

SAFAL EDUCATION ACADEMY
STANDARD – XI
MATHS

[Chapter- Sets, Binomial Theorem]

TIME : 1.0 Hr

MARKS : 40

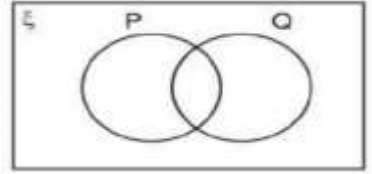
NAME : _____

Marks Obtained : _____

Q – 1 Solve the following

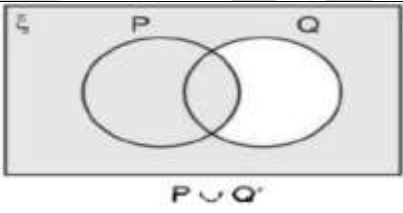
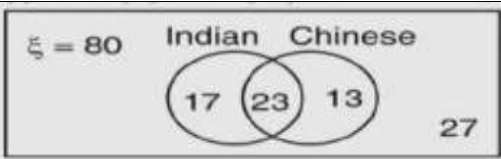
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| 1 | Expand $(1 + 4x)^5$. |
| 2 | Expand $\left(x + \frac{1}{x}\right)^6$. ($x \neq 0$) |
| 3 | Expand $(2 + x + x^2)^3$. |
| 4 | If the first three terms in the expansion of $(1 + ax)^n$ in ascending powers of x are $1 + 12x + 64x^2$, find n and a . [SC] |
| 5 | Using binomial theorem, evaluate : $(999)^3$. |
| 6 | Find the coefficient of x^5 in the expansion of $(1 + 2x)^6 (1 - x)^7$. |
| 7 | Find the 4th term from the end in the expansion of $\left(\frac{3}{x^2} - \frac{x^3}{6}\right)^7$. |
| 8 | Find the coefficient of x^{15} in the expansion of $(x - x^2)^{10}$. |
| 9 | Find the term independent of x in the expansion of $\left(\frac{3}{2}x^2 - \frac{1}{3x}\right)^9$. |
| 10 | The coefficients of $(2r + 1)$ th and $(r + 2)$ th terms in the expansions of $(1 + x)^{43}$ are equal. Find the value of r . |

| | |
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| 11 | Find the coefficient of x^5 in the expansion of $1 + (1 + x) + (1 + x)^2 + \dots + (1 + x)^{10}$. |
| 12 | Let $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 6, 8\}$ and $C = \{3, 4, 5, 6\}$, find (i) A' (ii) B' (iii) $(A \cup C)'$ (iv) $(A \cup B)'$ (v) $(A \cap C)'$ (vi) (A') (vii) $(B - C)'$ |
| 13 | (i) In the Venn diagram, shade $P \cup Q'$. (ii) A group of 60 children attend an often school club. Of these, 35 children play football and 29 play hockey. 3 children do not play either football or hockey. By drawing a Venn diagram or otherwise, find the number of children who play only hockey. (C.U.) |
| 14 | In a class of 100 students, 55 students have passed in mathematics and 67 students have passed in physics. Then, the number of students who have passed in physics only is |
| 15 | In a group of 80 people, 40 like Indian food, 36 like Chinese food and 27 do not like any kind of these foods. Draw Venn diagram to find: (i) how many like both kind of food? (ii) how many like only the Indian food? (iii) how many like only the Chinese food? |



ANSWERS

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|---|--|
| 1 | $1 + 20x + 160x^2 + 640x^3 + 1280x^4 + 1024x^5$. |
| 2 | $x^6 + 6x^4 + 15x^2 + 20 + \frac{15}{x^2} + \frac{6}{x^4} + \frac{1}{x^6}$. |
| 3 | $8 + 12x + 18x^2 + 13x^3 + 9x^4 + 3x^5 + x^6$. |
| 4 | $9, \frac{4}{3}$ |
| 5 | 997002999 |
| 6 | 171 |

| | |
|----|---|
| 7 | $\frac{35}{48}x^6.$ |
| 8 | $-252.$ |
| 9 | $\frac{7}{18}.$ |
| 10 | 14 |
| 11 | 462 |
| 12 | (i) $A' = \{5, 6, 7, 8, 9\}$ (ii) $B' = \{1, 3, 5, 7, 9\}$ (iii) $(A \cup C)' = \{7, 8, 9\}$ (iv) $(A \cup B)' = \{5, 7, 9\}$ (v) $(A \cap C)' = \{1, 2, 5, 6, 7, 8, 9\}$ (vi) $(A')' = \{1, 2, 3, 4\} = A$ (vii) $(B - C)' = \{1, 3, 4, 5, 6, 7, 9\}$ |
| 13 | (i)  (ii) 22 $P \cup Q'$ |
| 14 | 45 |
| 15 |  (i) 23 (ii) 17 (iii) 13 |