Tirunelveli District
Common Annual Examination - 2024

Standard 9
MATHS
PART - I

Time: 3.00 Hours Marks: 100

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

1) If B – A is B, then A ∩ B is
a) A b) B c) ∪ d) ϕ

2) Which one of the following is an irrational number?
a) $\sqrt{25}$ b) $\sqrt{\frac{9}{4}}$ c) $\sqrt{\frac{7}{11}}$ d) π

3) If $\sqrt{9^x} = \sqrt[3]{9^2}$, then x = ...
a) $\frac{2}{3}$ b) $\frac{4}{3}$ c) $\frac{1}{3}$ d) $\frac{5}{3}$

4) The zero of the polynomial 2x + 5 is
a) $\frac{5}{2}$ b) $\frac{-5}{2}$ c) $\frac{2}{5}$ d) $\frac{-2}{5}$

5) The GCD of $x^4 - y^4$ and $x^2 - y^2$ is
a) $x^4 - y^4$ b) $x^2 - y^2$ c) $(x + y)^2$ d) $(x + y)^4$

6) The angles of a triangle 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°

7) If (x + 2, 4) = (5, y – 2) then the co-ordinates (x, y) are
a) (7, 12) b) (6, 3) c) (3, 6) d) (2, 1)

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

9) The value of $\frac{1 - \tan^2 45}{1 + \tan^2 45}$ is
a) 2 b) 1 c) 0 d) $\frac{1}{2}$

10) 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

11) The mean of the square of first 11 natural number is
a) 26 b) 46 c) 48 d) 52

12) The probability of an event cannot be
a) Equal to zero b) Greater than zero
c) Equal to one d) Less than zero

13) The probability of a sure event is
a) 2 b) 1 c) 0 d) $0 \le P(E) \le 1$

14) In a right angled triangle, if the angles are in the ratio 30° : 60° : 90° then the sides are in the ratio .....
a) 1 : 1 : $\sqrt{2}$ b) $\sqrt{2}$: 1 : 3 c) 1 : $\sqrt{3}$: 2 d) 3 : 6 : 9

PART - II

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

15) If A = {6, 7, 8, 9} and B={8, 10, 12} find A Δ B

16) If P = {1, 2, 5, 7, 9}, Q = {2, 3, 5, 9, 11}, R = {3, 4, 5, 7, 9} then find (P ∪ Q) ∩ R.

17) Express the following in the form 2^n. (i) 32 (ii) $\frac{1}{4}$

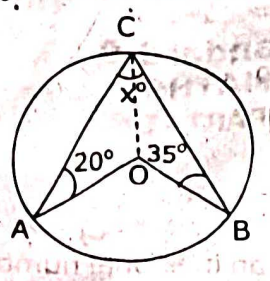
18) Write the following in scientific notation. $(50000000)^4$

19) Add the following polynomials: $f(x) = 16x^4 - 5x^2 + 9$; $g(x) = -6x^3 + 7x - 15$

20) Show that (x + 2) is a factor of $x^3 - 4x^2 - 2x + 20$

21) Factorise : $(x + y)^2 + 9(x + y) + 20$

22) Find the value of x°.



23) The centre of a circle is (−4, 2). If one end of the diameter of the circle is (−3, 7), then find the other end.
24) Find the centroid of the triangle whose vertices are (−5, −5) (1, −4) and (−4, −2)
25) Find the values of tan7° tan 23° tan 60° tan 67° tan 83°
26) A cube has the Total surface area of 486 cm^2. Find its lateral surface area.
27) Find the median for the following ungrouped data
10, 17, 16, 21, 13, 18, 12, 10, 19, 22
28) Two dice are rolled, find the probability that the sum is equal to 4.

PART - III

II. Answer any ten: (Q.No.42 is compulsory) **10x5=50**

29) i) If n(A) = 0, find n[P(A)] ii) If n[P(A)] = 256, find n(A)
30) 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)
31) Simplify : $2\sqrt[3]{40} + 3\sqrt[3]{625} - 4\sqrt[3]{320}$
32) Find the quotient and the remainder when
$(5x^2 - 7x + 2) \div (x - 1)$
33) Factorise: $x^3 - 3x^2 - 10x + 24$
34) The lengths of the diagonals of a Rhombus are 12 cm and 16 cm. Find the side of the rhombus.
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 point (11, 2) is the centre of the circle passing through the points (1, 2) (3, −4) and (5, −6)
37) The mid - points of the sides of a triangle are (5, 1) (3,−5) and (−5, −1). Find the co-ordinates of the vertices of the triangle.
38) If $\tan A = \frac{2}{3}$, then find all the other trigonometric ratios.
39) the dimensions of a brick are 24cm × 12 cm × 8 cm. Howmany such bricks will be required to build a wall of 20 m length, 48 cm breadth and 6 m height?
40) A land is in the shape of rhombus. The perimeter of the land is 160m and one of the diagonal is 48 m. Find the area of the land.
41) Find the mean for the following frequency table.

Class Interval	100-120	120-140	140-160	160-180	180-200	200-220	220-240
frequency	10	8	4	4	3	1	2

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 iii) a Green ball?

PART - IV

Answer the following: **2x8=16**

43) a) Construct ΔPQR whose sides are PQ = 6cm, $\angle Q = 60^\circ$ and QR = 7 cm and locate its orthocentre. **(OR)**
b) Draw an equilateral triangle of side 6.5 cm and locate its incentre. Also draw the incircle.
44) a) Draw the graph of 3x + 2y = 14 **(OR)**
b) Draw the graph of y = 3x−1