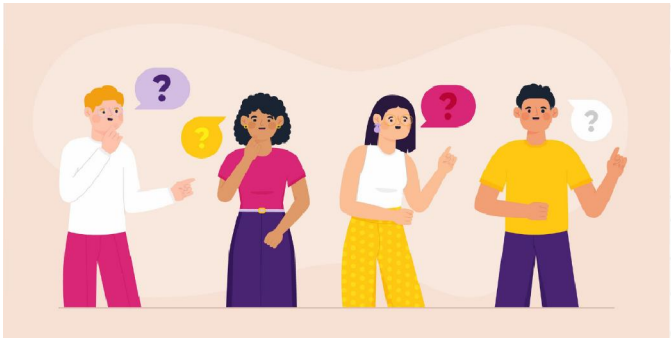

MULTIPLE CHOICE TYPE QUESTIONS

For 2025 Exams - Mathematics (041) - Class 11

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☑ Chapter 01
Sets Theory

01. $\{x : x$ is a two digit number so that the sum of its digits is one$\}$ in the tabular form, is given by
(a) $\{10\}, \{01\}$ both (b) $\{100\}$ (c) $\{10\}$ (d) $\{01\}$

02. If $A = \{0\}$, then A is
(a) null set (b) infinite set (c) singleton set (d) disjoint set

03. For $X = \{2, 4, 6\}$ and $Y = \{1, 3, 6, 10, 15\}$, $X - Y =$
(a) $\{2, 4\}$ (b) $\{2, 4, 6\}$ (c) $\{1, 3, 10, 15\}$ (d) ϕ

04. If U is a universal set and A is a non-empty set then, which of the following is not true?
(a) $A \cup U = A$ (b) $A \cup U = U$ (c) $A \cap U = A$ (d) $A \cap A' = \phi$

05. If U is a universal set and A is a non-empty set then, which of the following is true?
(a) $A \cup U = A$ (b) $A \cup A' = A$ (c) $A \cap A' = \phi$ (d) $A \cap U' = A$

☑ Chapter 02
Relations & Functions

01. Domain of $f(x) = \dfrac{1}{\sqrt{x^2 - 5x - 6}}$ is
(a) $\mathbb{R}$ (Real nos.) (b) $\mathbb{R} - [-1, 6]$ (c) $\mathbb{R} - \{-1\}$ (d) $\mathbb{R} - \{-1, 6\}$

02. If $|x| \geq 3$, then $x \in$
(a) $(-3, 3)$ (b) $[-3, 3]$ (c) $(-\infty, -3) \cup (3, \infty)$ (d) $(-\infty, -3] \cup [3, \infty)$

03. If $A = \{1, 2, 3, 4\}$ and $B = \{5, 6, 7\}$, then no. of functions defined from A to B is
(a) 64 (b) 81 (c) 4096 (d) 144

04. For the function $f(x) = [x]$, where [.] is greatest integer function, the range of $f(x)$ is
(a) Z^+ (b) Z^- (c) $[0, \infty)$ (d) Z

05. If $A = \{1, 2, 3\}$, $B = \{4, 5\}$ then, a relation R defined from A to B, having maximum no. of elements is given by
(a) $B \times B$ (b) $A \times A$ (c) $A \times B$ (d) $B \times A$

☑ Chapter 03
Trigonometric Functions

01. The greatest value of $\sin x \cos x$ is
(a) 1 (b) 2 (c) $\sqrt{2}$ (d) $\dfrac{1}{2}$

02. The value of $\tan 0° \times \tan 1° \times \tan 2° \times \tan 3° \times ... \times \tan 89°$ is
(a) 0 (b) 1 (c) $\dfrac{1}{2}$ (d) Not defined

03. The value of $\cos 1° \times \cos 2° \times \cos 3° \times ... \times \cos 179°$ is

(a) $\frac{1}{\sqrt{2}}$ (b) 1 (c) 0 (d) -1

04. The value of $\frac{1-\tan^2 15°}{1+\tan^2 15°}$ is

(a) 1 (b) $\sqrt{3}$ (c) $\frac{\sqrt{3}}{2}$ (d) 2

05. The value of $\sin 50° - \sin 70° + \sin 10°$ is equal to

(a) 1 (b) 0 (c) $\frac{1}{2}$ (d) 2

06. If $\sin\theta + \cos\theta = 1$, then the value of $\sin 2\theta$ is equal to

(a) 1 (b) 1 (c) 0 (d) 2

☑ Chapter 04
Complex Numbers

01. $(\sqrt{-2})(\sqrt{3})$ is equal to

(a) $\sqrt{6}$ (b) $-\sqrt{6}$ (c) $i\sqrt{6}$ (d) $i2\sqrt{3}$

02. If $\frac{(a^2+1)^2}{2a-i} = x + iy$, then $x^2 + y^2 =$

(a) $\frac{(a^2+1)^4}{4a^2+1}$ (b) $\frac{(a+1)^2}{4a^2+1}$ (c) $\frac{(a^2+1)^2}{(4a^2-1)^2}$ (d) None of these

03. If $z = \frac{1}{1-\cos\theta - i\sin\theta}$, then $\text{Re}(z) =$

(a) 0 (b) $\frac{1}{2}$ (c) $\cot\frac{\theta}{2}$ (d) $\frac{1}{2}\cot\frac{\theta}{2}$

04. If $f(z) = \frac{7-z}{1-z^2}$, where $z = 1 + 2i$, then $|f(z)|$ is

(a) $\frac{|z|}{2}$ (b) $|z|$ (c) $2|z|$ (d) None of these

☑ Chapter 05
Linear Inequations

01. For the inequation $\frac{3(x-2)}{5} \geq \frac{5(2-x)}{3}$, $x \in$

(a) $(\infty, 2]$ (b) $[2, \infty)$ (c) $(-\infty, 2]$ (d) $(\infty, 2)$

02. Consider $4x + 3 < 5x + 7$. Then $x \in$

(a) $(4, \infty)$ (b) $(-4, \infty)$ (c) $(2, \infty)$ (d) $(-2, \infty)$

03. For $3x - 2 < \frac{x}{3}$, we always have $x \in$

(a) $\left(\frac{3}{4}, \infty\right)$ (b) $\left(-\frac{3}{4}, \infty\right)$ (c) $\left(-\infty, \frac{3}{4}\right)$ (d) $\left(-\infty, \frac{3}{4}\right]$

04. **Fill in the blanks:** If $a < b$ and $c < 0$, then $\left(\frac{a}{c}\right)$ _____ $\left(\frac{b}{c}\right)$.

(a) $<$ (b) $\leq$ (c) $>$ (d) $\geq$

☑ Chapter 06
Permutations & Combinations

01. What is the number of ways of arrangement of letters of word BANANA so that no two N's are together?
(a) 40 (b) 60 (c) 80 (d) 100

02. What is the value of n, if ${}^{15}P_{n-1} : {}^{16}P_{n-2} = 3:4$?
(a) 10 (b) 12 (c) 14 (d) 15

03. If 7 points out of 12 are in the same straight line, then what is the number of triangles formed?
(a) 84 (b) 175 (c) 185 (d) 201

04. In how many ways can a bowler take four wickets in a single 6 balls over?
(a) 6 (b) 15 (c) 20 (d) 30

☑ Chapter 07
Binomial Theorem

01. The middle term in the expansion of $\left[2x - \frac{1}{3x}\right]^{10}$; $x \neq 0$ is
(a) ${}^{10}C_4 \frac{2^4}{3^4}$ (b) $-{}^{10}C_5 \frac{2^5}{3^5}$ (c) $-{}^{10}C_4 \frac{2^4}{3^5}$ (d) ${}^{10}C_5 \frac{2^5}{3^5}$

02. For all $n \in N$, $2^{4n} - 15n - 1$ is divisible by
(a) 125 (b) 225 (c) 450 (d) 625

03. What is the coefficient of x^n in the expansion of $(x^2 + 2x)^{n-1}$?
(a) $(n-1)\times 2^{(n-2)}$ (b) $(n-1)\times 2^{(n-1)}$ (c) $(n-1)\times 2^n$ (d) $n\times 2^{(n-1)}$

04. The coefficient of x^{-3} in the expansion of $\left[x - \frac{m}{x}\right]^{11}$; $x \neq 0$ is
(a) $-924m^7$ (b) $-792m^5$ (c) $-792m^6$ (d) $-330m^7$

☑ Chapter 08
Sequences & Series

01. Let A and G be the arithmetic mean and geometric mean of two positive nos., then which of the following is true?
(a) $G \geq A$ (b) $A = \sqrt{G}$ (c) $A \geq G$ (d) $G = \sqrt{A}$

02. The third term of G.P. is 4. The product of its first 5 terms is
(a) 4^3 (b) 2^8 (c) 2^{10} (d) $\frac{1}{4^5}$

03. If x, 2y, 3z are in A.P., where the distinct numbers x, y, z are in G.P., then the common ratio of the G.P. is
(a) 3 (b) $\frac{1}{3}$ (c) 2 (d) $\frac{1}{2}$

04. The minimum value of $4^x + 4^{1-x}$, $x \in R$ is
(a) 2 (b) 4 (c) 1 (d) 0

☑ Chapter 09
Straight Lines

01. The angle between the straight lines $x - y\sqrt{3} = 5$ and $\sqrt{3}x + y = 7$ is
(a) 90° (b) 60° (c) 75° (d) 30°

02. If p is the length of the perpendicular drawn from the origin to the line $\frac{x}{a}+\frac{y}{b}=1$, then which one of the following is correct?

(a) $\frac{1}{p^2}=\frac{1}{a^2}+\frac{1}{b^2}$ (b) $\frac{1}{p^2}=\frac{1}{a^2}-\frac{1}{b^2}$ (c) $\frac{1}{p}=\frac{1}{a}+\frac{1}{b}$ (d) $\frac{1}{p}=\frac{1}{a}-\frac{1}{b}$

03. What is the equation of the line passing through $(2,-3)$ and parallel to y-axis?

(a) $y=-3$ (b) $y=2$ (c) $x=2$ (d) $x=-3$

04. If the lines $3x+4y+1=0$, $5x+\lambda y+3=0$ and $2x+y-1=0$ are concurrent, then λ is equal to

(a) -8 (b) 8 (c) 4 (d) -4

05. The x-intercept and the y-intercept of the line $5x-7=6y$, respectively are

(a) 5 and 6 (b) $\frac{7}{5}$ and $-\frac{7}{6}$ (c) $\frac{5}{7}$ and $\frac{6}{7}$ (d) $-\frac{5}{7}$ and $\frac{6}{7}$

☑ Chapter 10
Conic Sections

01. The equation of the circle which passes through the points of intersection of the circles $x^2+y^2-6x=0$ and $x^2+y^2-6y=0$; and has its centre at $\left(\frac{3}{2},\frac{3}{2}\right)$ is

(a) $x^2+y^2+3x+3y+9=0$ (b) $x^2+y^2+3x+3y=0$

(c) $x^2+y^2-3x-3y=0$ (d) $x^2+y^2-3x-3y+9=0$

02. Value of p, for which $x^2+y^2-2px+4y-12=0$ represents a circle of radius 5 units is

(a) 3 (b) -3 (c) both (a) and (b) (d) Neither (a) nor (b)

03. The eccentricity of the ellipse $9x^2+25y^2=225$ is e, then the value of '5e' is

(a) 3 (b) 4 (c) 2 (d) 1

04. The centre of the circle $x^2+y^2-6x+4y-12=0$ is (a, b), then $(2a+3b)$ is

(a) 0 (b) 2 (c) 3 (d) 5

☑ Chapter 11
Introduction to Three Dimensional Geometry

01. A point on zx-plane which is equidistant from the points $(1,-1,0)$, $(2,1,2)$, $(3,2,-1)$ is

(a) $\left(\frac{1}{5},0,\frac{31}{10}\right)$ (b) $\left(\frac{1}{10},0,\frac{31}{5}\right)$ (c) $\left(\frac{31}{10},0,\frac{1}{5}\right)$ (d) $\left(\frac{31}{5},0,\frac{1}{10}\right)$

02. A point on y-axis which is at a distance of $\sqrt{10}$ from the point $(1,2,3)$ is

(a) $(2,0,2)$ (b) $(0,2,2)$ (c) $(2,2,2)$ (d) $(0,2,0)$

03. The locus of a point for which $y=0, z=0$ is

(a) x-axis (b) y-axis (c) z-axis (d) y and z axes

04. A line is parallel to xy-plane, if all points on the line have equal

(a) x-coordinates (b) y-coordinates (c) z-coordinates (d) x and y coordinates

☑ Chapter 12
Limits & Derivatives

01. $\lim\limits_{x\to\pi}\left(\frac{\sin x}{x-\pi}\right)=$

(a) 1 (b) 2 (c) -1 (d) does not exist

02. If $\lim_{x\to 2}\frac{x^n-2^n}{x-2}=80$, then n is

(a) 2 (b) 3 (c) 4 (d) 5

03. If $L=\lim_{x\to 1}\frac{x^4-1}{x^3-1}$, then value of 3L is

(a) 2 (b) 3 (c) 4 (d) 1

04. $\lim_{x\to 0}\frac{(1+x)^{16}-1}{(1+x)^4-1}=$

(a) 0 (b) 4 (c) 8 (d) 16

05. $\lim_{x\to 1}\frac{x+x^2+x^3+x^4-4}{x-1}$ is

(a) 0 (b) 4 (c) 10 (d) does not exist

06. $\lim_{x\to\frac{\pi}{4}}\frac{\sec^2 x-2}{\tan x-1}$ is

(a) 0 (b) 1 (c) 2 (d) 4

☑ Chapter 13
Statistics

01. The variance of 10 observations is 16 and their mean is 12. If each observation is multiplied by 4, what is the new mean?

(a) 12 (b) 16 (c) 24 (d) 48

02. The variance of 10 observations is 16 and their mean is 12. If each observation is multiplied by 4, what is the new standard deviation?

(a) 4 (b) 8 (c) 16 (d) 32

03. The standard deviation of 25 observations is 4 and their mean is 25. If each observation is increased by 10, what is the new mean?

(a) 25 (b) 29 (c) 30 (d) 35

04. The standard deviation of 35 observations is 4 and their mean is 25. If each observation is increased by 10, what is the new variance?

(a) 4 (b) 14 (c) 16 (d) 25

05. Consider the following table.
Given that the mean of $x_1, x_2, ..., x_{20}$ is 10.

	COLUMN 1		**COLUMN 2**
A	Mean of $2x_1, 2x_2, ..., 2x_{20}$	P	0
B	Mean of $(-3x_1+32), (-3x_2+32), ..., (3x_{20}+32)$	Q	2
C	Mean of $(x_1+2), (x_2+2), ..., (x_{20}+2)$	R	12
D	Mean of $(x_1-10), (x_2-10), ..., (x_{20}-10)$	S	20

(a) $A\to P, B\to Q, C\to R, D\to S$ (b) $A\to S, B\to Q, C\to R, D\to P$
(c) $A\to Q, B\to S, C\to R, D\to P$ (d) $A\to S, B\to Q, C\to P, D\to R$

☑ Chapter 14
Probability

01. Without repetition of the digits, four digit numbers are formed with the numbers 0, 2, 3, 5.

The probability of such a number divisible by 5 is

(a) $\frac{1}{5}$ (b) $\frac{4}{5}$ (c) $\frac{5}{9}$ (d) $\frac{1}{30}$

02. Three digit numbers are formed using the digits 0, 2, 4, 6, 8. A number is chosen at random out of these numbers. What is the probability that this number has the same digits?

(a) $\frac{1}{12}$ (b) $\frac{1}{16}$ (c) $\frac{4}{65}$ (d) $\frac{1}{25}$

03. The probability that a non-leap year selected at random will have 52 Sundays is

(a) 0 (b) 1 (c) $\frac{1}{7}$ (d) $\frac{2}{7}$

04. The probability that a non-leap year selected at random will have 53 Sundays is

(a) 0 (b) 1 (c) $\frac{1}{7}$ (d) $\frac{2}{7}$

16. If the probabilities for A to fail in an examination is 0.2 and that for B is 0.3, then the probability that either A or B fails is

(a) $> \frac{1}{2}$ (b) $\frac{1}{2}$ (c) $\leq \frac{1}{2}$ (d) 0

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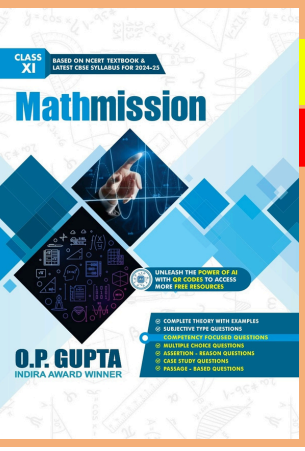

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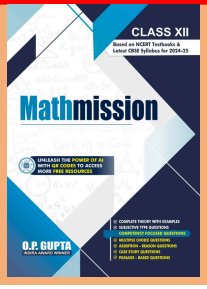

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