



BOARD OF SECONDARY EDUCATION KARACHI

MODEL QUESTION PAPER

S.S.C. (ANNUAL) EXAMINATIONS 2021 for IX, 2022 for X & ONWARDS

MATHEMATICS (Class IX)

Total Time: 3 Hours

SCIENCE GROUP

(Total Marks: 75)

General Instructions:

Section 'A': It consists of 15 Multiple choice questions (MCQs) and all of them are to be answered.

Section 'B': It consists of 14 Short Answer questions out of which 09 questions are to be solved.

Section 'C': It comprises 05 Descriptive questions of which 03 questions are to be solved.

SECTION 'A' (COMPULSORY) MULTIPLE CHOICE QUESTIONS (MCQs)

Time: 30 Minutes

(Marks: 15)

NOTE:

1. Attempt all questions from this section.
2. Do not copy down the question. Write only the answer against the proper number of the question
3. Each question carries One mark.
4. Write the Code of your question paper in bold letters at the beginning of the answer script.

Q.1 Choose the correct answer for each from the given options:

(i) $(A')' =$:

- ☆ A ☆ A' ☆ \emptyset ☆ U

(ii) The Cartesian product of set A and B is written as:

- ☆ $A \times B$ ☆ $A \cdot B$ ☆ $A \Delta B$ ☆ $B \times A$

(iii) $\frac{a}{\sqrt{a}} =$;

- ☆ a ☆ $a^{1/2}$ ☆ a^2 ☆ $\frac{1}{\sqrt{a}}$

(iv) If $x = y$ and $y = z$, then $x = z \because \forall x, y, z \in R$ used in property:

- ☆ Reflexive ☆ Symmetric ☆ Transitive ☆ Additive

(v) $\log_a \left(\frac{xy}{z}\right) =$:

- ☆ $\log_a x + \log_a y - \log_a z$ ☆ $\log_a z + \log_a y - \log_a x$
 ☆ $\frac{\log_a z + \log_a y}{\log_a z}$ ☆ $\log_a xy - \log_a z$

(vi) The degree of polynomial π is:

- ☆ zero ☆ one ☆ two ☆ three

(vii) $\frac{a^3 - b^3}{a - b} =$:

- ☆ $a^2 + ab + b^2$ ☆ $a^2 - b^2$ ☆ $(a - b)^2$ ☆ None of these

(viii) $a^4 + 64$ can be made a perfect square by adding:

- ☆ $16a^2$ ☆ $2a^2$ ☆ $16a^4$ ☆ $8a^2$

(ix) If $|A| = 0$, then matrix is called:

- ☆ Singular ☆ Non-singular ☆ Scalar ☆ Unit

(x) If $A = \begin{bmatrix} 2 & 3 \\ 1 & 6 \end{bmatrix}$, then $A^t =$

- ☆ $\begin{bmatrix} -2 & -4 \\ -1 & -6 \end{bmatrix}$ ☆ $\begin{bmatrix} 2 & 1 \\ 3 & 6 \end{bmatrix}$ ☆ $\begin{bmatrix} 6 & 1 \\ 3 & 2 \end{bmatrix}$ ☆ None of these []

(xi) One and only one line passes through _____ distinct point:

- ☆ three ☆ one ☆ two ☆ none of these

(xii) A triangle having no sides congruent is called:

- ☆ Scalene triangle ☆ Isosceles triangle ☆ Acute triangle ☆ Obtuse triangle

(xiii) The sum of the measure of angles of a quadrilateral is.

- ☆ 360° ☆ 270° ☆ 180° ☆ 90°

(xiv) Every triangle has at least _____ acute angle:

- ☆ one ☆ two ☆ three ☆ none of these

(xv) The characteristics of 6.67×10^{-11} is:

- ☆ 3 ☆ -3 ☆ 5 ☆ none of these



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MODEL QUESTION PAPER

S.S.C. (ANNUAL) EXAMINATIONS 2021 for IX, 2022 for X & ONWARDS

MATHEMATICS (Class IX)

Total Time: 2 1/2 Hours

SCIENCE GROUP

(Marks: 60)

Important Instructions:

This paper consists of Short-Answer questions (Section 'B') and Descriptive Answer questions (Section 'C') will be given after 30 minutes and its total duration will be 2 1/2 hours only.

SECTION 'B' (Short Answer Questions)

(MARKS 36)

Note: Attempt any Nine (09) questions from this section.

Q.2 If $A = \{1, 2, 3, 4, 6\}$ and $B = \{1, 3, 5, 7\}$ verify: $A \Delta B = (A \cup B) - (A \cap B)$

Q.3 If $S = \{0, 1, 2, 3\}$, find $P(S)$? Also verify your answer.

Q.4 If $A = \{-2, 0, 1\}$ and $B = \{2, -3\}$,
Find $(A \times B)$ and plot these points on graph paper.

Q.5 Simplify: $\sqrt[4]{\frac{a^x}{a^y}} \times \sqrt[4]{\frac{a^y}{a^r}} \times \sqrt[4]{\frac{a^r}{a^x}}$

Q.6 If $x = 2 - \sqrt{3}$, find the value of $x^2 + \frac{1}{x^2}$

Q.7 Find the value with the help of logarithms table.

$$\frac{85.7 \times 2.47}{8.89}$$

Q.8 Find the number of digits in 7^{56} (by using log table)

Q.9 Find the value of $x^3 - \frac{1}{x^3}$ when $x - \frac{1}{x} = 4$

Q.10 Find the value of $p^2 + q^2 + r^2$ when $p + q + r = \sqrt{17}$ and $pq + qr + rp = 2$.

Q.11 For what values of k , the expression, $x^3 + x^2 - 14x - k$ is exactly divisible by $x + 2$?

Q.12 Find the H.C.F. by factor method.

$$2x^3 - 2x^2 - 4x + 4, x^3 - 1$$

Q.13 What should be added to $4a^4 + 4a^3 + 5a^2 + 2a + 5$ to make it a perfect square?

Q.14 If $A = \begin{bmatrix} 5 & 3 \\ 4 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 4 \\ 8 & 0 \end{bmatrix}$

Prove that $|AB| = |A| \cdot |B|$

Q.15 Apply Cramer's rule to solve the system, of equations.

$$5x - 2y = 1; \quad 2x - y = 0$$

SECTION 'C' (Descriptive Answer Questions)

(MARKS 24)

Note: Attempt any three (03) questions from this section.

Q.16 Do any four factorize of the following:

(i) $4a^4 + b^4$ (ii) $a^2 - 13ab - 30b^2$ (iii) $a^3 - 8b^3 + c^3 + 6abc$
(iv) $x^3 + 64$ (v) $a^2 - b^2 - 2bc - c^2$ (vi) $x^3 - x^2 + 2$

Q.17 The H.C.F. and L.C.M. of two polynomials of the third degree are $x^2 + x + 5$ and $x^4 + 2x^3 + 4x^2 + 3x - 10$ respectively. Find the two polynomials.

Q.18 If a side of a triangle is extended, the exterior angle so formed is in measure, greater than either of the two interior opposite angles. Prove it

Q.19. Define and illustrate by drawing figure (any four terms):

- i) Line segment ii) Perpendicular
iii) Vertically opposite angles iv) Right angle
v) Opposite rays

Q.20. (a) Prove that the sum of the measures of the angles of a triangle is 180° .
(b) If two lines intersect, the vertically opposite angles so formed are congruent. Prove it

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