

| <p style="text-align: center;">CLASS-XI CHAPTER: SETS MCQS – SETS</p> | |
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| Q.1 | The set of intelligent students in a class is : (a) A null set (b) A singleton set (c) A finite set (d) Not a well defined collection |
| Q.2 | If the sets A and B are given by $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 6, 8, 10\}$ and the universal set $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$, then: (a) $(A \cup B)' = \{5, 7, 9\}$ (b) $(A \cap B)' = \{1, 3, 5, 6, 7\}$ (c) $(A \cap B)' = \{1, 3, 5, 6, 7, 8\}$ (d) None of these |
| Q.3 | If $A = \{1, 2, 3, 4\}$, $B = \{2, 3, 5, 6\}$ and $C = \{3, 4, 6, 7\}$, then (a) $A - (B \cap C) = \{1, 3, 4\}$ (b) $A - (B \cap C) = \{1, 2, 4\}$ (c) $A - (B \cup C) = \{2, 3\}$ (d) $A - (B \cup C) = \{\emptyset\}$ |
| Q.4 | The set $\{x : x \text{ is an even prime number}\}$ can be written as: (a) $\{2\}$ (b) $\{2, 4\}$ (c) $\{2, 14\}$ (d) $\{2, 4, 14\}$ |
| Q.5 | The number of the proper subset of $\{a, b, c\}$ is: (a) 3 (b) 8 (c) 6 (d) 7 |
| Q.6 | Which one is different from the others? (i) empty set (ii) void set (iii) zero set (iv) null set : (a) (i) (b) (ii) (c) (iii) (d) (iv) |
| Q.7 | Given the sets $A = \{1, 3, 5\}$, $B = \{2, 4, 6\}$ and $C = \{0, 2, 4, 6, 8\}$. Which of the following may be considered as universal set for all the three sets A, B and C: (a) $\{0, 1, 2, 3, 4, 5, 6\}$ (b) \emptyset (c) $\{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ (d) $\{1, 2, 3, 4, 5, 6, 7, 8\}$ |
| Q.8 | Which of the following collections is a set ? (a) The collection of all the days of a week (b) A collection of 11 best hockey player of India. (c) The collection of all rich person of Delhi (d) A collection of most dangerous animals of India. |
| Q.9 | If $A \cup B = \emptyset$ then $n(A \cup B)$ is equal to: (a) $n(A) + n(B) - n(A \cap B)$ (b) $n(A) - n(B) + n(A \cap B)$ (c) $n(A) + n(B) + n(A \cap B)$ (d) $n(A) - n(B) - n(A \cap B)$ |

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| Q.10 | Let $V = \{a, e, i, o, u\}$ and $B = \{a, i, k, u\}$ then value of $(V - B)$ and $(B - V)$ are respectively: (a) $\{e, o\}$ and $\{k\}$ (b) $\{e\}$ and $\{k\}$ (c) $\{o\}$ and $\{k\}$ (d) $\{e, o\}$ and $\{k, i\}$ |
| Q.11 | Let $A = \{a, b\}$, $B = \{a, b, c\}$ then $A \cup B$ is: (a) $\{a, b\}$ (b) $\{a, c\}$ (c) $\{a, b, c\}$ (d) $\{b, c\}$ |
| Q.12 | The number of subsets of a set containing n elements is: (a) n (b) $2^n - 1$ (c) n^2 (d) 2^n |
| Q.13 | If $A = \{1, 2, 3\}$, $B = \{1, 4, 6, 9\}$, and R is a relation from A to B defined by 'x is greater than y' the range of R is: (a) $\{1, 4, 6, 9\}$ (b) $\{4, 6, 9\}$ (c) $\{1\}$ (d) none of these |

LONG QUESTIONS
Trigonometric function

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| Q1 | Show that: $\cos 6x = 32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1$ |
| Q2 | Prove that: $\frac{(\sin 7x + \sin 5x) + (\sin 9x + \sin 3x)}{(\cos 7x + \cos 5x) + (\cos 9x + \cos 3x)} = \tan 6x$ |
| Q3 | Prove that: $\cos 2x \cos \frac{x}{2} - \cos 3x \cos \frac{9x}{2} = \sin 5x \sin \frac{5x}{2}$ |
| Q4 | Find $\sin \frac{x}{2}, \cos \frac{x}{2}$ and $\tan \frac{x}{2}$ if $\tan x = \frac{3}{4}$, x lies in the third quadrant. |
| Q5 | Find the value of $\tan \frac{\pi}{8}$ |
| Q6 | If $\sin x = \frac{3}{5}, \cos y = \frac{-12}{13}$, where x and y both lie in second quadrant, find the value of $\sin (x+y)$. |
| Q7 | Show that $\tan 3x \tan 2x \tan x = \tan 3x - \tan 2x - \tan x$. |
| Q8 | Prove that $\cos^2 x + \cos^2 \left(x + \frac{\pi}{3}\right) + \cos^2 \left(x - \frac{\pi}{3}\right) = \frac{3}{2}$ |
| Q9 | Prove that $2 \sin^2 \beta + 4 \cos(\alpha + \beta) \sin \alpha \sin \beta + \cos 2(\alpha + \beta)$ is independent of β . |
| Q10 | If α and β are the solutions of the equation $a \tan \theta + b \sec \theta = c$, then show that $\tan(\alpha + \beta) = \frac{2ac}{(a^2 - c^2)}$ |

CHAPTER: RELATIONS AND FUNCTIONS

| | MCQs |
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| Q1 | If $A \times B = \{(a, 1), (b, 3), (a, 3), (b, 1), (a, 2), (b, 2)\}$, then set B is (a) $\{a\}$ (b) $\{a, b\}$ (c) $\{1, 2\}$ (d) $\{1, 2, 3\}$ |
| Q2 | If $\left(\frac{x}{3} + 1, y - \frac{2}{3}\right) = \left(\frac{5}{3}, \frac{1}{3}\right)$, find the values of x and y respectively are: (a) 3,3 (b) 1,2 (c) 2,1 (d) 3/2,2 |
| Q3 | $U = \{1, 2, 3, 4\}$ and relation $R = \{(x, y) : y > x; x, y \in U\}$ then range of R is (a) $\{1, 2, 3, 4\}$ (b) $\{2, 3, 4\}$ (c) $\{4\}$ (d) |
| Q4 | If $A = \{1, 2, 3\}$ and $B = \{4, 5\}$ then number of relations from A to B is: (a) 6 (b) 8 (c) 9 (d) 64 |
| Q 5 | If set A has 2 elements and set B has 4 elements then how many relations are possible? (a) 32 (b) 128 (c) 256 (d) 64 |
| Q 6 | If $A \times B = \{(5, 5), (5, 6), (5, 7), (8, 6), (8, 7), (8, 5)\}$, then the set A: (a) $\{5\}$ (b) $\{8\}$ (c) $\{5, 8\}$ (d) $\{5, 6, 7, 8\}$ |
| Q 7 | Let $A = \{1, 2, 3, 4, 5\}$ and $B = \{1, 3, 5, 7, 9\}$. Which of the following relation is a function from A to B? (a) $R_1 = \{(x, y) \mid y = 2 + x, x \in A, y \in B\}$ (b) $R_2 = \{(1, 1), (2, 1), (3, 3), (4, 3), (5, 5)\}$ (c) $R_3 = \{(x, y) \mid y = 5 - x, x \in A, y \in B\}$ (d) $R_4 = \{(1, 3), (2, 5), (2, 4), (7, 9)\}$ |

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| Q 8 | $A = \{5, 10, 15, 20\}$, $B = \{2, 4, 6, 8, 10\}$. Out of the following, which is a function? (a) $\{(5, 2), (10, 4), (15, 6), (20, 9)\}$ (b) $\{(5, 2), (10, 4)\}$ (c) $\{(5, 2), (10, 4), (15, 6), (20, 10)\}$ (d) $\{(5, 1), (5, 10), (15, 6), (20, 9)\}$ |
| Q 9 | If A is the set of even natural number less than 8 and B is the set of prime number less than 7, then the number of relations from A to B is (a) 2^9 (b) 9^2 (c) 3^2 (d) 2^{9-1} |
| Q10 | Let O be the set of odd natural numbers and E be the set of even natural numbers. Relation S from O to E defined as $S = \{(a, b) : a, b \text{ even number}\}$. What is the Range of S? (a) E (b) O (c) N (d) None of these |

CLASS: XI
CHAPTER : COMPLEX NUMBERS

| | MCQ |
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| Q1 | The value of i^{528} (a) 1 (b) -1 (c) i (d) -i |
| Q2 | $[i^{19} + (\frac{1}{-i})^{25}]^2$ is equal to (a) 4 (b) -4 (c) i (d) -i |
| Q3 | $\frac{i^{592} + i^{590} + i^{588} + i^{586} + i^{584}}{i^{582} + i^{580} + i^{578} + i^{576} + i^{574}}$ is equal to (a) -1 (b) 1 (c) -2i (d) i |
| Q4 | $i^n + i^{n+1} + i^{n+2} + i^{n+3}$ is equal to (a) 0 (b) 1 (c) -1 (d) 2 |
| Q 5 | The conjugate of i^{-35} (a) 1 (b) -1 (c) i (d) -i |
| Q 6 | If $z_1 = 3 + 2i$ and $z_2 = 2 - 4i$ and $ z_1 + z_2 ^2 + z_1 - z_2 ^2$ is equal (a) 11 (b) 22 (c) 55 (d) 66 |

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| Q 7 | The value of $\frac{1-i-i^2-i^3-i^4-i^5-i^6-i^7-i^8-i^9-i^{10}}{2}$ (a) i (b) 2i (c) -i (d) -2i |
| Q 8 | The real part of $\frac{(1+i)^{10}}{3-i}$ is (a) $\frac{1}{3}$ (b) $-\frac{1}{5}$ (c) $-\frac{1}{3}$ (d) None of these |

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| Q 9 | <p>The conjugate of the complex number $\frac{7-26i}{25}$</p> <p>(a) $\frac{7-26i}{25}$ (b) $\frac{7+26i}{25}$ (c) $\frac{-7-26i}{25}$ (d) $\frac{7+26i}{25}$</p> |
| Q10 | <p>If $z(2-i) = (3+i)$, then z^{20} is equal to</p> <p>(a) 2^{10} (b) -2^{10} (c) 2^{20} (d) -2^{20}</p> |
| Q11 | <p>If $4x + i(3x - y) = 3 + i(-6)$ then the values of x and y are</p> <p>(a) $x=3, y=4$ (b) $x=3/4, y=33/4$ (c) $x=4, y=3$ (d) $x=33, y=4$</p> |
| Q 12 | <p>If $i^{103} = a + ib$ then $a + b$ is equal to</p> <p>(a) 1 (b) -1 (c) 0 (d) 2</p> |
| Q13 | <p>If $z_1 = \sqrt{3} + i\sqrt{3}$ and $z_2 = \sqrt{3} + i$ then the quadrant in which $z_1 z_2$ lies is</p> <p>(a) I (b) II (c) III (d) IV</p> |

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| Q14 | <p>The conjugate of $\frac{2}{25} + \frac{11i}{25}$</p> <p>(a) $\frac{2}{25} + \frac{11i}{25}$ (b) $\frac{2}{25} - \frac{11i}{25}$ (c) $\frac{2}{25} - \frac{11i}{25}$ (d) $\frac{2}{25} - \frac{11i}{25}$</p> |
| Q15 | <p>If $z = -5i^{-15} - 6i^{-8}$ then \bar{z} is equal to</p> <p>(a) $-6-5i$ (b) $-6+5i$ (c) $6-5i$ (d) $6+5i$</p> |
| Q16 | <p>$(1+i)^8 + (1-i)^8$ equal to</p> <p>(a) 1 (b) 2 (c) 8 (d) 32</p> |
| Q 17 | <p>Which of the following options defined 'imaginary number'?</p> <p>(a) Square root of any number (b) Square root of positive number (c) Square root of negative number (d) Cube root of number</p> |
| Q 18 | <p>If $z = \frac{7-i}{3-4i}$ then $z ^{14}$</p> <p>(a) 2^7 (b) $2^7 i$ (c) -2^7 (d) $-2^7 i$</p> |