

Sample

150

Abbottabad HSSC-A-I-2026 (11th)

P-419 0+0=

Roll No
Student Must Fill the
Roll Number Bubbles

(Section-A) Marks= (20) Time Allowed: 20 Minutes

All questions of this section must be answered on this page and handed over to the Superintendent within given time.

991234



Student Name: _____

Name of Paper MATHEMATICS (M I)

Paper Date 14-MAY-26

160

Paper Code 31

Signature of Student: _____

Paper Version

Sign and Seal of Suptd. _____

SEAL

A ● C

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

سوالات

سوال نمبر کے مطابق درست جواب نمبر کا دائرہ پُر کریں۔

- The sum of the series $(6 + 7 + 8 + \dots + 60)$ is: a) 1805, b) 1815, c) 1820, d) 1830
- Third coefficient in the row of Pascal's triangle for $(x + y)^8$ is: a) 9, b) 21, c) 24, d) 28
- The domain of the function $f(x) = \sqrt{36 - x^2}$ is: a) $-6 \leq x \leq 6$, b) $x \leq 6$, c) $x \geq -6$, d) all real numbers
- The graph of function $f(x) = \frac{5}{x^8} + 6$ is symmetric about: a) x-axis, b) y-axis, c) origin, d) none
- The profit function p if it yields the value 11 and 7 at $(3, 7)$ and $(1, 3)$ respectively is: a) $p = -8x + 5y$, b) $p = 8x - 5y$, c) $p = 8x + 5y$, d) $p = -(8x + 5y)$
- The value of $\sin(\pi - \beta) =$ a) $-\cos\beta$, b) $\cos\beta$, c) $\sin\beta$, d) $-\sin\beta$
- The expression $\sin 2\theta$ is equal to: a) $2\sin\theta \cos\theta$, b) $\cos^2\theta - \sin^2\theta$, c) $1 - 2\sin^2\theta$, d) $2\cos^2\theta - 1$
- The law of sines is used in case of: a) SSS, b) ASA, c) SAS, d) AAA
- The minimum value of the function $y = 5 + 3\cos(2\theta + \pi)$ is: a) -1, b) 1, c) 2, d) 3
- The graph of $y = \tan x$ is: a) continuous everywhere, b) discontinuous, c) discontinuous at asymptotes, d) constant
- The modulus of the complex number $-5 + \sqrt{11}i$ is: a) $\sqrt{6}$, b) $\sqrt{16}$, c) 6,
- In a square matrix $[a_{ij}]$ if $a_{ij} = 0$ for all $i \neq j$, such matrix is called: a) symmetric matrix, b) upper triangular matrix, c) lower triangular matrix, d) diagonal
- Cofactor of the element a_{11} of matrix $A = \begin{bmatrix} 1 & 6 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{bmatrix}$ is: a) -3, b) 1, c) -13, d) 13
- Sum of the cubes of first 10 natural numbers is: a) 1025, b) 2025, c) 3025, d) 3050
- The unit vector in the direction of the vector $6\hat{i} - 5\hat{j}$ is: a) $\frac{6}{10}\hat{i} + \frac{8}{10}\hat{j}$, b) $\frac{6}{10}\hat{i} - \frac{8}{10}\hat{j}$, c) $\frac{6}{14}\hat{i} - \frac{8}{14}\hat{j}$, d) $\frac{6}{14}\hat{i} + \frac{8}{14}\hat{j}$
- The magnitude of the vector $a = 4\hat{i} + 3\hat{j} + 5\hat{k}$ is: a) $5\sqrt{2}$, b) $2\sqrt{5}$, c) 25, d) 50
- The arithmetic mean of 9 and 15 is: a) 4, b) 8, c) 10, d) 12
- The determinant of the matrix $\begin{bmatrix} 1 & 6 & 1 \\ 6 & 5 & 6 \\ 7 & 8 & 7 \end{bmatrix}$ is: a) 5, b) 0, c) 5, d) 10
- The number of different arrangements of the letters of the word "Coffee" is: a) 90, b) 180, c) 360, d) 720
- The number of ways a committee of 3 members can be formed from a group of 10 people is: a) 90, b) 110, c) 120, d) 150

- A ● C D
- A B C ●
- B C D
- A ● C D
- B C D
- A B ● D
- B C D
- A ● B D
- A B ● D
- A B ● D
- A B ● D
- A B C ●
- B C D
- A B ● D
- B C D
- A B C ●
- A ● C D
- A ● C D
- A ● C D
- A B ● D

If the Candidate is absent, The Superintendent Should fill this Circle and pack the sheet with solved OMR sheets in roll number order

P-420

11261
MATHEMATICS
PART-I

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 50

1. Attempt any ten of the following short questions. Each question carries 5 marks.

- i. Find the additive and multiplicative inverse of complex number $6-3i$
- ii. Using cofactors find determinant of the matrix $A = \begin{bmatrix} 1 & 3 & 2 \\ 6 & 5 & 2 \\ 2 & 6 & 5 \end{bmatrix}$
- iii. Find the direction cosines of the vector from point A(5, 3, -1) to B(7, 5, 2)
- iv. Reduce the given matrix to its Row Echelon Form $\begin{bmatrix} 5 & -1 & 2 \\ 3 & 5 & 2 \\ 2 & -3 & 4 \end{bmatrix}$
- v. Find the angle between two vectors $\vec{OA}$ & $\vec{OB}$ where $\vec{OA} = 7\hat{i} + 5\hat{j}$, $\vec{OB} = 5\hat{i} - 2\hat{j}$
- vi. Find the sum of the infinite series: $\frac{1}{5} + \frac{1}{25} + \frac{1}{125} + \frac{1}{625} + \dots$
- vii. Express $\sin 8\theta + \sin 2\theta + \sin 6\theta + \sin 4\theta$ as a product.
- viii. If a pair of dice is rolled, find the probability that the sum of the digits is either 7 or 8.
- ix. Find $\sqrt[3]{11}$ correct up to four decimal places.
- x. Without graphing, determine the vertex, axis and opening direction for $f(x) = 2x^2 + 12x + 5$
- xi. Find the sum of the series: $\frac{2}{3} + \frac{4}{9} + \frac{6}{27} + \dots$ to n term.
- xii. Find measure of the angles of a triangle whose sides are 7, 10 and 13.
- xiii. Find domain and range of $y = -2\cos 3x$

SECTION-C

Marks: 30

NOTE: Attempt any three of the following questions. Each question carries 10 marks.

2. i. Factorize the polynomial $P(z) = z^3 + 4z^2 + z - 6$ into linear factors.
ii. Using elementary row operations find inverse of the matrix $A = \begin{bmatrix} 2 & -1 & 1 \\ 4 & 1 & 2 \\ 5 & 7 & 3 \end{bmatrix}$
3. i. For what value of m the following vectors are coplanar? $\vec{a} = m\hat{i} + 3\hat{j} + \hat{k}$, $\vec{b} = \hat{i} - \hat{j} + 2\hat{k}$, $\vec{c} = 7\hat{i} + 3\hat{j} + 10\hat{k}$
ii. Find the 12th term of the harmonic sequence $\frac{1}{5}, \frac{1}{10}, \frac{1}{15}, \dots$
4. i. A squad of 14 players is available for a match. A playing XI (11 players) must be selected. How many selections are possible if: (i) The Captain is always included. (ii) One specific player is injured and always excluded
ii. A fruit grower has 120 acres available for planting Peaches and Apricots. Peaches require 10 gallons of water per acre while Apricots require 5 gallons. The total water supply is limited to 800 gallons. If the profit is Rs.800 per acre of Peaches and Rs.500 per acre of Apricots, how many acres of each should be planted to maximize profit?
5. i. Find the circumscribing radius for a triangle whose sides are 6, 7 and 9.
ii. Describe the amplitude, period and frequency without drawing the graph of the function $y = 3\sin \frac{4x}{3}$