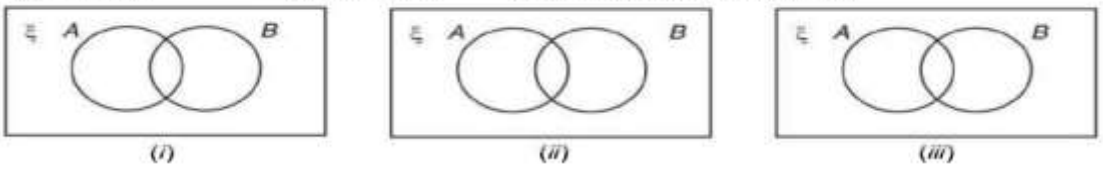
SAFAL EDUCATION ACADEMY
STANDARD – XI
MATHS
[Chapter- Sets, Binomial Theorm, Inequality, Complex Number, Sequence - Series]

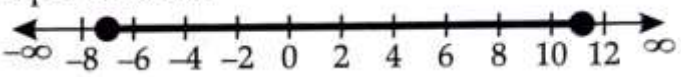
TIME : 1.0 Hr MARKS : 40
NAME : _____ Marks Obtained : ____

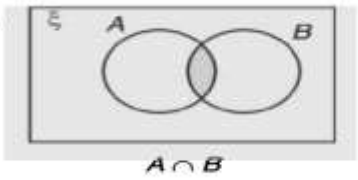
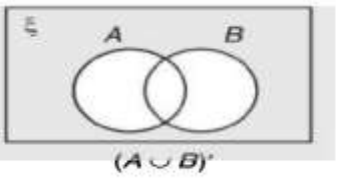
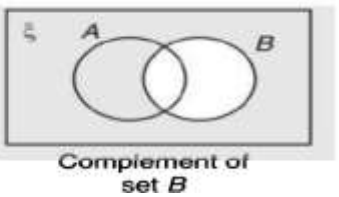
Q – 1 Solve the following

1	Convert complex number $-\sqrt{3}+i$ in polar form.
2	Find the modulus and principal argument of $(2-3i)$.
3	If cube roots of unity are 1, w and w^2, then find the value of $(1+w-w^2)^{32}$.
4	Find square root of complex number $3+4i$
5	Prove that $(1-\omega+\omega^2)(1+\omega-\omega^2)(1-\omega-\omega^2)=8$.
6	The sum of three numbers in A.P. is 51 and the product of their extremes is 273. Find the numbers.
7	Insert 4 arithmetic means between 3 and 23.
8	In an arithmetical progression, the sum of p terms is m and the sum of q terms is also m. Find the sum of $(p+q)$ terms. [ISC]
9	The ratio between the sum of n terms of two A.P.'s is $(7n+1):(4n+27)$. Find the ratio of their 11th terms.
10	Solve the linear inequality $\lvert x-2\rvert \geq 6$.

11	**Solve and represent the solution on a number line.** $5(2x-7)-3(2x+3)\le 0\ ,\ 2x+19\le 6x+47$
12	Solve $\frac{x^2-2x+3}{x^2-4x+3} > -3.$
13	If the coefficients of x^2 and x^3 in the expansion of $(3+ax)^9$ are the same, find the value of a. **[SC]**
14	In a binomial expansion, $(x+a)^n$, the first three terms are 1, 56 and 1372 respectively. Find values of x and a.
15	**The 2nd, 3rd and 4th terms in the expansion of $(x+y)^n$ are 240, 720 and 1080 respectively; find the values of, x, y and n.**
16	Using binomial theorem, expand $[(x+y)^5+(x-y)^5]$ and hence find the value of $[(\sqrt{3}+1)^5-(\sqrt{3}-1)^5]$.
17	Find the coefficient of x^5 in the expansion of $(1+2x)^6(1-x)^7$.
18	**If A and B are two sets such that n (A) = 17, n(B) = 23 and n(A ∪ B) = 38, find n(A ∩ B).**
19	Shade the regions as directed? (*i*) $A \cap B$ (*ii*) $(A \cup B)'$ (*iii*) Complementary set B 
20	**If $n(\xi)=600$ $n(A)=460$, $n(B)=390$, and $n(A\cap B)=325$, draw a Venn diagram to find:** **(*i*) $n(A\cup B)$ (*ii*) $n(A\cup B)'$ (*iii*) $n(A-B)$**

ANSWERS

1	$= 2\left(\cos\frac{5\pi}{6} + i\sin\frac{5\pi}{6}\right)$
2	$\sqrt{13}$, argument $\theta = -\alpha$ $= -\tan^{-1}\frac{3}{2}$
3	$= 2^{32}.w$
4	$\pm(2+i)$
5	Proved sum
6	the numbers are 13, 17, 21.
7	7, 11, 15 and 19.
8	0 (zero)
9	148 : 111
10	Hence, the solution set of the in equation is $[-\infty, +4) \cup [8, \infty)$.
11	$-7 \le x \le 11$ or $x \in [-7, 11]$ The graph of inequalities on the number line is represented as 
12	$x < 1$ or $\frac{3}{2} < x < 2, x > 3$

13	$\frac{9}{7}$
14	$n = 8,\ x = 1,\ a = 7$
15	$n = 5\ ,\ x = 2,\ y = 3.$
16	152
17	171
18	2
19	(i)  $A \cap B$ (ii)  $(A \cup B)'$ (iii)  Complement of set B
20	**Sol.** Given $n(\xi) = 600,\ n(A) = 460,\ n(B) = 390,\ n(A \cap B) = 325$ (i) $n(A \cup B) = n(A) + n(B) - n(A \cap B) = 460 + 390 - 325 = \mathbf{525}$ The given sets are intersecting sets. The Venn diagram is as shown. (ii) $n(A \cup B)' = n(\xi) - n(A \cup B) = 600 - 525 = \mathbf{75}$ iii) $n(A - B) = n(A) - n(A \cap B) = 460 - 325 = \mathbf{135}$