10th Standard

Maths

Reg.No. :

Exam Time : 02:30:00 Hrs

Total Marks : 90

14 x 1 = 14

1) If n(A x B) =6 and A={1,3} then n(B) is

  (a) 1   (b) 2   (c) 3   (d) 6

2) Euclid's division lemma states that for positive integers a and b, there exist unique integers q and r such that a = bq + r , where r must satisfy

  (a) $1 < r < b$ (b) $0 < r < b$ (c) $0 \leq r < b$ (d) $0 < r \leq b$

3) The sum of the exponents of the prime factors in the prime factorization of 1729 is

  (a) 1   (b) 2   (c) 3   (d) 4

4) The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

  (a) 2025   (b) 5220   (c) 5025   (d) 2520

5) A system of three linear equations in three variables is inconsistent if their planes

  (a) intersect only at a point   (b) intersect in a line   (c) coincides with each other   (d) do not intersect

6) If (x - 6) is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k is

  (a) 3   (b) 5   (c) 6   (d) 8

7) If in triangles ABC and EDF, $\dfrac{AB}{DE} = \dfrac{BC}{FD}$ then they will be similar, when

  (a) $\angle B = \angle E$ (b) $\angle A = \angle D$ (c) $\angle B = \angle D$ (d) $\angle A = \angle F$

8) In $\angle$ LMN, $\angle$ L=60º,$\angle$ M=50º, If $\triangle$ LMN~$\triangle$ PQR then the value of $\angle$ R is

  (a) 40º   (b) 70°   (c) 30°   (d) 110°

9) The area of triangle formed by the points (−5, 0), (0, −5) and (5, 0) is

  (a) 0 sq.units   (b) 25 sq.units   (c) 5 sq.units   (d) none of these

10) The straight line given by the equation x = 11 is

  (a) parallel to X axis   (b) parallel to Y axis   (c) passing through the origin   (d) passing through the point (0,11)

11) The value of is $sin^2\theta + \dfrac{1}{1+tan^2\theta}$ equal to

  (a) $tan^2\theta$ (b) 1   (c) $cot^2\theta$ (d) 0

12) $tan\theta\, cosec^2\theta - tan\theta$ is equal to

  (a) $sec\theta$ (b) $cot^2\theta$ (c) $sin\theta$ (d) $cot\theta$

13) Which of the following is not a measure of dispersion?

  (a) Range   (b) Standard deviation   (c) Arithmetic mean   (d) Variance

14) The sum of all deviations of the data from its mean is

  (a) Always positive   (b) always negative   (c) zero   (d) non-zero integer
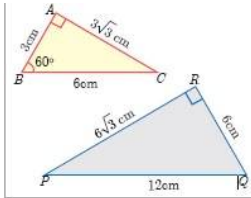
ANSWER 10. Q.NO 28 COMPULSORY   10 x 2 = 20

15) A relation 'f' is defined by f(x)=x^2-2 where x∈ {-2,-1,0,3}

  (i) List the elements of f

  (ii) Is f a function?

16) Find k if f o g(k) = 5 where f(k)=2k-1.

17) Determine the value of d such that 15 ≡ 3 (mod d).

18) Find the sum of

  1+3+5+..+55

19) Solve $2x - 3y = 6$, $x + y = 1$

20) Solve $2m^2 + 19m + 30 = 0$

21) Show that $\triangle$ PST~$\triangle$ PQR
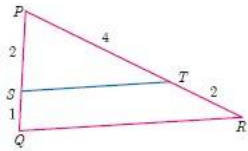
22) Observe figure and find $\angle$ P

23) Find the area of the triangle whose vertices are (-3,5) , (5,6) and (5,-2)

24) Find the equation of a straight line passing through (5, - 3) and (7, - 4).

25) Prove that $\tan^2\theta - \sin^2\theta = \tan^2\theta \ \sin^2\theta$

26) prove that $\sec\theta - \cos\theta = \tan\theta \ \sin\theta$

27) Find the range and coefficient of range of the following data: 25, 67, 48, 53, 18, 39, 44.

28) The range of a set of data is 13.67 and the largest value is 70.08. Find the smallest value.
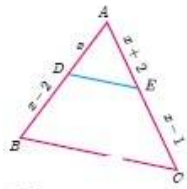
ANSWER 10. Q.NO 42 COMPULSORY   10 x 5 = 50

29) If the function f: R⟶ R defined by

$$f(x) = \begin{cases} 2x + 7, x < -2 \\ x^2 - \ 2, -2 \leq x < 3 \\ 3x - 2, x \geq 3 \end{cases}$$

  (i) f(4)

  (ii) f(-2)

  (iii) f(4)+2f(1)

  (iv) $\frac{f(1)-3f(4)}{f(-3)}$

30) Find the sum of all natural numbers between 300 and 600 which are divisible by 7.

31) Find the sum to n terms of the series $5 + 55 + 555 + ...$

32) In $\triangle$ ADC=, if DE‖BC,ADx=, DB x=−2, and EC=x=−1 then find the lengths of the sides AB and AC.

33) Let A = The set of all natural numbers less than 8, B = The set of all prime numbers less than 8, C = The set of even prime number. Verify that

  A ∩ B) x C=(A x C) ∩ (B x C)

34) The ratio of 6th and 8th term of an A.P is 7:9 Find the ratio of 9th term to 13th term

35) Find the square root of the following polynomials by division method

  $121x^4 - 198x^3 - 183x^2 + 216x + 144$

36) Solve the following quadratic equations by completing the square method

  $\frac{5x+7}{} = 3x + 2$

37) A girl looks the reflection of the top of the lamp post on the mirror which is 66 m away from the foot of the lamppost. The girl whose height is 12.5 m is standing 2.5 m away from the mirror. Assuming the mirror is placed on the ground facing the sky and the girl, mirror and the lamppost are in a same line, find the height of the lamp post.

38) In fig. if PQ∥BCandPR∥CD prove that
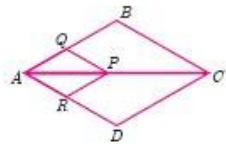
$$\frac{AB}{AD} = \frac{AQ}{AB}$$

39) In the figure, the quadrilateral swimming pool shown is surrounded by concrete patio. Find the area of the patio.
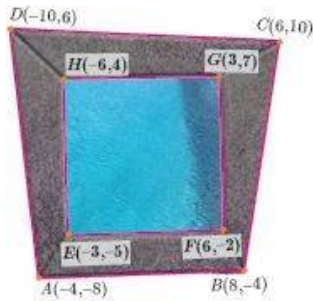
40) Find the equation of a straight line through the point of intersection of the lines 8x + 3y = 18, 4x+5y=9 and bisecting the line segment joining the points (5,–4) and (–7,6).

41) prove the following identities.

$\frac{sinA-sinB}{cosA+cosB} + \frac{cosA-cosB}{sinA+sinB} = 0$

42) if $sin\theta +cos\theta$ =p and $sec\theta$ =p and $sec\theta$ +cosecθ =q,then prove that q(p²-1)=2p

43) a) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{2}{3}$ of the corresponding sides of the triangle PQR (scale factor $\frac{2}{3}$).

(OR)

b) Construct a △ PQR such that QR = 6.5 cm,∠ P=60°and the altitude from P to QR is of length 4.5 cm.

44) a) Draw the graph of y = x² - 4 and hence solve x² - x - 12 = 0

(OR)

b) Draw the graph of y = x² + 3x + 2 and use it to solve x² + 2x + 1 = 0

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Exam Time : 02:30:00 Hrs   Total Marks : 90

12 x 1 = 12

1) Let n(A)= m and n(B) = n then the total number of non-empty relations that can be defined from A to B is

   (a) m^n (b) n^m (c) $2^{mn}-1$ (d) 2^{mn}

2) If {(a,8),(6,b)}represents an identity function, then the value of a and b are respectively

   (a) (8,6)   (b) (8,8)   (c) (6,8)   (d) (6,6)

3) If A = 2^{65} and B = $2^{64}+2^{63}+2^{62}+...+2^0$ Which of the following is true?

   (a) B is 2^{64} more than A   (b) A and B are equal   (c) B is larger than A by 1   (d) A is larger than B by 1

4) The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}$, ... is

   (a) $\frac{1}{24}$ (b) $\frac{1}{27}$ (c) $\frac{2}{3}$ (d) $\frac{1}{81}$

5) If the roots of the equation $q^2x^2 + p^2x + r^2 = 0$ are the squares of the roots of the equation $qx^2 + px + r = 0$, then q, p, r are in

   _____.

   (a) A.P   (b) G.P   (c) Both A.P and G.P   (d) none of these

6) The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the X axis is

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

7) In a given figure ST∥QR,PS=2cm and SQ=3 cm.

   Then the ratio of the area of △ PQR to the area △ PST is
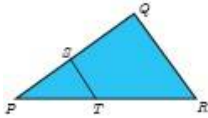
   (a) 25 : 4   (b) 25 : 7   (c) 25 : 11   (d) 25 : 13

8) The perimeters of two similar triangles△ ABC and △ PQR are 36 cm and 24 cm respectively. If PQ = 10 cm, then the length of AB is

   (a) $6\frac{2}{3}$ (b) $\frac{10\sqrt{6}}{3}cm$ (c) $60\frac{2}{3}cm$ (d) 15cm

9) The equation of a line passing through the origin and perpendicular to the line

   (a) 7x - 3y + 4 = 0   (b) 3x - 7y + 4 = 0   (c) 3x + 7y = 0   (d) 7x - 3y = 0

10) A straight line has equation 8y = 4x + 21. Which of the following is true

   (a) The slope is 0.5 and the y intercept is 2.6   (b) The slope is 5 and the y intercept is 1.6   (c) The slope is 0.5 and the y intercept is 1.6   (d) The slope is 5 and the y intercept is 2.6

11) Variance of first 20 natural numbers is

   (a) 32.25   (b) 44.25   (c) 33.25   (d) 30

12) If the standard deviation of x, y, z is p then the standard deviation of 3x+5, 3y+5, 3z +5 is

   (a) 3p+5   (b) 3p   (c) p + 5   (d) 9p + 15

ANSWER 10. Q.NO 28 COMPULSORY   11 x 2 = 22

13) Find f o g and g o f when f(x)=2x+1 and g(x)=x^2-2

14) Determine the general term of an A.P. whose 7th term is -1 and 16th term is 17.

15) Check whether the following sequences are in A.P. or not?

   $3\sqrt{2}, 5\sqrt{2}, 7\sqrt{2}, 9\sqrt{2}$,.....

16) If the difference between the roots of the equation $x^2 - 13x + k = 0$ is 17. find k

17) If α and β are the roots of $x^2 + 7x + 10 = 0$ find the values of

$\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$

18) Show that the points P(-1.5,3), Q(6,-2) , R(-3,4) are collinear.

19) Calculate the slope and y intercept of the straight line $8x - 7y + 6=0$

20) prove that $\sqrt{\frac{1+\cos\theta}{1-\cos\theta}}$ =cosec θ +cotθ

21) shoe that $\left(\frac{1+\tan^2 A}{1+\cot^2 A}\right) = \left(\frac{1-\tan A}{1-\cot A}\right)^2$

22) Find the range of the following distribution..

Age (in years)	16-18	18-20	20-22	22-24	24-26	26-28
Number of students	0	4	6	8	2	2

ANSWER 10. Q.NO 42 COMPULSORY   5X10 = 50

23) The general term of a sequence is defined as

$a_n = \begin{cases} n(n+3); n\epsilon N & is \quad odd \\ n^2 + 1; n\epsilon N & is \quad even \end{cases}$

Find the eleventh and eighteenth terms.

24) Find the first term of a G.P. in which $S_6 = 4095$ and $r = 4$

25) Find the GCD of $6x^3 - 30x^2 + 60x - 48$ and $3x^3 - 12x^2 + 21x - 18$.

26) Find

$\frac{x^2-16}{x+1} \div \frac{x-4}{x+4}$

27) Let A = {1,2,3,7} and B = {3,0,–1,7}, which of the following are relation from A to B ?

(i) R_1 = {(2,1), (7,1)}

(ii) R_2= {(–1,1)}

(iii) R_3 = {(2,–1), (7,7), (1,3)}

(iv) R_4= {(7,–1), (0,3), (3,3), (0,7)

28) If $f(x)=x^2$, $g(x)=3x$ and $h(x)=x-2$, Prove that $(f \circ g) \circ h = f \circ (g \circ h)$.

29) A function f: [-5,9] $\rightarrow$ R is defined as follows:

$f(x) = \begin{cases} 6x+1 & if \quad -5\le x < 2 \\ 5x^2 -1 & if \quad 2\le x < 6 \\ 3x-4 & if \quad 6\le x \le 9 \end{cases}$

Find $\frac{2f(-2)-f(6)}{f(4)+f(-2)}$.

30) How many consecutive odd integers beginning with 5 will sum to 480?

31) In a G.P. the product of three consecutive terms is 27 and the sum of the product of two terms taken at a time is $\frac{57}{2}$ .Find the three terms.

32) Solve $\sqrt{y+1} + \sqrt{2y-5} = 3$

33) Draw the graph of $y = x^2 - 4$ and hence solve $x^2 + 1 = 0$

34) Draw the graph of $y = (x - 1)(x + 3)$ and hence solve $x^2 - x - 6 = 0$

35) Simplyfy

$\frac{p^2-10p+21}{p-7} \times \frac{p^2+p-12}{(p-3)^2}$

36)

In the figure, find the area of
triangle AGF
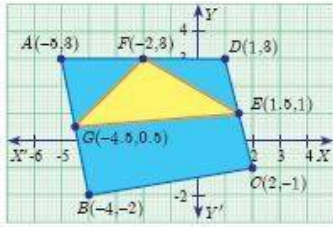
37) Find the equation of a straight line joining the point of intersection of $3x + y + 2 = 0$ and $x - 2y - 4 = 0$ to the point of intersection of $7x - 3y = -12$ and $2y = x + 3$

38) prove the following identities.

$\frac{sin^3A + cos^3A}{sinA + cosA} + \frac{sin^3A - cos^3A}{sinA - cosA} = 2$

39) if $\sqrt{3}$ $sin\theta$ -$cos\theta$ =0,then slow that $tan3\theta = \frac{3tan\theta - tan^3\theta}{1 - 3tan^2\theta}$

40) Find the range and coefficient of range of the following data.

63, 89, 98, 125, 79, 108, 117, 68

41) Find the variance and standard deviation of the wages of 9 workers given below: Rs.310, Rs.290, Rs.320, Rs.280, Rs.300, Rs.290, Rs.320, Rs.310, Rs.280.

42) The diameter of circles (in mm) drawn in a design are given below.

Diameters	3-36	37-40	41-44	45-48	49-52
Number of circles	15	17	21	22	25

Calculate the standard deviation.

43) a) Construct a triangle similar to a given triangle LMN with its sides equal to $\frac{4}{5}$ of the corresponding sides of the triangle
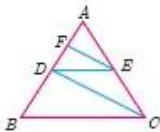
LMN (scale factor $\frac{4}{5}$).

(OR)

b) Construct a $\triangle$ ABC such that AB = 5.5 cm, $\angle$ C=25º and the altitude from C to AB is 4 cm.

44) a) Find the values of a and b if the following polynomials are perfect squares

$ax^4 + bx^3 + 361x^2 + 220x + 100$

(OR)

In figure DE||BC andCD. Prove that $AD^2=AB \times AF$

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RAVI MATHS TUITION CENTER, PH - 8056206308
QUARTERLY MODEL PAPER 3
Date : 26-Aug-19

10th Standard

Maths

Reg.No. :

Exam Time : 02:30:00 Hrs

Total Marks : 90

14 x 1 = 14

1) If n(A x B) =6 and A={1,3} then n(B) is
   (a) 1   (b) 2   (c) 3   (d) 6

2) If A={1,2}, B={1,2,3,4}, C={5,6} and D={5,6,7,8} then state which of the following statement is true..
   (a) (A x C) ⊂ (B x D)   (b) (B x D) ⊂ (A x C)   (c) (A x B) ⊂ (A x D)   (d) (D x A) ⊂ (B x A)

3) Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are
   (a) 0, 1, 8   (b) 1, 4, 8   (c) 0, 1, 3   (d) 0, 1, 3

4) The sum of the exponents of the prime factors in the prime factorization of 1729 is
   (a) 1   (b) 2   (c) 3   (d) 4

5) A system of three linear equations in three variables is inconsistent if their planes
   (a) intersect only at a point   (b) intersect in a line   (c) coincides with each other   (d) do not intersect

6) If (x - 6) is the HCF of x^2 - 2x - 24 and x^2 - kx - 6 then the value of k is
   (a) 3   (b) 5   (c) 6   (d) 8

7) If in triangles ABC and EDF, $\dfrac{AB}{DE} = \dfrac{BC}{FD}$ then they will be similar, when
   (a) $\angle B = \angle E$ (b) $\angle A = \angle D$ (c) $\angle B = \angle D$ (d) $\angle A = \angle F$

8) In $\angle$ LMN, $\angle$ L=60º, $\angle$ M=50º· If △ LMN~△ PQR then the value of $\angle$ R is
   (a) 40º   (b) 70°   (c) 30°   (d) 110°

9) A man walks near a wall, such that the distance between him and the wall is 10 units. Consider the wall to be the Y axis. The path travelled by the man is
   (a) x = 10   (b) y = 10   (c) x = 0   (d) y = 0

10) The straight line given by the equation x = 11 is
   (a) parallel to X axis   (b) parallel to Y axis   (c) passing through the origin   (d) passing through the point (0,11)

11) The value of is $sin^2\theta + \frac{1}{1+tan^2\theta}$ equal to
   (a) $tan^2\theta$ (b) 1   (c) $cot^2\theta$ (d) 0

12) $tan\theta\ cosec^2\theta$ -$tan\theta$ is equal to
   (a) $sec\theta$ (b) $cot^2\theta$ (c) $sin\theta$ (d) $cot\theta$

13) Which of the following is not a measure of dispersion?
   (a) Range   (b) Standard deviation   (c) Arithmetic mean   (d) Variance

14) The sum of all deviations of the data from its mean is
   (a) Always positive   (b) always negative   (c) zero   (d) non-zero integer

14 x 2 = 28

15) Find f o g and g o f when f(x)=2x+1 and g(x)=x^2-2

16) Let A = {0, 1, 2, 3} and B = {1, 3, 5, 7, 9} be two sets. Letf: A → B be a function given by f(x) = 2x + 1. Represent this function as an arrow .

17) Find the quotient and remainder when a is divided by b
   a=−12, b=5

18) Solve 8x ≡ 1 (mod 11)

19) Solve 2x − 3y = 6, x + y = 1

20) Solve $2x^2 - 2\sqrt{6}x + 3 = 0$

21) Show that $\triangle$ PST~$\triangle$ PQR
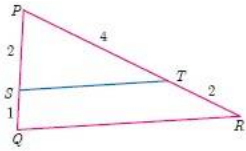
22) Find the area of the triangle whose vertices are (-3,5) , (5,6) and (5,-2)

23) Find the equation of the straight line passing through (5, 7) and is

Parallel to X axis

24) prove that $\frac{\sin A}{1+\cos A} = \frac{1-\cos A}{\sin A}$

25) if $\cos\theta + \sin\theta = \sqrt{2} \cos\theta$, then prove that $\cos\theta - \sin\theta = \sqrt{2} \sin\theta$

26) Show that $\tan^4\theta + \tan^2\theta = \sec^4\theta - \sec^2\theta$.

27) Find the range and coefficient of range of the following data: 25, 67, 48, 53, 18, 39, 44.

28) The range of a set of data is 13.67 and the largest value is 70.08. Find the smallest value.

$$9 \times 5 = 45$$

29) Let A = {1,2,3,4} and B ={2,5,8,11,14} be two sets. Let f: A $\longrightarrow$ B be a function given by f(x)=3x−1. Represent this function

(i) by arrow diagram

(ii) in a table form

(iii) as a set of ordered pairs

(iv) in a graphical form

30) If the function f: R$\longrightarrow$ R defined by

$$f(x) = \begin{cases} 2x + 7, x < -2 \\ x^2 - 2, -2 \leq x < 3 , \\ 3x - 2, x \geq 3 \end{cases}$$

(i) f(4)

(ii) f(-2)

(iii) f(4)+2f(1)

(iv) $\frac{f(1)-3f(4)}{f(-3)}$

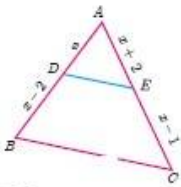31) Find the sum of all natural numbers between 300 and 600 which are divisible by 7.

32) How many terms of the series $1 + 4 + 16 + \ldots$ make the sum 1365?

33) Find the GCD of the polynomials $x^3 + x^2 - x + 2$ and $2x^3 - 5x^2 + 5x - 3$.

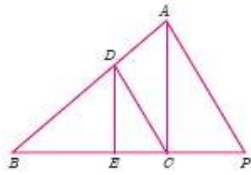34) Find the square root of the following expressions

$16x^2 + 9y^2 - 24xy + 24x - 18y + 9$

35) In $\triangle$ ADC=, if DE||BC,ADx=, DB x=−2, and EC=x=−1 then find the lengths of the sides AB and AC.

36)

DE‖AC and DC‖AP. Prove that $\dfrac{BE}{CE} = \dfrac{BC}{CP}$

37) a) Construct a triangle $\triangle$ PQR such that QR = 5 cm, $\angle$ P=30 and the altitude from P to QR is of length 4.2 cm.

$$9 \times 8 = 72$$

38) The function 't' which maps temperature in Celsius (C) into temperature in Fahrenheit (F) is defined by t(C)=F where F-$\frac{9}{5}$C+32. Find,

(i) t(0)

(ii) t(28)

(iii) t(-10)

(iv) the value of C whenn t(C)=212

(v) the temperature when the Celsius value is equal to the Farenheit value.

39) Solve $\sqrt{y+1} + \sqrt{2y-5} = 3$

40) Which rational expression should be subtracted from $\dfrac{x^2+6x+8}{x^8+8}$ to get $\dfrac{3}{x^2-2x+4}$

41) Find the equation of a straight line through the intersection of lines 5x − 6y = 2, 3x + 2y = 10 and perpendicular to the line 4x − 7y + 13 = 0

42) if $\sin\theta +\cos\theta$ =p and $\sec\theta$ =p and $\sec\theta$ +$\csc\theta$ =q,then prove that q(p²-1)=2p

43) A teacher asked the students to complete 60 pages of a record note book. Eight students have completed only 32, 35, 37, 30, 33, 36, 35 and 37 pages. Find the standard deviation of the pages yet to be completed by them.

44) Construct a triangle similar to a given triangle LMN with its sides equal to $\dfrac{4}{5}$ of the corresponding sides of the triangle LMN (scale factor $\dfrac{4}{5}$).

45) Draw the graph of y = x² - 4 and hence solve x² - x - 12 = 0

46) Draw the graph of y = x² + 3x + 2 and use it to solve x² + 2x + 1 = 0

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Prepared by
 RAVI MATHS TUITION CENTER
My YouTube channel name
SR MATHS TEST PAPERS (RAVI MATHS)
Answers uploaded soon in YouTube

10th Standard

Maths   Reg.No. : ☐☐☐☐☐☐

Exam Time : 02:30:00 Hrs   Total Marks : 90

14 x 1 = 14

1) The range of the relation R ={(x,x^2) |x is a prime number less than 13} is

    (a) {2,3,5,7}   (b) {2,3,5,7,11}   (c) {4,9,25,49,121}   (d) {1,4,9,25,49,121}

2) Let n(A)= m and n(B) = n then the total number of non-empty relations that can be defined from A to B is

    (a) m^n (b) n^m (c) 2^{mn}-1   (d) 2^{mn}

3) If the HCF of 65 and 117 is expressible in the form of 65m - 117 , then the value of m is

    (a) 4   (b) 2   (c) 1   (d) 3

4) The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

    (a) 2025   (b) 5220   (c) 5025   (d) 2520

5) Which of the following should be added to make x^4 + 64 a perfect square

    (a) 4x^2 (b) 16x^2 (c) 8x^2 (d) -8x^2

6) The solution of (2x - 1)^2 = 9 is equal to

    (a) -1   (b) 2   (c) -1, 2   (d) None of these

7) In a given figure ST||QR,PS=2cm and SQ=3 cm.

    Then the ratio of the area of △ PQR to the area △ PST is
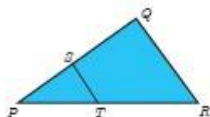
    (a) 25 : 4   (b) 25 : 7   (c) 25 : 11   (d) 25 : 13

8) How many tangents can be drawn to the circle from an exterior point?

    (a) one   (b) two   (c) infinite   (d) zero

9) The point of intersection of 3x − y = 4 and x + y = 8 is

    (a) (5, 3)   (b) (2, 4)   (c) (3, 5)   (d) (4, 4)

10) The slope of the line joining (12, 3) , (4, a) is $\frac{1}{8}$. The value of 'a' is

    (a) 1   (b) 4   (c) -5   (d) 2

11) (1+tanθ +secθ) (1+cotθ -cosecθ) is equal to

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

12) a cotθ +b cosecθ =p and b cot θ +a cosecθ =q then p^2-q^2 is equal to

    (a) a^2-b^2 (b) b^2-a^2 (c) a^2+b^2 (d) b-a

13) The mean of 100 observations is 40 and their standard deviation is 3. The sum of squares of all deviations is

    (a) 40000   (b) 160900   (c) 160000   (d) 30000

14) The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is

    (a) 3   (b) 15   (c) 5   (d) 225

11 x 2 = 22

15) Find k if f o g(k) = 5 where f(k)=2k-1.

16) Check whether the following sequences are in A.P. or not?

    x+2, 2x+3, 3x+4, ...

17) Find the sum of

    1^2+2^2+...+19^2

18) Solve $x^4 - 13x^2 + 42 = 0$

19) If α, β are the roots of the equation $2x^2 - x - 1 = 0$, then form the equation whose roots are
$\frac{1}{\alpha}, \frac{1}{\beta}$

20) Find the area of the quadrilateral formed by the points (8, 6), (5, 11), (-5, 12) and (-4, 3).

21) Calculate the slope and y intercept of the straight line $8x - 7y + 6 = 0$

22) prove that $\frac{sec\theta}{sin\theta} - \frac{sin\theta}{cos\theta} = cot\theta$

23) prove that $(cosec\theta - sin\theta)(sec\theta - cos\theta)(tan\theta + cot\theta) = 1$

24) Find the standard deviation of the following data 7, 4, 8, 10, 11. Add 3 to all the values then find the standard deviation for the new values.

25) Find the standard deviation of the data 2, 3, 5, 7, 8. Multiply each data by 4. Find the standard deviation of the new values.

5 x 5 = 25

26) Let A={1,2,3}, B={4,5,6,7}, and f={(1,4),(2,5),(3,6)} be a function from A to B. Show that f is one – one but not onto function.

27) Let f be a function from R to R defined by f(x)=x-5. Find the values of a a and b given that (a,4) and (1,b) belong to f.

28) A functionf: [-7,6) → R is defined as follows.

$$f(x) = \begin{cases} x^2 + 2x + 1 & -7 \le x < -5 \\ x + 5 & -5 \le x \le 2 \\ x - 1 & 2 < x < 6 \end{cases}$$

$$\frac{4f(-3) + f2(4)}{f(-6) - 3f(1)}$$

29) Find the sum to n terms of the series 5 + 55 + 555 + ...

30) Solve $pqx^2 - (p + q)^2 x + (p + q)^2 = 0$

16 x 8 = 128

31) Given A={1,2,3}, B = {2,3,5}, C = {3,4} and D = {1,3,5}, check if $(A \cap C) \times (B \cap D) = (A \times B) \cap (C \times D)$ is true?

32) Consider the functions f(x), g(x), h(x) as given below. Show that (f o g) o h = f o (g o h) in each case.
f(x)=x-1, g(x)=3x+1 and $h(x) = x^2$

33) The sum of three consecutive terms that are in A.P. is 27 and their product is 288. Find the three terms.

34) Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

35) In a G.P. the 9th term is 32805 and 6th term is 1215. Find the 12th term

36) The sum of the squares of the first n natural numbers is 285, while the sum of their cubes is 2025. Find the value of n.

37) Find the square root of $289x^4 - 612x^3 + 970x^2 - 684x + 361$

38) The number of seats in a row is equal to the total number of rows in a hall. The total number of seats in the hall will increase by 375 if the number of rows is doubled and the number of seats in each row is reduced by 5. Find the number of rows in the hall at the beginning.

39) In fig. if PQ||BC and PR||CD prove that
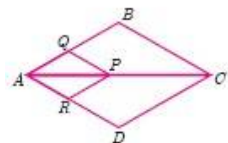
$$\frac{AB}{AD} = \frac{AQ}{AB}$$

40)

Find the equation of a straight line through the point of intersection of the lines 8x + 3y = 18, 4x+5y=9 and bisecting the line segment joining the points (5,–4) and (–7,6).

41) if $\frac{cos\alpha}{cos\beta}$ =m and $\frac{cos\alpha}{sin\beta}$ =n, then prove that $(m^2+n^2)\cos^2$

42) a) The rainfall recorded in various places of five districts in a week are given below..

Rainfall (in mm)	45	50	55	60	65	70
Number of places	5	13	4	9	5	4

Find its standard deviation.

b) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{3}$ of thecorresponding sides of the triangle PQR (scale factor $\frac{7}{3}$)

c) Draw a triangle ABC of base BC = 5.6 cm, $\angle$ A=40º and the bisector of $\angle$ A meets BC at D such that CD = 4 cm.

d) Draw the graph of y = $2x^2$ - 3x - 5 and hence solve $2x^2$ - 4x - 6 = 0

43) a) Draw the graph of y = (x - 1) (x + 3) and hence solve x^2 - x - 6 = 0

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Prepared by
 RAVI MATHS TUITION CENTER
My YouTube channel name
SR MATHS TEST PAPERS (RAVI MATHS)
Answers uploaded soon in YouTube

Exam Time : 02:30:00 Hrs   Total Marks : 90

14 x 1 = 14

1) If g={(1,1), (2,3), (3,5), (4,7)} is a function givrn by g(x)=αx+β then the values of α and β are

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

2) f(x) = $(x+1)^3$ - $(x-1)^3$ represents a function which is

(a) linear   (b) cubic   (c) reciprocal   (d) quadratic

3) If the sequence t_1, t_2, t_3...are in A.P. then the sequence t_6, t_{12}, t_{18},....is

(a) a Geometric Progression   (b) an Arithmetic Progression   (c) neither an Arithmetic Progression nor a Geometric Progression   (d) a constant sequence

4) The value of $(1^3+2^3+3^3+...15^3)$ - (1+2+3+...+15)is

(a) 14400   (b) 14200   (c) 14280   (d) 14520

5) The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the X axis is

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

6) In a given figure ST∥QR,PS=2cm and SQ=3 cm.

Then the ratio of the area of △ PQR to the area △ PST is

(a) 25 : 4   (b) 25 : 7   (c) 25 : 11   (d) 25 : 13

7) The perimeters of two similar triangles△ ABC and △ PQR are 36 cm and 24 cm respectively. If PQ = 10 cm, then the length of AB is

(a) $6\dfrac{2}{3}$ (b) $\dfrac{10\sqrt{6}}{3}cm$ (c) $60\dfrac{2}{3}cm$ (d) 15cm

8) A straight line has equation 8y = 4x + 21. Which of the following is true

(a) The slope is 0.5 and the y intercept is 2.6   (b) The slope is 5 and the y intercept is 1.6   (c) The slope is 0.5 and the y intercept is 1.6   (d) The slope is 5 and the y intercept is 2.6

9) When proving that a quadrilateral is a parallelogram by using slopes you must find

(a) The slopes of two sides   (b) The slopes of two pair of opposite sides   (c) The lengths of all sides   (d) Both the lengths and slopes of two sides

10) If the ratio of the height of a tower and the length of its shadow is $\sqrt{3}$:1 then the angle of elevation of the sun has measure

(a) 45°   (b) 30°   (c) 90°   (d) 60°

11) If $(\sin α + \text{cosec } α)^2 + (\cos α + \sec α)^2 = k + \tan^2 α + \cot^2 α$, then the value of k is equal to

(a) 9   (b) 7   (c) 5   (d) 3

12) If tanθ=cotθ the value of secθ is

(a) 2   (b) 1   (c) $\dfrac{1}{\sqrt{3}}$ (d) $\sqrt{2}$

13) The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is

(a) 3   (b) 15   (c) 5   (d) 225

14) 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

ANSWER 10. Q.NO 28 COMPULSORY   10X2 = 20

15)

Determine the general term of an A.P. whose 7th term is -1 and 16th term is 17.

16) Find the value of

16 + 17 +18 + ...+75

17) Solve the following system of linear equations in three variables $3x - 2y + z = 2$, $2x + 3y - z = 5$, $x + y + z = 6$.

18) if $\cos\theta + \sin\theta = \sqrt{2} \cos\theta$, then prove that $\cos\theta - \sin\theta = \sqrt{2} \sin\theta$

19) Prove that $\sec A (1 - \sin A)(\sec A + \tan A) = 1$.

20) $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\csc\theta$

ANSWER 10. Q.NO 42 COMPULSORY   10 x 5 = 50

21) If A={-2,-1,0,1,2} and f: A → B is an onto function defined by $f(x)=x^2+x+1$ then find B.

22) Find the sum of first 15 terms of the A.P. $8, 7\frac{1}{4}, 6\frac{1}{2}, 5\frac{3}{4}, ...$

23) Find the square root of the following expressions

$256(x - a)^2 (x - b)^4 (x - c)^{16} (x - d)^{20}$

24) Solve $pqx^2 - (p + q)^2x + (p + q)^2 = 0$

25) Multiply $\frac{x^4b^2}{x-1}$ by $\frac{x^2-1}{a^4b^3}$

26) Without using Pythagoras theorem, show that the vertices (1, - 4), (2, - 3) and (4, - 7) form a right angled triangle.

27) Show that the straight lines $x - 2y + 3 = 0$ and $6x + 3y + 8 = 0$ are perpendicular.

28) The mean of a data is 25.6 and its coefficient of variation is 18.75. Find the standard deviation.

29) Let f: A → B be a function defined by $f(x) = \frac{x}{2} -1$, where A={2,4,6,10,12}, B={0,1,2,4,5,9}, Represent f by

(i) set of ordered pairs

(ii) a table

(iii) an arrow diagram

(iv) a graph

30) A function f: [-5,9] → R is defined as follows:

$$f(x) = \begin{cases} 6x+1 & \text{if } -5 \le x < 2 \\ 5x^2 -1 & \text{if } 2 \le x < 6 \\ 3x-4 & \text{if } 6 \le x \le 9 \end{cases}$$

Find $\frac{2f(-2)-f(6)}{f(4)+f(-2)}$.

31) Find the sum of all natural numbers between 602 and 902 which are not divisible by 4.

32) Find the sum of the Geometric series 3 + 6 +12 + ...+1536

33) Find the least positive value of x such that

$89 \equiv (x + 3) \pmod 4$

34) If $A = \frac{x}{x+1}$, $B = \frac{1}{x+1}$, prove that $\frac{(A+B)^2+(A-B)^2}{A \div B} = \frac{2(x^2+1)}{x(x+1)^2}$

35) Find the square root of the expression $\frac{x^2}{y^2} - \frac{10x}{y} + 27 - \frac{10y}{x} + \frac{y^2}{x^2}$

36) A bus covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hour more it would have taken 30 minutes less for the journey. Find the original speed of the bus.

37) Find the equation of a straight line passing through the point P(-5, 2) and parallel to the line joining the points Q(3, -2) and R(-5, 4).

38) Find the equation of a straight line

Passing through (-8, 4) and making equal intercepts on the coordinate axes

Passing through (-8, 4) and making equal intercepts on the coordinate axes

39) prove the following identities.

$\sec^6\theta = \tan^6\theta + 3\tan^2\theta \, \sec^2\theta + 1$

40) if $\frac{\cos\alpha}{\cos\beta}$ =m and $\frac{\cos\alpha}{\sin\beta}$ =n, then prove that $(m^2+n^2)\cos^2$

41) Find the variance and standard deviation of the wages of 9 workers given below: Rs.310, Rs.290, Rs.320, Rs.280, Rs.300, Rs.290, Rs.320, Rs.310, Rs.280.

42) A wall clock strikes the bell once at 1 o' clock, 2 times at 2 o' clock, 3 times at 3 o' clock and so on. How many times will it strike in a particular day. Find the standard deviation of the number of strikes the bell make a day.

43) a) Construct a triangle similar to a given triangle ABC with its sides equal to $\frac{6}{5}$ of thecorresponding sides of the triangle ABC (scale factor $\frac{6}{4}$).

(OR)

b) Construct a $\triangle$ ABC such that AB = 5.5 cm, $\angle$ C=25º and the altitude from C to AB is 4 cm.

44) a) Graph the following quadratic equations and state their nature of solutions.

$x^2 + x + 7 = 0$

(OR)

b) Graph the following quadratic equations and state their nature of solutions.

$x^2 - 6x + 9 = 0$

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