Tsi9M

Tenkasi District
Common Annual Examination - 2024

08·04·24

Standard 9
MATHS
Part - I

Time: 3.00 Hours   Marks: 100

I. Choose the best answer: 14x1=14

1) The set P = {x / x ∈ z; −1 < x < 1} is a
   a) singleten set   b) power set   c) null set   d) subset

2) An irrational number between 2 and 2.5 is
   a) $\sqrt{11}$ b) $\sqrt{5}$ c) $\sqrt{2.5}$ d) $\sqrt{8}$

3) $\sqrt{27} + \sqrt{12}$ =
   a) $\sqrt{39}$ b) $5\sqrt{6}$ c) $5\sqrt{3}$ d) $3\sqrt{5}$

4) The root of the polynomial equation 2x + 3 = 0 is
   a) $\frac{1}{3}$ b) $\frac{-1}{3}$ c) $\frac{-3}{2}$ d) $\frac{-2}{3}$

5) The value of k for which the pair of Linear equations 4x + 6y − 1 = 0 and 2x + ky − 7 =0 represents parallel lines is
   a) k = 3   b) k = 2   c) k = 4   d) k = −3

6) The angles of the triangles are (3x − 40)°, (x + 20)° and (2x − 10)° then the value of x is
   a) 40°   b) 35°   c) 50°   d) 45°

7) AD is a diameter of a circle and AB is a chord if AD=30 cm and AB = 24 cm then the distance of AB from the centre of circle is
   a) 10 cm   b) 9 cm   c) 8 cm   d) 6 cm

8) For any three sets A, B and C, (A − B) ∩ (B − C) equal to
   a) A only   b) B only   c) C only   d) ϕ

9) In what ratio does the y - axis divides the line joining the points (−5, 1) and (2, 3) internally
   a) 1 : 3   b) 2 : 5   c) 3 : 1   d) 5 : 2

10) If $P\left(\frac{a}{3}, \frac{b}{2}\right)$ is the mid point of the line segment joining A(−4, 3) and B(−2, 4) then (a, b) is
   a) (−9, 7)   b) $\left(-3, \frac{7}{2}\right)$ c) (9, −7)   d) $\left(3, \frac{-7}{2}\right)$

11) The value of tan 72° tan 18° is
   a) 0   b) 1   c) 18°   d) 72°

12) The perimeter of an equilateral triangle is 30 cm. The area is
   a) $10\sqrt{3}$ cm²   b) $12\sqrt{3}$ cm²   c) $15\sqrt{3}$ cm²   d) $25\sqrt{3}$ cm²

13) The arithmetic mean of 7 values is 35 and if each value is decreased by 6, then the arithmetic mean of new set of value is
   a) 28   b) 29   c) 35   d) 7

14) If p(E) = 0 then E is called .... event.
   a) contain   b) sure   c) impossible   d) exclusive

Part - II

II. Answer any ten questions. (28 is the compulsory):   10x2=20

15) Write down the power set of A = {1, 2, 3}

16) If A = {b,d,e,g,h} and B = {a,e,c,h}. Verify that n(A−B) = n(A) − n(A∩B)

17) Multiply $\sqrt[3]{40}$ and $\sqrt[3]{16}$

18) Verify whether the following are zeros of the Polynomial indicated against them, or not
   P(x) = (x + 3) (x − 4), x = 4, x = −3

19) Find the G.C.D of x⁴ − 1, x² − 1

20) The diameter of the circle is 52 cm and the length of one of its chord is 20cm. Find the distance of the chord from the centre.

21) Find the co.ordinates of the point which divides the line segment joining the points A(4, −3) and B(9, 7) in the ratio 3 : 2

22) Find the values of

$\tan^2 60° - 2\tan^2 45° - \cot^2 30° + 2\sin^2 30° + \frac{3}{4}\csc^2 45°$

23) Find the centroid of the triangle whose vertices are (−5, −5) (1, −4) and (−4, −2)
24) Find the total surface area of the cube whose side is 5cm.
25) Find the volume of the cuboid whose dimensions are length = 12cm, breadth = 8cm height = 6 cm.
26) The mean weight of 4 members of a family is 60kg. Three of them have the weight 56kg, 68kg and 72kg respectively. Find the weight of the fourth member.
27) Find the median of the given data 36, 44, 86, 31, 37, 44, 86, 35, 60, 51
28) Solve by the method of elimination 2x − y = 3 and 3x + y = 7

Part - III

III. Answer any ten questions. (42 is the compulsory):   10x5=50

29) If A = {−2, 0, 1, 3, 5} B = {−1, 0, 2, 5, 6} and C = {−1, 2, 5, 6, 7} then show that A − (B ∪ C) = (A − B) ∩ (A − C)
30) Given $\sqrt{2} = 1.414$. Find the value of $\frac{8 - 5\sqrt{2}}{3 - 2\sqrt{2}}$ (to 3 places of decimals)
31) If P = {2, 3, 5, 7, 11} and Q = {1, 3, 5, 11}. Find the symmetric difference between P and Q.
32) Find the value of m, if (x − 2) is a factor of the polynomial $2x^3 - 6x^2 + mx + 4$
33) Factorise $x^3 - 5x^2 - 2x + 24$
34) Find the points of trisection of the line segment joining (−2, −1) and (4, 8)
35) Find the area of the right angled triangle with hypotenuse 5cm and one of the acute angle is 48°30' (sin 48°30' = 0.7490, cos 48°30' = 0.6626)
36) The adjacent sides of a parallelogram measures 34 m, 20 m and the measure of one of the diagonal is 42m. Find the area of parallelogram.
37) The dimensions of a brick are 24cm × 12 cm × 8 cm. How many such bricks will be required to build a wall of 20 m length, 48 cm breadth and 6 m height.
38) The following are the marks second by the students in the summative assessment exam.

Class	0–10	10–20	20–30	30–40	40–50	50–60
No.of.Students	2	7	15	10	11	5

Calculate the median

39) In a recent year, of the 1184 centum scores in various subjects in tenth standard public exams. 233 were in mathematics, 125 in social science and 106 in science. If one of the student is selected at random. Find the probability of that selected student.
   i) is a centum scorer in Mathematics
   ii) is not a centum scorer in science

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40) If $\sec\theta = \frac{13}{5}$ then prove that $\frac{2\sin\theta - 3\cos\theta}{4\sin\theta - 9\cos\theta} = 3$
41) The area of a rectangle is $x^2 + 7x + 12$. If its breadth is (x + 3). then find its length.
42) Show that the points are taken in order form an isosceles triangle A(5, 4) B(2, 0) C(−2, 3) .

Part - IV

IV. Draw any one: 2x8=16

43) i) Construct the centroid of ΔPQR whose sides are PQ = 8 cm, QR = 6cm, RP = 7cm.   **(OR)**

   ii) Draw a triangle ABC, where AB = 8cm, BC = 6cm and |B = 70° and Locate its circumcentre and draw the circumcircle.

44) i) Use graphical method to solve the system of equations x + y = 5, 2x − y = 4.
                    (OR)

   ii) Solve graphically x − y = 0, y + 3 = 0

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