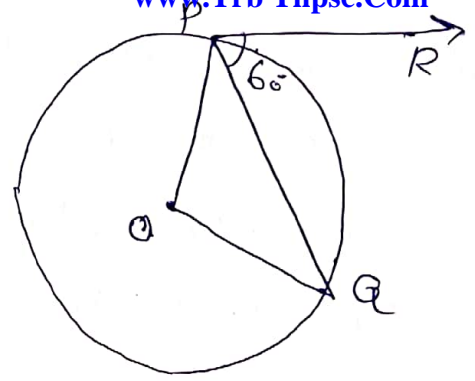
- A) 100° B) 110° C) 120° D) 130°

14. In figure CP and CQ are tangents to a circle with centre at O. ARB is another tangent touching the circle at R. If $CP = 11$ cm and $BC = 7$ cm then the length of BR is



- A) 6 cm B) 5 cm C) 8 cm D) 4 cm

15. In figure if PR is tangent to the circle at P and O is the centre of the circle then $\angle POQ$ is



A) 120° B) 100° C) 110° D) 90°

16. S and T are points on sides PQ and RP respectively of ΔPQR . If $PS = 3\text{cm}$, $SQ = 6\text{cm}$, $PT = 5\text{cm}$ and $TR = 10\text{cm}$ and then QR

A) $4ST$ B) $5ST$ C) $3ST$ D) $3QR$

17. The perimeter of a right angle triangle is 36cm . Its hypotenuse is 15cm , then the area of the triangle

A) 108cm^2 B) 54cm^2 C) 27cm^2 D) 216cm^2

18. A line which intersects a circle at two distinct points is called.

A) point of contact B) secant C) diameter D) tangent.

19. If the angle between two radii of a circle is 130° the angle between the tangents at the end of radii is

A) 50° B) 130° C) 90° D) 40°

20. The height of an equilateral triangle of side 'a' is

A) $\frac{a}{2}\text{cm}$ B) $\sqrt{3}a\text{cm}$ C) $\frac{\sqrt{3}}{2}a\text{cm}$ D) $\frac{\sqrt{3}}{4}a\text{cm}$

11-6-2020

Ln: 5. coordinate geometry

Choose the correct answer:

- Find the ratio in which the line segment joining the points $(-3, 10)$ and $(6, -8)$ is internally divided by
A) 7:2 B) 3:4 C) 2:7 D) 5:3
- If the points $(0,0)$, $(a,0)$ and $(0,b)$ are collinear then
A) $a=b$ B) $a+b=0$ C) $ab=0$ D) $a \neq b$
- If the mid-point of the line segment joining $A\left(\frac{x}{2}, \frac{y+1}{2}\right)$ and $B(x+1, y-3)$ is $C(5, -2)$ then find the values of x, y
A) $(6, -1)$ B) $(-6, 1)$ C) $(-2, 1)$ D) $(3, 5)$
- The area of triangle formed by the points $(a, b+c)$, $(b, c+a)$ and $(c, a+b)$ is
A) $a+b+c$ B) abc C) $(a+b+c)^2$ D) 0
- The four vertices of a quadrilateral are $(1, 2)$, $(-5, 6)$, $(7, -4)$ and $(k, -2)$ taken in order. If the area of quadrilateral is zero then find the value of k .
A) 4 B) -2 C) 6 D) 3
- Find the equation of the line passing through the point which is parallel to the y -axis $(5, 3)$ is
A) $y=5$ B) $y=3$ C) $x=5$ D) $x=3$
- Find the slope of the line $2y = x + 8$
A) $\frac{1}{2}$ B) 1 C) 8 D) 2
- Find the value of P , given that the line $\frac{y}{2} = x - P$ passes through the point $(-4, 4)$ is
A) -4 B) -6 C) 0 D) 8
- Find the slope and y -intercept of the line $3y - \sqrt{3}x + 1 = 0$ is
A) $\frac{1}{\sqrt{3}}, -\frac{1}{3}$ B) $-\frac{1}{\sqrt{3}}, -\frac{1}{3}$ C) $\sqrt{3}, 1$ D) $-\sqrt{3}, -3$

10. Find the value of 'a' if the lines $7y = ax + 4$ and $2y = 3 - x$ are parallel.
 A) $\frac{7}{2}$ B) $-\frac{2}{7}$ C) $\frac{2}{7}$ D) $-\frac{7}{2}$
11. A line passing through the point (2, 2) and the axes enclose an area ∞ . The intercepts on the axes made by the line are given by the roots of.
 A) $x^2 - 2\infty x + \infty = 0$ B) $x^2 + 2\infty + \infty = 0$
 C) $x^2 - \infty x + 2\infty = 0$ D) None of these.
12. Find the equation of the line passing through the point (0, 4) and is parallel to $3x + 5y + 15 = 0$ the line is.
 A) $3x + 5y + 15 = 0$ B) $3x + 5y - 20 = 0$
 C) $2x + 7y - 20 = 0$ D) $4x + 3y - 15 = 0$
13. In a right angled triangle, right angled at B, if the side BC is parallel to x-axis, then the slope of AB is
 A) $\sqrt{3}$ B) $\frac{1}{\sqrt{3}}$ C) 1 D) not defined.
14. The y-intercept of the line $3x - 4y + 8 = 0$ is
 A) $-\frac{8}{3}$ B) $\frac{8}{3}$ C) 2 D) $\frac{1}{2}$
15. The lines $y = 5x - 3$, $y = 2x + 9$ intersect, at A. The coordinates of A are.
 A) (2, 7) B) (2, 3) C) (4, 17) D) (-4, 23).
16. The inclination of x-axis and every line parallel to x-axis is _____
 A) 0° B) 90° C) 45° D) 30°
17. The slope of vertical line is _____
 A) 0 B) 1 C) $\frac{1}{\sqrt{3}}$ D) undefined.
18. x-intercept is 1 and y-intercept is 3 then the S.L
 A) $3x + y + 3 = 0$ B) $x + y = 0$ C) $3x + y - 3 = 0$ D) $3x - 3y = 0$

19. A line passing through $(2, -3)$ and slope is 3 then the equation of the straight line is

- A) $3x - y + 9 = 0$ B) $3x - y - 9 = 0$
 C) $3x + y = 0$ D) $3x - y + 18 = 0$

20. The equation of the line passing through the point $(2, 4)$ and $(5, 1)$ is

- A) $x + y - 6 = 0$ B) $x - y - 6 = 0$
 C) $x + 2y - 6 = 0$ D) $2x - y - 6 = 0$

13-6-2020

Ln: 6. Trigonometry.

Choose the correct Answer

1. $\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta} = \underline{\hspace{2cm}}$

- A) $\cos^2 \theta$ B) $\tan^2 \theta$ C) $\sin^2 \theta$ D) $\cot^2 \theta$

2. $(\cos^2 \theta - 1)(\cot^2 \theta + 1) + 1 = \underline{\hspace{2cm}}$

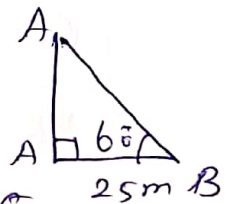
- A) 1 B) -1 C) 2 D) 0

3. $9 \tan^2 \theta - 9 \sec^2 \theta = \underline{\hspace{2cm}}$

- A) 1 B) 0 C) 9 D) -9

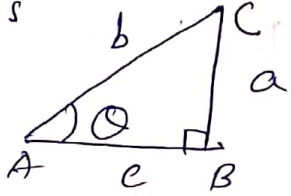
4. In the adjoining figure $AC = \underline{\hspace{2cm}}$

- A) 25 m B) $25\sqrt{3}$ m C) $\frac{25}{\sqrt{3}}$ m D) $25\sqrt{2}$ m



5. A man is 28.5 m away from a tower. His eye level above the ground is 1.5 m. The angle of elevation of the tower from his eyes is 45° . Then the height of the tower is

- A) 30 m B) 27.5 m C) 28.5 m D) 27 m.

6. From the figure, the value of $\operatorname{cosec} \theta + \cot \theta$ is
- A) $\frac{a+b}{c}$ B) $\frac{c}{a+b}$ C) $\frac{b+c}{a}$ D) $\frac{b}{a+c}$
- 
7. $(\sec A + \tan A)(1 - \sin A)$ is equal to
- A) $\sec A$ B) $\sin A$ C) $\operatorname{cosec} A$ D) $\cos A$
8. If $x = r \sin \theta \cdot \cos \phi$, $y = r \sin \theta \sin \phi$ and $z = r \cos \theta$ then $x^2 + y^2 + z^2$
- A) r B) r^2 C) $\frac{r^2}{2}$ D) $2r^2$
9. If $\cos \theta + \cos^2 \theta = 1$ then $\sin^2 \theta + \sin^4 \theta$ is equal to
- A) 1 B) 0 C) -1 D) 2
10. If $\tan \theta + \cot \theta = 3$ then $\tan^2 \theta + \cot^2 \theta$ is equal to
- A) 4 B) 7 C) 6 D) 9
11. If $m \cos \theta + n \sin \theta = a$ and $m \sin \theta - n \cos \theta = b$ then $a^2 + b^2$ is equal to
- A) $m^2 - n^2$ B) $m^2 + n^2$ C) $m^2 n^2$ D) $n^2 - m^2$
12. $\frac{\tan \theta}{\sec \theta - 1} + \frac{\tan \theta}{\sec \theta + 1}$ is equal to
- A) $2 \tan \theta$ B) $2 \sec \theta$ C) $2 \operatorname{cosec} \theta$ D) $2 \tan \theta \cdot \sec \theta$
13. The value of $\frac{3}{\cot^2 \theta} - \frac{3}{\cos^2 \theta}$ is equal to
- A) $\frac{1}{3}$ B) 3 C) 0 D) -3
14. If $\sin(\alpha + \beta) = 1$ then $\cos(\alpha - \beta)$ can be reduced to
- A) $\sin \alpha$ B) $\cos \beta$ C) $\sin 2\beta$ D) $\cos 2\beta$

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15. If $x = a \sec \theta$ and $y = b \tan \theta$ then $b^2 x^2 - a^2 y^2$ is
 A) ab B) $a^2 - b^2$ C) $a^2 + b^2$ D) $a^2 b^2$
16. The angle of elevation of the top of tree from a point at a distance of 250m from its base is 60° . The height of the tree is
 A) 250m B) $250\sqrt{3}$ m C) $\frac{250}{3}$ m D) $200\sqrt{3}$ m.
17. The angle of depression of a boat from a $50\sqrt{3}$ m high bridge is 30° . The horizontal distance of the boat from the bridge is
 A) 150m B) $150\sqrt{3}$ m C) 60m D) $60\sqrt{3}$ m
18. A ladder of length 14m just reaches the top of a wall. If the ladder makes an angle 60° with the horizontal then the height of the wall is
 A) $14\sqrt{3}$ m B) $28\sqrt{3}$ m C) $7\sqrt{3}$ m D) $35\sqrt{3}$ m
19. The top of two poles of height 18.5m and 7m are connected by a wire. If the wire makes an angle of measure 30° with horizontal then the length of the wire is —
 A) 23m B) 18m C) 28m D) 25.5m
20. The banks of a river are parallel. A swimmer starts from a point on one of the banks and swims in a straight line inclined to the bank at 45° and reaches the opposite bank at a point 20m from the point opposite to the starting point. The breadth of the river is equal to. ($\sqrt{2} = 1.414$).
 A) 12.12m B) 14.14m C) 16.16m D) 18.18m

16-6-2020

Ln: 7. Mensuration.

Choose the correct answer.

1. If S_1 denotes the TSA of a sphere of radius ' r ' and S_2 denotes the TSA of a cylinder of base radius ' r ' and height ' $2r$ ' then
 A) $S_1 = S_2$ B) $S_1 > S_2$ C) $S_1 < S_2$ D) $S_1 = 2S_2$
2. The ratio of the volume of two spheres is $8:27$. If r and R are the radii of spheres respectively. Then $(R-r) : r$ is —
 A) $1:2$ B) $1:3$ C) $2:3$ D) $4:9$
3. The radius of a wire is decreased to one-third of a original. If volume remains the same, then the length will be increased — of the original
 A) 3 times B) 6 times C) 9 times D) 27 times
4. The height of a cone is 60cm. A small cone is cut off at the top by a plane parallel to the base and volume is $(\frac{1}{64})^{\text{th}}$ the volume of the original cone. Then the height of the smaller cone is
 A) 45cm B) 30cm C) 15cm D) 20cm
5. A solid frustum is of height 8 cm. If the radii of its lower and upper ends are 3cm and 9cm respectively, then its slant height is. —
 A) 15 cm B) 12cm C) 10cm D) 17cm

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6. A solid is hemispherical at the bottom and conical above. If the curved surface areas of the two parts are equal, then the ratio of its radius and height of its conical part is —
 A) 1:3 B) $1:\sqrt{3}$ C) 1:1 D) $\sqrt{3}:1$
7. The material of a cone is converted into the shape of a cylinder of equal radius. If the height of the cylinder is 5 cm, then height of the cone is
 A) 10 cm B) 25 cm C) 15 cm D) 18 cm.
8. The CSA of a cylinder is 264 cm^2 and its volume is 924 cm^3 . The ratio of the diameter to its height is
 A) 3:7 B) 7:3 C) 6:7 D) 7:6
9. When Muruga divided surface area of a sphere by the sphere's volume, he got the answer as $\frac{1}{3}$. What is the radius of the sphere?
 A) 24 cm B) 9 cm C) 54 cm D) 4.5 cm
10. A spherical steel ball is melted to make 8 new identical balls. Then the radius each new ball is how much times the radius of the original ball?
 A) $\frac{1}{3}$ B) $\frac{1}{4}$ C) $\frac{1}{2}$ D) $\frac{1}{8}$
11. A semicircular thin sheet of a metal of diameter 28 cm is bent and an open conical cup is made. What is the capacity of the cup?
 A) $\left(\frac{1000}{3}\right)\sqrt{3} \text{ cm}^3$ B) $300\sqrt{3} \text{ cm}^3$ C) $\left(\frac{700}{3}\right)\sqrt{3} \text{ cm}^3$ D) $\left[\frac{1078}{3}\right]\sqrt{3} \text{ cm}^3$.

12. A cone of height 9cm with diameter of its base 18cm is carved out from a wooden solid sphere of radius 9cm. The percentage of wood wasted is
 A) 45% B) 56% C) 67% D) 75%
13. A cylinder having radius 1m and height 5m is completely filled with milk. In how many conical flasks can this milk be filled if the flask radius and height is 50cm each?
 A) 50 B) 500 C) 120 D) 160
14. A floating boat having a length 3m and breadth 2m is floating on a lake. The boat is sinks by 10cm when a man gets into it. The mass of the man is (density of water is 1000 kg/m^3).
 A) 50kg B) 60kg C) 70kg D) 80kg
15. The CSA of a right circular cone is of height 15cm and base diameter is 16cm is
 A) $60\pi \text{ cm}^2$ B) $68\pi \text{ cm}^2$ C) $120\pi \text{ cm}^2$ D) $136\pi \text{ cm}^2$
16. If the volume and surface area of a sphere are numerically equal, then the radius of the sphere is units.
 A) 2 B) 4 C) 3 D) 1
17. How many frustum can a right circular cone have?
 A) 1 B) two C) finite D) infinite.

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18. The ratio of surface area of a sphere and C.S.A of hemisphere is _____
 A) 1:2 B) 2:1 C) 3:1 D) 1:3
19. How many hemispheres can be obtained from a given sphere—
 A) 3 B) 4 C) infinite D) 2
20. A section of the sphere by a plane through any of its great circle is _____
 A) a sphere B) a hemisphere C) a circle D) none.

18-6-2020

Ln: 8 Statistics & Probability

Choose the correct answer!

1. The range of first 10 prime numbers.
 A) 9 B) 20 C) 27 D) 5
2. If the smallest value and co-efficient of range of a data are 25 and 0.5 respectively. Then the largest value.
 A) 25 B) 75 C) 100 D) 12.5
3. If the observations 1, 2, 3, ..., 50 have the variance V_1 , and the observations 51, 52, 53, ..., 100 have the variance V_2 then $\frac{V_1}{V_2}$ is
 A) 2 B) 1 C) 3 D) 0
4. If the standard deviation of a variable x is 4 and if $y = \frac{3x+5}{4}$, then the standard deviation of y is
 A) 4 B) 3.5 C) 3 D) 2.5

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5. If the data is multiplied by 4, then the corresponding variance is get multiplied by
 A) 4 B) 16 C) 2 D) 3
6. If the co-efficient of variance and standard deviation of a data are 35% and 7.7 respectively, then the mean is
 A) 20 B) 30 C) 35 D) 22
7. The batsman A is more consistent than batsman B is
 A) C.V of A > C.V of B B) C.V of A < C.V of B
 C) C.V of A = C.V of B D) C.V of A ≥ C.V of B
8. If an event occurs surely, then its probability is
 A) 1 B) 0 C) $\frac{1}{2}$ D) $\frac{3}{4}$
9. A letter is selected at random from the 'PROBABILITY'. The probability is not a vowel is
 A) $\frac{4}{11}$ B) $\frac{7}{11}$ C) $\frac{3}{11}$ D) $\frac{6}{11}$
10. In a competition containing two events A and B, the probability of winning the events A and B are $\frac{1}{3}$ and $\frac{1}{4}$ respectively, and the probability of winning both the events is $\frac{1}{4}$. The probability of winning only one events is
 A) $\frac{1}{12}$ B) $\frac{5}{12}$ C) $\frac{1}{11}$ D) $\frac{7}{12}$
11. A number x is chosen at random from -4, -3, -2, -1, 0, 1, 2, 3, 4. The probability that $|x| \leq 3$ is
 A) $\frac{3}{9}$ B) $\frac{4}{9}$ C) $\frac{1}{9}$ D) $\frac{7}{9}$
12. If the probability of non-happening of an events is, then the probability of happening of the event is
 A) $1-p$ B) p C) $\frac{p}{2}$ D) $2p$.

13. In one thousand lottery tickets, there are 50 prizes to be given. The probability of Mani winning a prize who bought one ticket is
 A) $\frac{1}{50}$ B) $\frac{1}{100}$ C) $\frac{1}{1000}$ D) $\frac{1}{20}$
14. When three coins are tossed, the probability of getting the same face on all the three coins is.
 A) $\frac{1}{8}$ B) $\frac{1}{4}$ C) $\frac{3}{8}$ D) $\frac{1}{3}$
15. A box contains some milk chocolates and some coco chocolates and there are 80 chocolates in the box. If the probability of taking a milk chocolate is $\frac{2}{3}$ then the number of coco chocolates is
 A) 40 B) 50 C) 20 D) 30.
16. The probability of getting a job for a person is $\frac{x}{2}$. If the probability of not getting the job is $\frac{2}{3}$ then the value of x is
 A) 2 B) 1. C) 3 D) 1.5
17. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is
 A) $\frac{3}{10}$ B) $\frac{7}{10}$ C) $\frac{3}{9}$ D) $\frac{7}{9}$
18. Which of the following is incorrect?
 A) $P(A) > 1$. B) $0 \leq P(A) \leq 1$ C) $P(\Phi) = 0$ D) $P(A) + P(\bar{A}) = 1$
19. If the mean and coefficient of variation of a data are 4 and 87.5% then the standard deviation is
 A) 3.5 B) 3 C) 4.5 D) 2.5
20. Probability of impossible event $P(\Phi) =$
 A) 1 B) 2 C) 0 D) -1

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Ln. No Q.No	1	2	3	4	5	6	7	8
1	D	A	C	C	C	B	C	C
2	C	B	C	B	C	D	A	B
3	C	C	B	D	A	D	C	B
4	B	B	B	B	D	B	C	C
5	A	D	B	D	A	A	C	B
6	C	D	B	A	C	C	B	D
7	A	C	A	B	A	D	B	B
8	A	C	B	C	B	B	B	A
9	C	B	C	A	A	A	B	B
10	A	B	A	D	D	B	C	B
11	A	B	A	B	C	B	D	D
12	A	A	C	B	B	C	D	A
13	C	D	B	B	D	B	BC	A
14	C	C	D	D	C	C	B	B
15	C	C	D	A	C	D	D	C
16	C	A	B	C	A	B	C	B
17	A	C	A	B	D	A	D	B
18	B	C	A	B	C	C	B	A
19	A	C	C	A	B	A	D	A
20	B	A	C	C	A	B	B	C

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