IMPORTANT QUESTIONS PREPARED FROM 16 CHAPTER BASED ON THE UPCOMING EXAM IN JUNE

IMPORTANT QUESTIONS

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MOST IMPORTANT QUESTION

CHAPTER 1 SETS

1. Write all subset of the set $\{3,4,5\}$
2. If A and B are two sets such that A⊂B,thenA∪B is
3. The set builder form of (6, 12)
4. Draw the ven diagram for B-A
5. Let u=$\{1,2,3,4,5,6,7,8,\}$ $A = \{2,4,6,8\}$ and $B = \{2,4,8\}$
   a. Find A' and B'
   b. Also find $(A \cup B)'$
   c. Verify $(A \cup B)' = A' \cap B'$
6. In a group of 400 people 250 can speak Hindi 200 can speak English how many people can speak both Hindi and English
7. in a survey of 600 students in a school 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee.
8. let A=$\{x: x \in N, 1 \leq x \leq 5\}$
   B=$\{2,3,6,9\}$ and C=$\{1,4,5,8,9,10\}$
   a. find the number of element of A
   b. Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
   c. If X and Y are two sets such that n(x)=17,n(Y)=23 and $n(X \cup Y) = 38$ then find $n(X \cap Y)$

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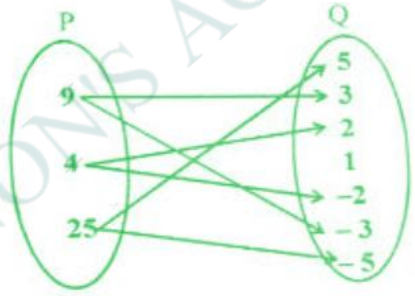
CHAPTER 2 RELATION AND FUNCTIONS

1. IF $(x+1, y-2) = (3,1)$ find the value of x and y
2. If A=$\{-1,1\}$ find $A \times A \times$
3. Let $A = \{1,2\}$ and B =$\{3,4\}$ find the number of relation from A TO B
4. Determine the domain and range of the relation R defined by
$$R = \{(x, x+5 : x \epsilon \{0,1,2,3,4,5\}\}$$
5. Find the domain of the function f(x)=$\frac{x^2+3x+5}{x^2-5x+4}$
6. Sketch the graph of the function, find domain and range
   a. $|x+1|$
   b. $-|x|$
   c. $|x+3|$
   d. $|x|+1$
7. The figure shows a relation between the sets P and Q



   a. Write the relation in set builder form
   b. Write the relation in roster form
   c. Write its domain and range.

8. If $f(x) = x^3 + 5x$, $g(x) = 2x + 1$. Then find $f + g$, fg and f/g

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CHAPTER 3 **TRIGONOMETRIC FUNCTIONS**

1. Find the values of other five trigonometric function $\sin x = \frac{3}{5}$ x lies in second
2. Find the value of
   a. $sin765^0$
   b. Cosec(-1410)
   c. $\tan\frac{19\pi}{3}$
   d. $sin75^0$
3. Solve $sin2x - sin4x + sin6x = 0$
4. $\cos 4x = 1 - 8sin^2 x cos^2 x$
5. $\frac{\sin 3x+sinx}{cos3x+cosx}$ =tan 2x
6. The maximum value of the function f (x)= sinx is
7. Prove that $\frac{tan\left(\frac{\pi}{4}+x\right)}{tan\left(\frac{\pi}{4}-x\right)} = \left(\frac{1+tanx}{1-\tan x}\right)^2$
8. $\boldsymbol{A.\, sin^2 8x - sin^2 4x = \sin 12x\, sin4x}$

   B.For any $\Delta ABC, prove\ that\ \frac{a+b}{c} = \frac{cos\left(\frac{A-B}{2}\right)}{sin\frac{C}{2}}$

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CHAPTER 4 PRINCIPLES OF MATHEMATICAL INDUCTION

1. using principle of mathematical induction prove that

   p(n):$1 + 3 + 3^2 + \cdots \ldots \ldots \ldots \ldots + 3^{n-1} = \frac{3^n - 1}{2}$

2. consider the statement p(n):$\boldsymbol{7^n - 3^n \text{ is divisible by } 4}$
   a. show p(1) is true
   b. verify by using principle of mathematical induction for all $n \epsilon N$

3. using principle of mathematical induction prove that

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \cdots \ldots \ldots \ldots \ldots \ldots \ldots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$$

4. Prove that $1.2 + 2.3 + 3.4 + \cdots \ldots \ldots \ldots \ldots \ldots + n(n+1) = \frac{n(n+1)(n+2)}{3}$

5. consider the following statement prove that

$$p(n): a + ar + ar^2 + \cdots \ldots \ldots + ar^{n-1} = \frac{a(r^n - 1)}{r - 1}$$

CHAPTER 5 COMPLEX NUMBERS QUADRATIC EQUATIONS

1. Express $a + ib$

   a. $\frac{(2+i)}{(1+i)(1+2i)}$

   b. $\frac{3-\sqrt{-16}}{1-\sqrt{-9}}$

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2. Solve the quadratic equation
   a. $\sqrt{5}x^2 + x + \sqrt{5} = 0$
   b. $ix^2 - x + 12i = 0$
3. Find the multiplicative inverse
   a. $4 - 3i$
4. Find the polar form of the complex
   a. $\sqrt{3} + i$
   b. $1 - i$
5. if $(a + ib)(c + id)(e + if) = A + iB$, show that
   $(a^2 + b^2) + (c^2 + d^2) + (e^2 + f^2) = A^2 + B^2$
6. find the square root of the complex number
   a. $-8-6i$
   b. 1+i
7. consider the complex number $z=1 + i + i^2 + i^4 \ldots$
   a. write z in the form a+ib
   b. find conjugate of z
   c. z^2

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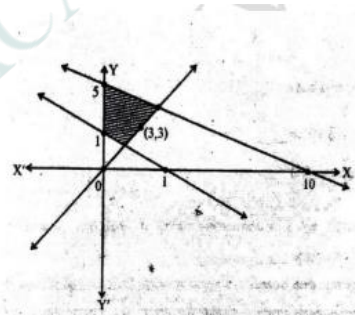
CHAPTER 6

LINEAR INEQUALITIES

1. solve $\frac{x}{3} > \frac{x}{2} + 1$
2. Solve the following system of inequalities graphically:
   $x + 2y \leq 8;\ 2x + y \leq 8;\ x \geq 0;\ y \geq 0$
3. solve the following system of inequalities graphically
   $3x + 4y \leq 12;\ x \geq 0;\ y \geq 0$
4. Solve the following system of inequalities graphically.
   $x - 2y \leq 3;\ 3x + 4y \geq 12;\ x \geq 0,\ y \geq 0$
5. Solve $\frac{3(x-2)}{5} \leq \frac{5(2-x)}{3}$
6. Shaded region in the graph shows solution of a system of linear inequalities. Find the inequalities.



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CHAPTER 7 PERMUTATIONS AND COMBINATIONS

1. Find the value of n, If ${}^{2n}C_3 = 11\ {}^{n}C_3$, find 'n'.
2. Find the number of different 8 letter arrangement that can be made from the letters of the word 'DAUGHTER' so that all vowels occur together.
3. Find the number of ways of choosing 4 cards from a pack of 52 playing cards. How many of these
   a. Four cards of the same suits?
   b. Four cards belong to different suits?
   c. Two cards red cards and two are black cards?
4. In how many ways can the letters of the word, PERMUTATIONS be arranged if:
   a. the words start with P and end with S?
   b. there are always 4 letters between P and S?
5. how many 3-digt numbers can be formed from the digits 1,2,3,4 and 5 assuming that
   a. repetition of the digits is not allowed
   b. repletion of the digits is allowed
6. how many chords can be drawn through 21 points on a circle
7. A bag contains 5 white, 6 red and 4 blue balls. Determine the number of ways in which 2 white, 3 red and 2 blue balls can be selected
8. If $\frac{1}{6!} + \frac{1}{7!} = \frac{x}{8!}$ Then x is .....