



Sri Raghavendra Tuition Center

QUATERLY EXAM QUESTION PAPER - 2024

10th Standard

Maths

Date : 16-09-24

Reg.No. :

Exam Time : 03:00 Hrs

Total Marks : 180

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Centum Book Available

I. Multiple Choice Question.

20 x 1 = 20

- 1) 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) $0 < r \leq b$
- 2) 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
- 3) $7^{4k} \equiv \underline{\hspace{2cm}} \pmod{100}$
 (a) 1 (b) 2 (c) 3 (d) 4
- 4) The first term of an arithmetic progression is unity and the common difference is 4. Which of the following will be a term of this A.P.
 (a) 4551 (b) 10091 (c) 7881 (d) 13531
- 5) An A.P. consists of 31 terms. If its 16th term is m, then the sum of all the terms of this A.P. is
 (a) 16 m (b) 62 m (c) 31 m (d) $\frac{31}{2} m$
- 6) The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$ is
 (a) $\frac{1}{24}$ (b) $\frac{1}{27}$ (c) $\frac{2}{3}$ (d) $\frac{1}{81}$
- 7) 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
- 8) 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) $y = 0$
- 9) If (5, 7), (3, p) and (6, 6) are collinear, then the value of p is
 (a) 3 (b) 6 (c) 9 (d) 12
- 10) 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)
- 11) If slope of the line PQ is $\frac{1}{\sqrt{3}}$ then slope of the perpendicular bisector of PQ is
 (a) $\sqrt{3}$ (b) $-\sqrt{3}$ (c) $\frac{1}{\sqrt{3}}$ (d) 0
- 12) 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

- 13) (2, 1) is the point of intersection of two lines.
 (a) $x - y - 3 = 0; 3x - y - 7 = 0$ (b) $x + y = 3; 3x + y = 7$ (c) $3x + y = 3; x + y = 7$ (d) $x + 3y - 3 = 0; x - y - 7 = 0$
- 14) 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
- 15) The sum of the exponents of the prime factors in the prime factorization of 1729 is
 (a) 1 (b) 2 (c) 3 (d) 4
- 16) 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
- 17) Given $F_1 = 1, F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_5 is
 (a) 3 (b) 5 (c) 8 (d) 11
- 18) If 6 times of 6th term of an A.P. is equal to 7 times the 7th term, then the 13th term of the A.P. is
 (a) 0 (b) 6 (c) 7 (d) 13
- 19) In an A.P., the first term is 1 and the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?
 (a) 6 (b) 7 (c) 8 (d) 9

II. Answer any 10 question.

10 x 2 = 20

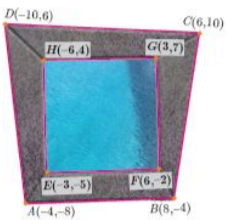
- 20) We have 34 cakes. Each box can hold 5 cakes only. How many boxes we need to pack and how many cakes are unpacked?
- 21) Find all positive integers, when divided by 3 leaves remainder 2.
- 22) If $13824 = 2^a \times 3^b$ then find a and b.
- 23) Find the general term for the following sequences.
 3, 6, 9, ...
- 24) Check whether the following sequences are in A.P. or not?
 $x + 2, 2x + 3, 3x + 4, \dots$
- 25) Which term of an A.P. 16, 11, 6, 1, ... is -54?
- 26) In a theatre, there are 20 seats in the front row and 30 rows were allotted. Each successive row contains two additional seats than its front row. How many seats are there in the last row?
- 27) Find the geometric progression whose first term and common ratios are given by
 $a = -7, r = 6$
- 28) If a, b, c are in A.P. then show that $3^a, 3^b, 3^c$ are in G.P
- 29) Find the value of
 $1 + 2 + 3 + \dots + 50$
- 30) Determine whether the sets of points are collinear? $(-\frac{1}{2}, 3), (-5, 6)$ and $(-8, 8)$
- 31) Find the slope of a line joining the given points $(-6, 1)$ and $(-3, 2)$
- 32) The line through the points $(-2, 6)$ and $(4, 8)$ is perpendicular to the line through the points $(8, 12)$ and $(x, 24)$. Find the value of x.
- 33) Find the equation of a line through the given pair of points $(2, \frac{2}{3})$ and $(\frac{-1}{2}, 2)$

III. Answer any 8 question.

8 x 5 = 40

- 34) If the Highest Common Factor of 210 and 55 is expressible in the form $55x - 325$, find x
- 35) Find the sum of all natural numbers between 300 and 600 which are divisible by 7.
- 36) If a, b, c are three consecutive terms of an A.P. and x, y, z are three consecutive terms of G.P then prove that $x^{b-c} \times y^{c-a} \times z^{a-b} = 1$
- 37) Find the sum to n terms of the series $5 + 55 + 555 + \dots$

- 38) Find the least positive integer n such that $1 + 6 + 6^2 + \dots + 6^n > 5000$
- 39) Find the sum of the series $(2^3 - 1) + (4^3 - 3^3) + (6^3 - 5^3) + \dots$ to (i) n terms, (ii) 8 terms
- 40) Find the sum of
 $15^2 + 16^2 + 17^2 + \dots + 28^2$
- 41) Find the sum of the following series
 $10^3 + 11^3 + 12^3 + \dots + 20^3$
- 42) Find the area of the triangle whose vertices are $(-3, 5)$, $(5, 6)$ and $(5, -2)$
- 43) Show that the points $P(-1, 5, 3)$, $Q(6, -2)$, $R(-3, 4)$ are collinear.
- 44) The floor of a hall is covered with identical tiles which are in the shapes of triangles. One such triangle has the vertices at $(-3, 2)$, $(-1, -1)$ and $(1, 2)$. If the floor of the hall is completely covered by 110 tiles, find the area of the floor.
- 45) In the figure, the quadrilateral swimming pool shown is surrounded by concrete patio. Find the area of the patio.



- 46) Without using Pythagoras theorem, show that the vertices $(1, -4)$, $(2, -3)$ and $(4, -7)$ form a right angled triangle.
- 47) A quadrilateral has vertices $A(-4, -2)$, $B(5, -1)$, $C(6, 5)$ and $D(-7, 6)$. Show that the mid-points of its sides form a parallelogram.

IV. Answer all question.

2 x 10 = 20

- 48) a) Draw the graph of $y = x^2 + 4x + 3$ and hence find the roots of $x^2 + x + 1 = 0$

(OR)

- b) A two wheeler parking zone near bus stand charges as below

Time in hours (x)	4	8	12	24
Amount Rs. (y)	60	120	180	360

Check if the amount charged are in direct variation or in inverse variation to the parking time. Graph the data. Also

- (i) find the amount to be paid when parking time is 6 hr;
 (ii) find the parking duration when the amount paid is Rs. 150.

- 49) a) Construct a $\triangle PQR$ such that $QR = 6.5$ cm, $\angle P = 60^\circ$ and the altitude from P to QR is of length 4.5 cm.

(OR)

- b) Draw a circle of diameter 6 cm from a point P , which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

All the best
