



INDIAN SCHOOL AL WADI AL KABIR

REVISION QUESTIONS

Class: XI

Sub: MATHEMATICS (Code 041)

Section A

Q.1. If $(2a + b, a - b) = (9, 3)$, then values of a and b

- A 4, 1 B 4, -1 C -4, 1 D -4, -1

Q.2. Value of $\tan \frac{\pi}{12}$

- A $2 + \sqrt{3}$ B $2 - \sqrt{3}$ C $\sqrt{3} - 2$ D None of these

Q.3. If $(1 + i)(2 + i)(3 + i) = a + ib$, then $\sqrt{a^2 + b^2}$

- A 10 B $10\sqrt{2}$ C $10\sqrt{3}$ D $10\sqrt{5}$

Q.4. If $A = \{x: x < 7, x \in N\}$ and $B = \{y: y \text{ is a prime number less than } 7\}$, then $A - B =$

- A $\{2, 4, 6\}$ B $\{1, 4, 5, 7\}$ C $\{4, 6, 7\}$ D $\{1, 4, 6\}$

Q.5. $\lim_{x \rightarrow 0} \frac{2x + 3 \sin x}{3 \sin x + 2x} =$

- A 0 B 1 C 3 D 5

Q.6. If the middle term of the expansion $(1 + \tan x)^8$ is equal to $\frac{70}{9}$, then value of x .

- A $n\pi$ B $n\pi + \frac{\pi}{3}$ C $n\pi + \frac{\pi}{6}$ D $n\pi + \frac{5\pi}{6}$
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- Q.7.** The sum of first 10 terms of the series $1 + 2 + 4 + \dots$...
- A 160 B 2048 C 1024 D 1023
- Q.8.** In triangle ABC, A(0, 0, 6), B(0, 4, 0) and C(6, 0, 0), then length of median through A
- A $\sqrt{34}$ B $6\sqrt{2}$ C 7 D 10
- Q.9.** Distance between the lines whose equations are $3x + 4y + 5 = 0$ and $6x + 8y - 10 = 0$.
- A 3 B 2 C 1 D 0
- Q.10.** If A and B are mutually exclusive events of a random experiment. If $P(A \cup B) = 0.85$ and $P(\text{not } A) = 0.6$, then $P(B)$.
- A 0.4 B 0.25 C 0.45 D 0.15
- Q.11** A company manufactures cassettes. Its cost and revenue functions are $C(x) = 26000 + 30x$ and $R(x) = 43x$ respectively where x is the number of cassettes produced and sold in a week. The minimum number of cassettes must be sold per week by the company to realise some profit is
- Q.12** If A and B are mutually exclusive events, $P(A \text{ and } B) = \dots$
- Q.13** $n_{C_8} = n_{C_2}$, then $n_{C_2} = \dots$
- Q.14** The sum of three consecutive terms of a GP is $\frac{21}{2}$ and product is 8, then second term is
- Q.15** While shuffling a pack of 52 cards, 2 cards are accidentally dropped. Then the probability of the missing cards to be of different colours is

Short Answer Questions (Type – 1) of 1 marks each

- Q.16** Write standard form: $i^8 + i^{17} + i^{31} + i^{-21}$
- Q.17** Solve: $2(x-1) + 3(1-5x) \leq 3 - x$
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Q.18 Determine whether X is a subset of Y, where $X = \{x: x = 8^n - 7n - 1, n \in N\}$ and $Y = \{49n - 49\}$. Justify your answer.

Q.19 Write roster form of the relation $R = \{(x, y): 2x + 3y = 30, x, y \in N\}$

Q.20 Which term in the expansion of $\left(\sqrt{x} + \frac{2}{3x}\right)^{12}$ is independent of x ?

Section B : Short Answer Questions (Type – 2) of 2 marks each

Q.21. Find domain and range of the real valued function: $f(x) = \sqrt{25 - x^2}$.

Q.22. Evaluate: $4\cos^2 \frac{3\pi}{4} + 7\sin^2 \frac{29\pi}{3}$.

Q.23. If four digit numbers greater than 5000 are randomly formed from the digits 0, 1, 3, 5 and 7, what is the probability of forming a number divisible by 5 when the repetition of digits is not allowed?

Q.24. Two students A and B appeared in an examination. The probability that A will qualify is 0.05 and that B will qualify the examination is 0.1. The probability that both will qualify the examination is 0.02. Find the probability that i). both A and B will not qualify the examination

ii). only one of them will qualify the examination.

Q.25. Find mean deviation from median:

x	5	7	9	11	13	15
f	3	5	8	5	3	2

Q.26. If all the letters of the word ‘LIMIT’ are arranged in all possible ways as listed in dictionary, then what is the rank of the word ‘TIILM’ ? OR

A question paper consists of 10 questions, divided in to two parts, section A and B, each containing 5 questions. A student is required to attempt 7 questions in all, taking at least three questions from each part. In how many ways can the student select the questions?

Section C : Long Answer Questions (Type – 1) of 3 marks each

Q.27. Let $U = \{1, 2, 3, \dots, 10\}$, $A = \{2, 3, 4, 5\}$, $B = \{2, 3, 7, 8\}$, $C = \{1, 3, 5, 7, 9\}$.

- (i) Find $(A \cup (B \cap C))'$
- (ii) Verify: $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

Q.28. Prove: $(1 + \cos \frac{\pi}{8})(1 + \cos \frac{3\pi}{8})(1 + \cos \frac{5\pi}{8})(1 + \cos \frac{7\pi}{8}) = \frac{1}{8}$.

Q.29. Three Numbers are in AP and their sum is 15, If 1, 3, 9 be added to them respectively, they form a G P. Find the numbers.

Q.30. Find the equation of a line intersecting y axis at a distance of 3 units above origin and makes an angle 135° with the positive direction of x axis.

- (i) Reduce the equation of the line into normal form.
- (ii) Find the equation of line parallel to it and passing through (2, -5)

OR

Find the image of (3, 4) with respect to the line $x + y = 3$

Q.31. Find equation of the ellipse, length of whose major axis is 24 and foci $(\pm 6, 0)$. Also find the co-ordinates of its vertices and length of latus rectum.

Q.32. If $f(x) = \begin{cases} \frac{x^5-32}{x^2-4}, & x < 2 \\ \frac{k(x^2-x-2)}{x-2}, & x > 2 \end{cases}$ and $\lim_{x \rightarrow 2} f(x)$ exists, find the value of k.

Q33 If $y = \frac{\sec x + \tan x}{\sec x - \tan x}$, prove that $\frac{dy}{dx} = \frac{2 \cos x}{(1 - \sin x)^2}$ OR

Evaluate: $\lim_{x \rightarrow 2} \frac{x^3 - 8}{x^2 - x - 2}$

Section D : Long Answer Questions (Type – 2) of **5** marks each

Q.34. Find mean, variance and standard deviation for the following:

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
frequency	2	7	8	11	7	7	5	3

Q.35. Expand and simplify: $(\sqrt{2} + 1)^4 - (\sqrt{2} - 1)^4$

Q.36. Prove: $\frac{\sin(y-z)}{\cos y \cos z} + \frac{\sin(z-x)}{\cos z \cos x} + \frac{\sin(x-y)}{\cos x \cos y} = 0$.

Q.37. Consider the terms in the expansion of $(2 + 3x)^{12}$

Write a) General term

b) coefficient of x^7 c) 5th term from the end d) Middle term(s)
