

Ts9M

**Tenkasi District Common Examinations
Common Annual Examination - 2023**



**Standard 9
MATHEMATICS
Part - I**

Time: 3.00 Hours

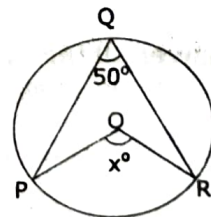
Marks: 100

Answer all the 14 questions:**14x1=14**

- If $B \subseteq A$ then $n(A \cap B)$ is
a) $n(A - B)$ b) $n(B)$ c) $n(B - A)$ d) $n(A)$
- Let $A = \{\phi\}$ and $B = P(A)$, then $A \cap B$ is
a) $\{\phi, \{\phi\}\}$ b) $\{\phi\}$ c) ϕ d) $\{0\}$
- Which one of the following is an irrational number
a) $\sqrt{25}$ b) $\sqrt[9]{4}$ c) $\frac{7}{11}$ d) π
- When $(2\sqrt{5} - \sqrt{2})^2$ is simplified, we get
a) $4\sqrt{5} + 2\sqrt{2}$ b) $22 - 4\sqrt{10}$ c) $8 - 4\sqrt{10}$ d) $2\sqrt{10} - 2$
- Degree of the constant polynomial is
a) 3 b) 2 c) 1 d) 0
- In a cyclic quadrilaterals ABCD, $\angle A = 4x$, $\angle C = 2x$ the value of x is
a) 30° b) 20° c) 15° d) 25°
- The distance between the two points (2,3) and (1,4) is
a) 2 b) $\sqrt{56}$ c) $\sqrt{10}$ d) $\sqrt{5}$
- 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
- The value of $\tan 72^\circ \tan 18^\circ$ is
a) 0 b) 1 c) 18° d) 72°
- $\sin^2 45^\circ + \cos^2 45^\circ = \dots\dots\dots$
a) 0 b) 1 c) 2 d) $\sqrt{2}$
- If the ratio of the sides of two cubes are 2 : 3 the ratio of their surface areas will be
a) 4 : 6 b) 4 : 9 c) 6 : 9 d) 16 : 36
- A particular observation which occurs maximum number of times in a given data is called its
a) Frequency b) range c) mode d) Median
- Which of the following cannot be taken as probability of an event?
a) 0 b) 0.5 c) 1 d) -1
- The median of the first four whole numbers
a) 1 b) 1.5 c) 2 d) 2.5

Part - II**Answer any 10 questions only:****10x2=20****Question No.28 is compulsory:**

- Find (i) $A - B$ and (ii) $B - A$. If $A = \{2, 6, 10, 14\}$: $B = \{2, 5, 14, 16\}$
- The mass of the Earth is 5.97×10^{24} kg and that of the Moon is 0.073×10^{24} kg. What is their total mass?
- Find the G.C.D of a^{m+1} , a^{m+2} , a^{m+3}
- Find the value of x° in the following figure.
- Find the distance between the pair of points (1,2) and (4, 3)
- 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.
- If $\tan A = \frac{2}{3}$, then find all the other trigonometric ratios.
- Find the value of $\frac{\tan 45^\circ}{\operatorname{Cosec} 30^\circ} + \frac{\sec 60^\circ}{\cot 45^\circ} - \frac{5 \sin 90^\circ}{2 \cos 0^\circ}$
- Using Heron's formula, find the area of a triangle whose sides are 10cm, 24cm, 26cm.
- Find the volume of a cube whose side is 5cm
- 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.



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- 26) Find the mode of the given data:
3.1, 3.2, 3.3, 2.1, 1.3, 3.3, 3.1
- 27) What is the probability of throwing an even number with a single standard dice of six faces?
- 28) Evaluate $10^3 - 15^3 + 5^3$

Part - III**Answer any 10 questions only:****10x5=50****Question No.42 is compulsory:**

- 29) Verify $(A \cap B)' = A' \cup B'$ using Venn diagrams.
- 30) In a group of 100 students, 85 students speak Tamil, 40 students speak English, 20 students speak French, 32 speak Tamil and English, 13 speak English and French and 10 speak Tamil and French. If each student knows atleast any one of these languages, then find the number of students who speak all these three languages.
- 31) Given $\sqrt{2} = 1.414$, find the value of $\frac{8-5\sqrt{2}}{3-2\sqrt{2}}$ (to 3 places of decimals)
- 32) Represent $4.\overline{73}$ upto 4 decimal places on the number line.
- 33) If the quotient on dividing $x^4 + 10x^3 + 35x^2 + 50x + 29$ by $(x+4)$ is $x^3 - ax^2 + bx + 6$, then find the value of a, b and also remainder.
- 34) Solve $8x - 3y = 12$; $5x = 2y + 7$ by cross multiplication method.
- 35) In a parallelogram, opposite sides are equal. Prove the theorem.
- 36) If the centroid of a triangle is at $(-2, 1)$ and two of its vertices are $(1, -6)$ and $(-5, 2)$, then find the third vertex of the triangle.
- 37) Find the value of $\sin 65^\circ 39' + \cos 24^\circ 57' + \tan 10^\circ 10'$
- 38) The dimensions of a hall is $10\text{m} \times 9\text{m} \times 8\text{m}$. Find the cost of white washing the walls and ceiling at the rate of Rs.8.50 per m^2 .
- 39) The median of the following data is 24. Find the value of x.

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	6	24	x	16	9

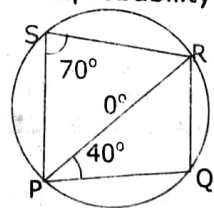
- 40) Find the mean, median and mode of the following distribution

Weight	25-34	35-44	45-54	55-64	65-74	75-84
Number of Students	4	8	10	14	8	6

- 41) In a recent year, of the 1184 centum scorers 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

- 42) If PQRS is a cyclic quadrilateral in which $\angle PSR = 70^\circ$ and $\angle QPR = 40^\circ$, then find $\angle PRQ$

**Part - IV****Answer all the questions:****2x8=16**

- 43) a) Draw $\triangle PQR$ with sides $PQ = 7\text{cm}$, $QR = 8\text{cm}$ and $PR = 5\text{cm}$ and construct its Orthocentre.

(OR)

- b) Construct the circumcentre of the $\triangle ABC$ with $AB = 5\text{cm}$, $\angle A = 60^\circ$ and $\angle B = 80^\circ$. Also draw the circumcircle and find the circumradius of the $\triangle ABC$.

- 44) a) Draw a graph $y = 3x - 1$.

(OR)

- b) Solve the following graphically, $x + y = 7$; $x - y = 3$.

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