RAVI MATHS TUITION CENTER, PH- 8056206308

10th MATHS MODEL PAPER 9

Date : 19-Nov-19

10th Standard

Maths

Reg.No. : | | | | | | |

Exam Time : 03:00:00 Hrs

Total Marks : 100

ANSWER ALL

14 x 1 = 14

1) Let f and g be two functions given by
f={(0,1), (2,0), (3,-4), (4,2), (5,7)}
g={(0,2), (1,0), (2,4), (-4,2), (7,0)} then the range of f o g is
(a) {0,2,3,4,5} (b) {–4,1,0,2,7} (c) {1,2,3,4,5} (d) {0,1,2}

2) 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)

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) 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

5) $\frac{3y-3}{y} \div \frac{7y-7}{3y^2}$ is
(a) $\frac{9y}{7}$ (b) $\frac{9y^2}{(21y-21)}$ (c) $\frac{21y^2-42y+21}{3y^2}$ (d) $\frac{7(y^2-2y+1)}{y^2}$

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

8) How many tangents can be drawn to the circle from an exterior point?
(a) one (b) two (c) infinite (d) zero

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) Consider four straight lines
(i) l_1 : 3y = 4x + 5
(ii) l_2 : 4y = 3x - 1
(iii) l_3 : 4y + 3x =7
(iv) l_4 : 4x + 3y = 2
Which of the following statement is true?
(a) l_1 and l_2 are perpendicular (b) l_1 and l_4 are parallel (c) l_2 and l_4 are perpendicular (d) l_2 and l_3 are parallel

11) if $\sin\theta = \cos\theta$, then $2\tan^2\theta + \sin^2\theta - 1$ is equal to
(a) $\frac{-3}{2}$ (b) $\frac{3}{2}$ (c) $\frac{2}{3}$ (d) $\frac{-2}{3}$

12) The angle of depression of the top and bottom of 20 m tall building from the top of a multistoried building are 30° and 60° respectively. The height of the multistoried building and the distance between two buildings (in metres) is
(a) $20,10\sqrt{3}$ (b) $30,5\sqrt{3}$ (c) 20,10 (d) $30,10\sqrt{3}$

13) The total surface area of a cylinder whose radius is $\frac{1}{3}$ of its height is
(b) 24π h^2 sq.units

(a) $\frac{9\pi h^2}{8}$ sq.units (c) $\frac{8\pi h^2}{9}$ sq.units (d) $\frac{56\pi h^2}{9}$ sq.units

14) Variance of first 20 natural numbers is

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

ANSWER ANY 10 QUESTIONS IN WHICH QUESTION NO. 28 IS COMPULSORY. 10 x 2 = 20

15) Find the remainders when 70004 and 778 is divided by 7

16) Find the 15^{th}, 24^{th} and n^{th} term (general term) of an A.P. given by 3, 15, 27, 39

17) Simplify $\frac{1}{x^2-5x+6} + \frac{1}{x^2-3x+2} - \frac{1}{x^2-8x+15}$

18) If α and β are the roots of $x^2 + 7x + 10 = 0$ find the values of
$\alpha^3 - \beta^3$

19) If the area of the triangle formed by the vertices A(-1,2) , B(k,-2) and C(7,4) (taken in order) is 22 sq. units, find the value of k.

20) $(\sin \propto+\cos \propto)(\tan \propto+\cot \propto)=\sec \propto+\operatorname{cosec} \propto$

21) The marks scored by the students in a slip test are given below.

x	4	6	8	10	12
f	7	3	5	9	5

Find the standard deviation of their marks.

22) A die is rolled and a coin is tossed simultaneously. Find the probability that the die shows an odd number and the coin shows a head.

23) 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.

24) Find the sum of 0.40 + 0.43 + 0.46 + ...+1

25) Find the LCM of the following
$x^3 - 27$, $(x - 3)^2$, $x^2 - 9$.

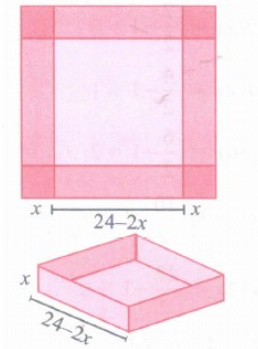
26) Show that the straight lines x - 2y + 3 = 0 and 6x + 3y + 8 = 0 are perpendicular.

27) A cone of height 24 cm is made up of modeling clay. A child reshapes it in the form of a cylinder of same radius as cone. Find the height of the cylinder.

28) A card is drawn from a pack of 52 cards. Find the probability of getting a king or a heart or a red card.

ANSWER ANY 10 QUESTIONS IN WHICH QUESTION NO. 42 IS COMPULSORY. 10 x 5 = 50

29) An open box is to be made from a square piece of material, 24 cm on a side, by cutting equal squares from the corners and turning up the sides as shown Fig. Express the volume V of the box as a function of x.



30) If f(x) =2x-1, g(x) = $\frac{x+1}{2}$, show that f o g = g o f=x.

31) Find the middle term(s) of an A.P 9,15,21,27,.....,183.

32)

Find the sum of the following

3,7,11....up to 40 terms

33) Find the GCD of the given polynomials

$x^4 - 1$, $x^3 - 11x^2 + x - 11$

34) To get from point A to point B you must avoid walking through a pond. You must walk 34 m south and 41 m east. To the nearest meter, how many meters would be saved if it were possible to make a way through the pond?

35) Find the value of k, if the area of a quadrilateral is 28 sq.units, whose vertices are (–4, –2), (–3, k), (3, –2) and (2, 3)

36) Find the value of 'a', if the line through (–2, 3) and (8, 5) is perpendicular to y = ax + 2

37) 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).

38) prove the following identities.

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

39) From the top of the tower 60 m high the angles of depression of the top and bottom of a vertical lamp post are observed to be 38° and 60° respectively. Find the height of the lamp post.tan38°(=0.7813,$\sqrt{3}$ =1.732)

40) The external radius and the length of a hollow wooden log are 16 cm and 13 cm respectively. If its thickness is 4 cm then find its T.S.A.

41) The time taken by 50 students to complete a 100 meter race are given below. Find its standard deviation.

Time taken(sec)	8.5-9.5	9.5-10.5	10.5-11.5	11.5-12.5	12.5-13.5
Number of students	6	8	17	10	9

42) If A is an event of a random experiment such that P(A) : P($\bar{A}$)=17.15 and n(S)=640 then find (i) P($\bar{A}$) (ii) n(A).

43) a) Two triangles QPR and QSR, right angled at P and S respectively are drawn on the same base QR and on the same side of QR. If PR and SQ intersect at T, prove that PT × TR = ST × TQ.

(OR)

b) Draw ∠ PQR such that PQ = 6.8 cm, vertical angle is 50° and the bisector of the vertical angle meets the base at D where PD = 5.2 cm.

44) a) If $S_1, S_2, S_3, ...S_m$ are the sums of n terms of m A.P.s Whose first terms are 1,2,3,....m and whose common differences are 1,3,5 ,...., (2m-1) respectively , then show that $S_1+S_2+S_3+..+S_m=\frac{1}{2}$ mn(mn+1).

(OR)

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

$x^2 - 9 = 0$

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