నమస్తే తెలంగాణ
నిపుణ II
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పోటీపరీక్షల ప్రత్యేకం
గురువారం 30 మార్చి 2023

వాయుకోశగోణులు

ఊపిరితిత్తుల లోపలిభాగం మిలియన్ల సంఖ్యలో ఉండే వాయుకోశగోణులను కలిగి ఉండి, వాయుమార్పిడి జరిగే వైశాల్యాన్ని పెంచుతుంది. ఊపిరితిత్తుల్లోని లోపలి పొర ఎక్కువగా ముడతలుపడి ఉండటం వల్ల వాటి వైశాల్యం చాలా ఎక్కువగా ఉంటుంది. మన ఊపిరితిత్తుల్లోని వాయుకోశగోణులన్నింటినీ విడదీసి పరిస్తే దాదాపు 160 చదరపు మీటర్ల (ఒక టెన్నిస్ కోర్టు) వైశాల్యాన్ని ఆక్రమిస్తాయి.

X CLASS MATHEMATICS MODEL PAPER

MODEL PAPER -1

TIME: 3.00 HOURS **MAX.MARKS: 80**

PART – A

MARKS: 60Marks TIME 2.30Hrs

SECTION – I

Note: (i) Answer all the questions
(ii) Each question carries 2 marks.

$6 \times 2 = 12$ Marks

1. If one zero of the polynomial **$x^2 - 3x + k$ is 2 then find the value of k.**

2. If A = {x/x is a prime number less than 7} B is the set of first 3 prime numbers is A=B? Give the reasons.

3. Find the nth term of the A.P. 19, 25, 31……127 find the 11^{th} term from the end.

4. The areas of two similar triangles are 108sq.cm and 75 sq.cm respectively, if the altitude of bigger triangle is 6cm, then find the corresponding altitude of the second triangle.

5. Express $\cos\theta$ in terms of $\tan\theta$

6.Find the probability of a card picked from well-shuffled deck of 52 cards which is a black card with prime number?

SECTION – II

Note: (i) Answer all the questions
(ii) Each question carries 4 marks.

$6 \times 4 = 24$ Marks

7. For what value of P the following pair of equations has unique solution $2x+py = -5$ and $3x+3y = -6$

8. If the distance between the points (5, 8) and (-3, y) is 10 units, then find the value of 'y'.

9. If $x^2 + y^2 = 11xy$ then prove that $2\log(x-y) = 2\log 3 + \log x + \log y$.

10. A sphere, a cylinder and a cone are of same height and same diameter then find the ratio of their volumes.

11. Find the mean of the following data.

Marks	13	15	17	19	21	23	25
frequency	7	11	15	8	4	3	2

12. In a triangle ABC, DE//BC if AD= x+1 and BD = 3x-2, AE=x, CE =4x-6, then find the value of x.

SECTION – III

(i) Answer any 4 questions of the following
(ii) Each question carries 4 marks

$6 \times 4 = 24$ Marks

13. Prove that $\sqrt{3} + \sqrt{5}$ is an irrational number.

14. Name the quadrilateral formed by the joining the points A(-1, -2) B(1, 0) C(-1, 2)D(-3, 0).

15. Draw the graph of $p(x) = x^2 - 6x + 9$ and find the zeros from the graph and verify the zeros by solving the equation.

16. Construct an equilateral triangle whose side measure is 5cm and construct a similar triangle to it whose sides are $\frac{4}{5}$ of the corresponding sides of the first triangle.

17.Two poles of equal heights are standing opposite to each other on either side of the road which is 80 m wide. From a point between them on the road, the angles of elevation of top of two poles are 60° and 30° respectively. Find the height of the poles.

18.Find the median of the following data.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of students	5	6	11	13	8	7	6	4

PART - B

Time: $\frac{1}{2}$ Hour **Max. Marks: 20**

Instructions:

I. Write the capital letters of the correct answer in the brackets provided against each question.

$20 \times 1 = 20$ marks

1. If A = {3, 5, 7, 11} then number of subsets of A? ( )
A) 4 B) 8 C) 12 D)16

2. In a GP 3^{rd} term is 8 and 5^{th} term is 32. Its common ratio is? ( )
A) 2 B)4 C) 6 D) 8

3. The coefficient of x^2 polynomial $6x^3 - 2x^2 + 4x + 7$ is ( )
A) 6 B) 2 C) -2 D) $\frac{7}{3}$

4. If the angle of elevation of the sun increases from 0° to 90° then the length of the shadow of the tower is?
( ) A)No change
B) Increases C) Decreases D) Cannot be decided

5. The pair of equations $4x-2y+6=0$ and $2x-y+8=0$ has___
solutions ( ) A) 1 B) 2 C) no solution D) infinitely many solutions

6. The value of k, if the distance between (2, 8) and(2, k)is 2( )
A) 4.5 B)5 C)10 D)12

7. The diagonals of a rhombus are 24 cm and 28cm then the area of rhombus is
A)336sq. mt B) 672 sq. mt C) 672 sq.mt D) 156 sq.mt

8. If the volume of a cube is 216 cm^3 then its side is ___cm ( )
A) 4 B) 6 C) 8 D)16

9. The nature of the roots of the quadratic equation $4x^2 - 12x + 6$ is ( )
A) real and distinct
B) real and equal C) not real D) none of them

10. The parallelogram circumscribing a circle is__(
A) rectangle B)square C) rhombus D)circle

11. If $\cot\theta + \operatorname{cosec}\theta = 5$ then $\cot\theta - \operatorname{cosec}\theta$ =? ( )
A) $\frac{1}{5}$ B) $\frac{-1}{5}$ C) 5 D) -5

12. A pole 6m high casts a shadow $2\sqrt{3}$ long on the ground, then the sun's elevation is ( )

A) 45° B) 60° C) 30° D) 90°

13. The length of the tangent from a point 12cm and the radius of the circle is 5cm, then the distance from point p to the center of the circle is __ ( )
A) 10cm B) 8cm C) 13cm D)15cm

14. The probability of getting a composite number is? _____( )
A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) $\frac{5}{6}$ D) $\frac{1}{2}$

15. The mode of the first 10 natural numbers is ( )
A) 5 B) 10 C) 0 D) 5.5

16. If the sum of a number and its reciprocal is $\frac{17}{4}$ then the number is ( )
A) 4 B) 5 C) $\frac{1}{3}$ D) 17

17. The value of k, for which the system of equations $kx - y = 2$ and $6x - 2y = 3$ has no solution is ( )
A) $\neq 2$ B) $\neq -3$ C) $\neq 3$ D) 6

18. Which of the following is an irrational number ( )
A) log_{10}^{1} B) log_{10}^{2} C) log_{10}^{10} D) log_{10}^{100}

19. If the cumulative frequency of the class 20-30 is 25 and the class 30-40 is 37 then the frequency of the class 30-40 is? ( )
A) 25 B) 12 C) 37 D)57

20. If $\frac{-2}{7}$, x, $\frac{-7}{2}$ are in geometric progression then the value of x is? ( )
A) 1 B) 4 C) 0 D)14

ANSWERS TO PART-B

1.D, 2.A, 3.C, 4.C, 5.C,
6.D, 7.A, 8.B, 9.A, 10.C,
11.B, 12.B, 13.C, 14.A, 15.C,
16.A, 17.C, 18.B, 19.B, 20.A.

MODEL PAPER -2

TIME: 3.15 HOURS **MAX.MARKS: 80**

PART – A

MARKS: 60 TIME:2.30Hours

SECTION – I

Note: (i) Answer all the questions
(ii) Each question carries 2 marks.

$6 \times 2 = 12$ Marks

1.If the mean of 9, 11, 13, k, 18, 19 is k, then find the value of k.

2. Write the formula to find the total surface area of a cone. Explain the term involving in it.

3. If $p(x) = x^2 - 5x + 4$ then find p(1), p(-2).

4. If the system of equations $kx + 3y = 1$ and $12x + ky = 2$ has no solutions, then find the value of k.

5. The sum of a number and its reciprocal is $\frac{10}{3}$. Find the numbers.

6.Karunya walks 24m due east and turns left and walks another 7m, how far is he now, from the starting point

SECTION – II

(i) Answer all the questions.
(ii) Each question carries 4 marks.

$6 \times 4 = 24$ Marks

7. Find the zeros of the polynomial $p(x) = x^2 - 3x - 4$.

8. If $\tan(A-B) = \frac{1}{\sqrt{3}}$ and $\sin A = \frac{\sqrt{3}}{2}$ then find the value of $\angle B$ and cos B.

9. On which ratio does the point (−4, 6) divide the line segment joining the points (−6, 6) and (2, 6).

10. When 3 coins are rolled simultaneously, then find the probability of (i) getting at least one head (ii) exactly two tails.

11. If P= {x/ x is an even multiple of 2, x< 20}, B = {x/x is an odd factor of 36} find n(A), n(B), n(A∩B), n(AUB).

12. Find the radius and area of a circle whose circumference is 176cm.

SECTION – III

Note: (i) Answer any 4 questions
(ii) Each question carries 6 marks.

$4 \times 6 = 24$ Marks

13. Check whether the pair of linear equations $3x + 4y = 2$, $6x + 8y = 5$ in-consistent? Verify graphically.

14. Find the coordinates of the points of trisection of the line segment joining (4, -1) and (2, -3)

15.Find the mode of the following data.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of students	5	6	11	13	8	7	6	4

16. Prove that the parallelogram circumscribing a circle is rhombus.

17. From the top of a hill, the angles of depression of two consecutive kilometre stones due east are found to be 30° and 45°. Find the height of the hill.

18. If $\sec\theta + \tan\theta = p$, then show that $\frac{p^2-1}{p^2+1} = \sin\theta$

Turn Page III

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