

KOMARASAMY GOUNDER MAT.HR.SEC.SCHOOL – KURUMANDURMONTHLY TEST – JULY – 2023X – STANDARDTIME : 1.30 HOURSMATHEMATICSMAXIMUM MARKS : 50PART – AI.CHOOSE THE CORRECT ANSWER :

6 X 1 = 6

- The values of a and b if $4x^4 - 24x^3 + 76x^2 + ax + b$ is a perfect square are
 a) 100, 120 b) 10,12 c) - 120,100 d) 12,10
- The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the axis is
 a) 0 b) 1 c) 0 or 1 d) 2
- If a letter is at random from the English alphabets (a, b z) then the probability that the letter chosen precedes x
 a) $\frac{12}{13}$ b) $\frac{1}{13}$ c) $\frac{23}{26}$ d) $\frac{3}{26}$
- A page is selected at random from a book. The probability that the digit at unit place of the page number chosen is less is less than 7 is
 a) $\frac{3}{10}$ b) $\frac{7}{10}$ c) $\frac{3}{9}$ d) $\frac{7}{9}$
- Which of the following is incorrect
 a) $P(A) > 1$ b) $0 \leq P(A) \leq 1$ c) $P(\emptyset) = 0$ d) $P(A) + P(A) = 1$
- The solution of $(2x - 1)^2 = 9$ is equal to
 a) -1 b) 2 c) -1, 2 d) None of the above

PART – BII.ANSWER ANY SIX OF THE FOLLOWING :

6 X 2 = 12

QUESTION NO "12" IS COMPULSORY.

- Determine the quadratic equations, whose sum and product of roots are $\frac{5}{3}, 4$
- Write each of the following expression in terms of $\alpha + \beta$ and $\alpha\beta$.
 i) $(3\alpha - 1)(3\beta - 1)$ ii) $\frac{\alpha}{3\beta} + \frac{\beta}{3\alpha}$
- What will be the probability that a non leap year will have 53 Saturdays?
- The number of volleyball games that must be scheduled in a league with n teams is given by $G(n) = (n^2 - n) / 2$ where each team plays with every other team exactly once. A league schedules 15 games. How many teams are in the league?

11. The probability of happening of an event A is 0.5 and that of B is 0.3. If A and B are mutually exclusive events, then find the probability that neither A nor B happen.
12. Fill in the empty box in each of the given expression so that the resulting quadratic polynomial becomes a perfect square.
- i) $x^2 + 14x + \square$ ii) $p^2 + 2qp + \square$
13. Solve $2m^2 + 19m + 30 = 0$
14. If $P(A) = 0.37$, $P(B) = 0.42$, $P(A \cap B) = 0.09$ then find $P(A \cup B)$.

PART - CIII. ANSWER ANY FIVE OF THE FOLLOWING :

5 X 5 = 25

(QUESTION NUMBER "19" IS COMPULSORY)

15. In a class of 50 students, 28 opted for NCC, 30 opted for NSS and 18 opted both NCC and NSS. One of the students is selected at random. Find the probability that
- i) The student opted for NCC but not NSS.
ii) The student opted for NSS but not NCC.
iii) The student opted for exactly one of them.
16. A game of chance consists of spinning an arrow which is equally likely to come to rest pointing to one of the numbers 1, 2, 3, ..., 12. What is the probability that it will point to
- i) 7 ii) a prime number iii) a composite number ?
17. If A is an event of a random experiment such that $P(A) : P(\bar{A}) = 17 : 15$ and $n(S) = 640$ then find
- i) $P(\bar{A})$ ii) $n(A)$
18. Find the value of P and Q if the following expressions are perfect squares.
- i) $\frac{1}{x^4} - \frac{6}{x^3} + \frac{13}{x^2} + \frac{P}{x} + Q$ ii) $x^4 - 8x^3 + Px^2 + Qx + 16$
19. Solve the following Quadratic equations by formula method.
- i) $\sqrt{2f^2} - 6f + 3\sqrt{2} = 0$ ii) $36y^2 - 12ay + (a^2 - b^2) = 0$
20. The roots of the equation $x^2 + 6x - 4 = 0$ are α, β . Find the quadratic equation whose roots are
- i) α^2 and β^2 ii) $\alpha^2\beta$ and $\beta^2\alpha$
21. Solve $3p^2 + 2\sqrt{5p} - 5 = 0$ by formula method.

PART - DIV. ANSWER THE FOLLOWING :

1 X 7 = 7

22. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{3}$ of the corresponding sides of the triangle PQR (scale factor $\frac{7}{3}$)

OR

Draw a circle of radius 4cm .At a point L on it draw a tangent to the circle using the alternate segment.

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