Tsi9M

Tenkasi District
Common Annual Examination - 2025

16-04-25

Standard 9
MATHEMATICS
PART - I

Time: 2.30 Hours Marks: 100

I. Choose the correct answer: **14x1=14**

1) If $B \subseteq A$ then $n(A \cap B)$ is
   a) n(A–B) b) n(B) c) n(B–A) d) n(A)
2) If $A \cup B = A \cap B$ then
   a) $A \neq B$ b) $A = B$ c) $A \subset B$ d) $B \subset A$
3) If $\sqrt{80} = k\sqrt{5}$, then k =?
   a) 2 b) 4 c) 8 d) 16
4) When written with a rational denominator, the expression $\frac{2\sqrt{3}}{3\sqrt{2}}$ can be simplified as
   a) $\frac{\sqrt{2}}{3}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{\sqrt{6}}{3}$ d) $\frac{2}{3}$
5) If $x^{51}+51$ is divided by $x + 1$, then the remainder is
   a) 0 b) 1 c) 49 d) 50
6) If (x–3) is a factor of P(x), then the remainder is
   a) 3 b) –3 c) P(3) d) P(–3)
7) The interior angle made by the side in a parallelogram is 90° then the Parallelogram is a
   a) rhombus b) rectangle c) trapezium d) Kite
8) The angles of the rectanlge are $(3x - 40)^\circ$, $(x + 20)^\circ$ and $(2x - 10)^\circ$ then the value of x is
   a) 40° b) 35° c) 50° d) 45°
9) The distance between the two points (2, 3) and (1, 4) is
   a) 2 b) $\sqrt{56}$ c) $\sqrt{10}$ d) $\sqrt{2}$
10) If (x + 2, 4) = (5, y – 2), then the co-ordinate (x, y) are .....
   a) (7, 12) b) (6, 3) c) (3, 6) d) (2, 1)
11) If $\tan\theta = \cot 37^\circ$ then the value of θ is
   a) 37° b) 53° c) 90° d) 1°
12) If the lateral surface area of a cube is 600cm², then the total surface area is
   a) 150 cm² b) 400 cm² c) 900 cm² d) 1350 cm²
13) A Particular observation which occurs maximum number of times in a given data is called its
   a) frequency b) range c) mode d) median
14) The probability of all possible outcomes of a random experiment is always equal to
   a) One b) Zero c) Infinity d) Less than one

PART - II

II. Answer any 10 questions. (Q.No. 28 is compulsory): **10x2=20**

15) If A = {6, 7, 8, 9} and B = {8, 10, 12}, Find $A \Delta B$
16) If P = {1, 2, 5, 7, 9}, Q ={2, 3, 5, 9, 11} and R = {3, 4, 5, 7, 9} then find $(P \cup Q) \cup R$
17) Simplify: $\sqrt{63} - \sqrt{175} + \sqrt{28}$
18) Show that (x + 2) is a factor of $x^3 - 4x^2 - 2x + 20$
19) The angles of a quadrilateral are in the ratio 2 : 4 : 5 : 7. Find all the angles
20) Find the centroid of the triangle whose vertices are (2,–4), (–3, –7) and (7, 2)
21) Find the value of $\tan^2 60^\circ - 2\tan^2 45^\circ - \text{Cot}^2 30^\circ + 2\sin^2 30^\circ + \frac{3}{4}\text{cosec}^2 45^\circ$
22) Find the total surface area and lateral surface area of the cube, whose side is 5cm
23) In a distribution, the mean and mode are 66 and 60 respectively, calculate the median

24) The probability that it will rain tomorrow is $\frac{91}{100}$, what is the probability that it will not rain tomorrow?

25) Express the decimal expression into rational number $2.\overline{327}$

26) Find the length of a chord which is at a distance of $2\sqrt{11}$ cm find the centre of a circle of radius 12cm

27) In what ratio does the point P(−2, 5) divide the line segment joining A(−3, 5) and (4, −9)

28) Factorise: $3a^2-24ab+48b^2$

PART - III

III. Answer any 10 questions. (Q.No. 34 is compulsory): **10x5=50**

29) Verify $A-(B\cup C)=(A-B)\cap(A-C)$ using venn diagrams

30) In a class, all students take part in either music or drama or both. 25 students take part in music, 30 students take part in drama and 8 students take part in both music and drama. Find
(i) The number of students who take part in only music
(ii) The number of students who take part in drama
(iii) The total number of students in the class

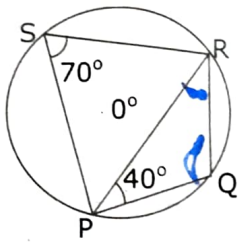
31) Represent $\sqrt{9.3}$ on a number line

32) Find the value of a and b if $\frac{\sqrt{7}-2}{\sqrt{7}+2}=a\sqrt{7}+b$

33) If $x^2+\frac{1}{x^2}=23$, then find the value of $x+\frac{1}{x}$ and $x^3+\frac{1}{x^3}$

34) Find quotient and the remainder when f(x) is divided by g(x)
$f(x)=8x^3-6x^2+15x-7$, $g(x)=2x+1$

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



36) Show that the following points taken in order form an isosceles triangle. A(6, −4), B(−2, −4), C(2, 10).

37) What are the co-ordinates of B if point P(−2, 3) and divides the line segment joining A(−3, 5) and B internally in the ratio 1 : 6?

38) If $\tan A=\frac{2}{3}$, then find all the other trigonometric ratios:

39) Find the value of the following

i) $\left(\frac{\cos 47^\circ}{\sin 43^\circ}\right)^2+\left(\frac{\sin 72^\circ}{\cos 18^\circ}\right)^2-2\cos^2 45^\circ$ (ii) $\frac{\cot\theta}{\tan(90^\circ-\theta)}+\frac{\cos(90^\circ-\theta)\tan\theta\sec(90^\circ-\theta)}{\sin(90^\circ-\theta)\cot(90^\circ-\theta)\operatorname{cosec}(90^\circ-\theta)}$

40) A land is in the shape of rhombus. The Perimeter of the land is 160m and one of the diagonal is 48m. Find the area of the land

41) The median of the following data is 24. Find the value of x

Class Internal (CI)	0–10	10–20	20–30	30–40	40–50
Frequency (f)	6	24	x	16	9

42) There are 24 balls in a pot. If 3 of them are Red, 5 of them are Blue and the remaining are green then, what is the probability of picking out i) a Blue ball ii) a Red ball and iii) a Green ball?

SIVAKUMAR M
Sri Ramana Hss
Vallam-627809

PART - IV

IV. Do both the questions: **2x8=16**

43) Construct the incentre of ΔABC with AB = 6cm, $\angle B = 65^\circ$ and AC=7cm. Also draw the incircle and measure its radius

(OR)

Construct ΔABC with AB = 5cm, $\angle B = 100^\circ$ and BC = 6cm Also locate its circumcentre draw circumcircle

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

(OR)

Draw the graph of y = 2x

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