

**Standard 9****MATHS****Part - I**

Time: 3.00 Hours

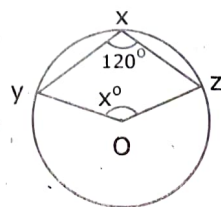
Marks: 100

**Choose the best option from the four given alternatives:****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) The set difference in general is not ..... property.  
a) commutative      b) Associative      c) Distributive      d) closure
- 3) Which one of the following has terminating decimal expansion?  
a)  $\frac{5}{64}$       b)  $\frac{8}{9}$       c)  $\frac{14}{15}$       d)  $\frac{1}{12}$
- 4) If  $\sqrt{80} = K\sqrt{5}$ , then  $K =$   
a) 2      b) 4      c) 8      d) 16
- 5) If  $x^{51} - 51$  is divided by  $x - 1$  then the remainder is  
a) 0      b) -1      c) 50      d) -50
- 6) Degree of constant polynomial is .....  
a) 3      b) 2      c) 1      d) 0
- 7) A chord is at a distance 15 cm from the centre of the circle of radius 25cm. The length of Chord is .....  
a) 25 cm      b) 20 cm      c) 40 cm      d) 18 cm
- 8) If  $(3, x)$  is the mid point of the line segment joining the points  $A(8, -5)$  and  $B(-2, 11)$ , then find the value of  $x$  is .....  
a) 6      b) 2      c) 3      d) 16
- 9) The ratio in which the  $x$  - axis divides the line segment joining the points  $(6, 4)$  and  $(1, -7)$  is  
a) 2 : 3      b) 3 : 4      c) 4 : 7      d) 4 : 3
- 10) Given that  $\sin \alpha = \frac{1}{2}$  and  $\cos \beta = \frac{1}{2}$ , then the value of  $\alpha + \beta$  is  
a)  $0^\circ$       b)  $90^\circ$       c)  $30^\circ$       d)  $60^\circ$
- 11) The perimeter of an equilateral triangle is 30cm. The area is  
a)  $10\sqrt{3} \text{ cm}^2$       b)  $12\sqrt{3} \text{ cm}^2$       c)  $15\sqrt{3} \text{ cm}^2$       d)  $25\sqrt{3} \text{ cm}^2$
- 12) The capacity of a water tank of dimensions  $10 \text{ m} \times 5 \text{ m} \times 1.5 \text{ m}$  is  
a) 75 litres      b) 750 litres      c) 7500 litres      d) 75000 litres
- 13) The mean of the square of first 11 natural number is  
a) 26      b) 46      c) 48      d) 52
- 14) Which of the following cannot be taken as probability of an event?  
a) 0      b) 0.5      c) 1      d) -1

**Part - II****Answer any 10 of the following. Q.No.28 is compulsory:****10x2=20**

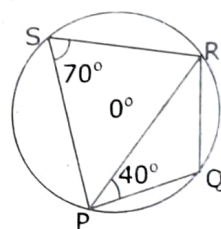
- 15) Write the power set of the following set.  $D = \{p, q, r, s\}$ .
- 16) If  $U = \{a, b, c, d, e, f, g, h\}$ ,  $A = \{b, d, f, h\}$  and  $B = \{a, d, e, h\}$ , then find  $A' \cap B$ .
- 17) Verify that  $1 = 0.\bar{9}$ .
- 18) The mass of the earth is  $5.97 \times 10^{24} \text{ kg}$  and that of the moon is  $0.073 \times 10^{24} \text{ kg}$ . What is their total mass?
- 19) Find the value of  $m$ , if  $(x - 2)$  is a factor of the polynomial  $2x^3 - 6x^2 + mx + 4$ .
- 20) The area of a rectangle is  $x^2 + 7x + 12$ . If its breadth is  $(x + 3)$ , then find its length.
- 21) Find the value of  $K$  for which the system of linear equations  $8x + 5y = 9$ ,  $Kx + 10y = 15$  has no solution.
- 22) The angles of a quadrilateral are in the ratio 2 : 4 : 5 : 7. Find all the angles.
- 23) Find the value of  $x^\circ$  in the given figure.
- 24) Find the coordinates of the points of trisection of the line segment joining the points  $A(-5, 6)$  and  $B(4, -3)$ .
- 25) Find the value of  $8 \sin 2x \cdot \cos 4x \cdot \sin 6x$ , when  $x = 15^\circ$ .



- 26) A cube has the total surface area of  $384\text{cm}^2$ . Find its lateral surface area.  
 27) For the data 11, 15, 17,  $x+1$ , 19,  $x-2$ , 3 if the mean is 14, find the value of  $x$ .  
 28) What is the probability of throwing an prime number with a single standard dice of six faces?

**Part - III****Answer any 10 of the following. Q.No.42 is compulsory:****10x5=50**

- 29) Verify:  $A - (B \cup C) = (A - B) \cap (A - C)$  using Venn diagrams.  
 30) In a colony, 275 families buy Tamil newspaper, 150 families buy English newspaper, 45 families buy Hindi newspaper, 125 families buy Tamil and English newspapers, 17 families buy English and Hindi newspapers, 5 families buy Tamil and Hindi newspapers and 3 families buy all the three newspapers. If each family buy atleast one of these newspapers then find  
 i) Number of families buy only one newspapers  
 ii) Number of families buy atleast two newspapers  
 iii) Total number of families in the colony.  
 31) Simplify:  $2\sqrt[3]{40} + 3\sqrt[3]{625} - 4\sqrt[3]{320}$   
 32) Given  $\sqrt{3} = 1.732$  find the value of  $\frac{9-5\sqrt{3}}{7-4\sqrt{3}}$  (to 3 places of decimals.)  
 33) Find quotient and the remainder when  $f(x)$  is divided by  $g(x)$ .  $f(x) = x^4 - 3x^3 + 5x^2 - 7$   
 $g(x) = x^2 + x + 1$   
 34) Solve by the method of elimination:  
 $13x + 11y = 70$ ;  $11x + 13y = 74$   
 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 points (11, 2) is the centre of the circle passing through the points (1, 2), (3, -4) and (5, -6)  
 37) Find the length of median through A of a triangles whose vertices are A(-1, 3), B(1, -1) and C(5, 1)  
 38) If  $\sec \theta = \frac{13}{5}$ , then show that  $\frac{2 \sin \theta - 3 \cos \theta}{4 \sin \theta - 9 \cos \theta} = 3$   
 39) The length, breadth and height of a cuboid are in the ratio 7 : 5 : 2. Its Volume is  $35840 \text{ cm}^3$ . Find its dimensions.  
 40) 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

- 41) 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 students 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) Factorise using synthetic division :  $x^3 - 7x + 6$

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

- 43) Draw and locate the centroid of triangle ABC where right angle at A,  $AB = 4 \text{ cm}$ ,  $AC = 3 \text{ cm}$ .

**(OR)**

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) Use graphical method to solve the following system of equation:  $3x + 2y = 6$ ,  $6x + 4y = 8$

**(OR)**

Draw the graph :  $y = \left(\frac{3}{2}\right)x + 3$