

ARC MATRIC HR SEC SCHOOL

SUBJECT : MATHS

CLASS: 10

TIME : 2.30 Hrs

MAXMARK: 100

Part 1 - CHOOSE THE CORRECT ANSWER

5 × 1 = 5

- If m and n are co-prime number then m^2 and n^2 are ____
(A) co - prime (B) not a co - prime (C) even (D) odd
- The height of the equilateral triangle of side a is ____ cm.
(A) $\frac{a}{2}$ (B) $\sqrt{3}a$ (C) $\frac{\sqrt{3}}{2}a$ (D) $\frac{\sqrt{3}}{4}a$
- The y - intercept of the line $3x - 4y + 8 = 0$ is ____.
(A) -4 (B) 4 (C) 2 (D) 0.375
- A number x is chosen at random from $-4, -3, -2, -1, 0, 1, 2, 3, 4$. The probability that $|x| \leq 3$ is ____ (A) $\frac{3}{9}$ (B) $\frac{4}{9}$ (C) $\frac{1}{9}$ (D) $\frac{7}{9}$
- Using Euclid's division lemma, if the cube of any positive integer is divided by 9 then the possible remainders are.
(A) 0, 1, 8 (B) 1, 4, 8 (C) 0, 1, 3 (D) 1, 3, 5
- The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$ is.
(A) $\frac{1}{24}$ (B) $\frac{1}{27}$ (C) $\frac{2}{3}$ (D) $\frac{1}{81}$
- If the sequence t_1, t_2, t_3, \dots are in A.P. then the sequence $t_6, t_{12}, t_{18}, \dots$ is ____.
(A) a G.P (B) an A.P (C) neither an A.P nor a G.P
(D) a constant sequence
- If in triangles ABC and EDF , $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when
(A) $\angle B = \angle E$ (B) $\angle A = \angle D$ (C) $\angle B = \angle D$ (D) $\angle A = \angle F$
- In figure (1) if PR is tangent to the circle at P and O is the centre of the circle, then $\angle POQ$ is ____
(A) 120° (B) 100° (C) 110° (D) 90°
- The straight line given by the equation $y = 11$ is

- (A) parallel to X axis (B) parallel to Y axis
(C) passing through the origin (D) passing through the point $(11,0)$

- A straight line has equation $8y = 4x + 21$. Which of the following is true
(A) The m is 0.5 and the c is 2.6 (B) The m is 5 and the c is 1.6
(C) The m is 0.5 and the c is 1.6 (D) The m is 5 and the c is 2.6
- The standard deviation of a data is 3. If each value is multiplied by 5 then the new variance is (A) 3 (B) 15 (C) 5 (D) 225
- If the mean and coefficient of variation of a data are 4 and 87.5% then the standard deviation is ____ (A) 3.5 (B) 3 (C) 4.5 (D) 2.5
- Which of the following is not a measure of dispersion?
(A) Range (B) Standard deviation (C) Arithmetic mean (D) Variance

Part 2 – 2 Marks (Q.No 28 is Compulsory)

10 X 2 = 20

- We have 34 cakes. Each box can hold 5 cakes only. How many boxes we need to pack and how many cakes are unpacked?
- If $A = 2^{65}$ and $B = 2^0 + 2^1 + 2^2 + 2^3 + \dots + 2^{64}$. Which one is bigger which one is smaller?
- Find a, b, c, d and e . If $32760 = a \times b \times c \times d^2 \times e^3$.
- A boy of height 90cm is walking away from the base of a lamp post at a speed of 1.2m/sec. If the lamppost is 3.6m above the ground, find the length of his shadow cast after 4 seconds.
- Find the sum of 3, 7, 11, ... up to 40 terms.
- In figure (2) if $PQ \parallel BC$ and $PR \parallel CD$
prove that $\frac{AR}{AD} = \frac{AQ}{AB}$
- If radii of two concentric circles are 4 cm and 5 cm then find the length of the chord of one circle which is a tangent to the other circle.
- Find the area of the triangle whose vertices are $(-3, 5), (5, 6)$, and $(5, -2)$
- The line through the points $(1, -a)$ and $(a, -7)$ has slope -1 . Find the value of a .
- Find the slope and y intercept of $\sqrt{3}x + (1 - \sqrt{3})y = 3$
- The amount of rainfall in a particular season for 6 days are

given as 17.8 cm, 19.2 cm, 16.3 cm, 12.5 cm, 12.8 cm and 11.4 cm. Find its Arithmetic mean

26. If the co-efficient of variation and standard deviation of a data are 35 % and 7.7 respectively then find the mean of the data.
27. A bag contains 5 blue balls and 4 green balls. A ball is drawn at random from the bag. Find the probability that the ball drawn is (i) blue (ii) not blue.
28. A and B are two events such that, $P(A) = 0.42$, $P(B) = 0.48$, and $P(A \cap B) = 0.16$. Find $P(A \cup B)$

Part III – 5 Marks (Q.No 42 is Compulsory)

10 X 5 = 50

29. Find the HCF of 396, 504, 636.
(using Euclid's Division Algorithm)
30. Find x such that (i) $89 \equiv (x + 3) \pmod{4}$
(ii) $5x \equiv 4 \pmod{6}$
31. The sum of three consecutive terms that are in A.P. is 27 and their product is 288. Find the three terms.
32. Find the sum of $15^2 + 16^2 + 17^2 + \dots + 28^2$.
33. In the given figure (3) find the value of AB , AC
34. In figure (4) $\angle QPR = 90^\circ$, PS is its bisector
If $ST \perp PR$, Prove that $ST \times (PQ + PR) = PQ \times PR$
35. Draw a circle of radius 3 cm. Take a point P on this circle and draw a tangent at P .
36. Prove analytically that the line segment joining the mid-points of two sides of a triangle is parallel to the third side and is equal to half of its length
37. A line makes positive intercepts on coordinate axes whose sum is 7 and it passes through $(-3, 8)$. Find its equation.
38. Find the equation of a straight line joining the point of intersection of $3x + y + 2 = 0$ and $x - 2y - 4 = 0$ to the point of

intersection of $7x - 3y = -12$ and $2y = x + 3$

39. Marks of the students in a particular subject of a class are given below

Mark	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No.of.student	8	12	17	14	9	7	4

40. A bag contains 12 blue balls and x red balls. If one ball is drawn at random (i) what is the probability that it will be a red ball? (ii) If 8 more red balls are put in the bag, and if the probability of drawing a red ball will be twice that of the probability in (i), then find x .
41. In a class of 35, students are numbered from 1 to 35. The ratio of boys to girls is 4:3. The roll numbers of students begin with boys and end with girls. Find the probability that a student selected is either a boy with prime roll number or a girl with composite roll number or an even roll number.
42. Find the area of the triangle formed by the point $(a, b + c)$, $(b, c + a)$ and $(c, a + b)$

Part IV – 8 Marks

2 X 8 = 16

43. a. Construct a ΔPQR such that $QR = 6.5$ cm, $\angle P = 60^\circ$ and the altitude from P to QR is of length 4.5 cm
(or)
b. Construct a triangle similar to a given triangle LMN with its sides equal to $\frac{8}{5}$ of the corresponding sides of the triangle LMN
44. a. Draw the graph of $y = x^2 + x - 2$ and hence solve $x^2 + x - 2 = 0$
(or)
b. Graph the following linear function $y = \frac{1}{3}x$. Identify the constant of variation and verify it with the graph. Also (i) find y when $x = 9$ (ii) find x when $y = 7$