

نوٹ: حضرت اول لازمی ہے۔ حضرت دوم میں سے تین (3) سوالات حل کیجئے۔ تاہم سوال نمبر (9) لازمی ہے۔

Section I
(2 x 6 = 12)

2- Write short answers to any SIX questions:

i- If $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, then verify that $(A^t)^t = A$

ii- If $D = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 0 & 2 \end{bmatrix}$, then find $D + \begin{bmatrix} 0 & 1 & 0 \\ 2 & 0 & 1 \end{bmatrix}$

iii- Express $\frac{9-7i}{3+i}$ in the standard form $a+bi$

iv- Evaluate i^{27}

v- Express 9.018×10^{-6} in ordinary notation.

vi- Find the value of x when $\log_2 x = 5$

vii- Reduce the rational expression to the lowest form $\frac{(x+y)^2 - 4xy}{(x-y)^2}$

viii- Simplify $(\sqrt{x} + \sqrt{y})(\sqrt{x} - \sqrt{y})(x+y)(x^2+y^2)$

ix- Factorize $3x - 243x^3$

3- Write short answers to any SIX questions:

i- Find the H.C.F. of the following expressions: $102xy^2z$, $85x^2yz$, $187xy^2z^2$

ii- Solve the equation $\sqrt{\frac{x+1}{2x+5}} = 2$, $x \neq -\frac{5}{2}$

iii- Solve $|x+2| - 3 = 5 - |x+2|$

iv- Draw the graph of $y = 4x$

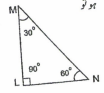
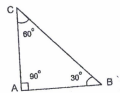
v- Determine the quadrant of the co-ordinate plane in which the following points lie: $P(-4, 3)$, $S(2, -6)$

vi- Find the mid-point of the points $(6, 6)$, $(4, -2)$

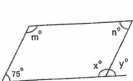
vii- Find the distance between points $(7, 5)$, $(1, -1)$

viii- If $\triangle ABC \cong \triangle LMN$, then

(i) $m\angle N \cong \dots\dots\dots$
(ii) $m\angle A \cong \dots\dots\dots$

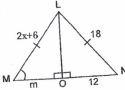


ix- Find the unknowns x° , y° , m° and n° in the given figure:



4- Write short answers to any SIX questions:

i- In the given congruent triangles LMO and LNO, find the unknowns x and m :



(درجہ لکھئے)

2- کوئی سے چھ (6) سوالات کے مختصر جوابات تحریر کیجئے۔

i- اگر $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ ہو تو تصدیق کیجئے کہ $(A^t)^t = A$

ii- اگر $D = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 0 & 2 \end{bmatrix}$ ہو تو $D + \begin{bmatrix} 0 & 1 & 0 \\ 2 & 0 & 1 \end{bmatrix}$ معلوم کیجئے۔

iii- $\frac{9-7i}{3+i}$ کو معیاری شکل $a+bi$ میں ظاہر کیجئے۔

iv- i^{27} کی قیمت معلوم کیجئے۔

v- 9.018×10^{-6} کو عام تحریر میں لکھئے۔

vi- x کی قیمت معلوم کیجئے جبکہ $\log_2 x = 5$

vii- $\frac{(x+y)^2 - 4xy}{(x-y)^2}$ کو مختصر ترین شکل میں لکھئے۔

viii- $(\sqrt{x} + \sqrt{y})(\sqrt{x} - \sqrt{y})(x+y)(x^2+y^2)$ کو مختصر کیجئے۔

ix- $3x - 243x^3$ کی تجزی کیجئے۔

3- کوئی سے چھ (6) سوالات کے مختصر جوابات تحریر کیجئے۔

i- درجہ ذیل متلوں کا عاقل مضام معلوم کیجئے۔
 $102xy^2z$, $85x^2yz$, $187xy^2z^2$

ii- $\sqrt{\frac{x+1}{2x+5}} = 2$, $x \neq -\frac{5}{2}$ مساوات کو حل کیجئے۔

iii- $|x+2| - 3 = 5 - |x+2|$ کو حل کیجئے۔

iv- $y = 4x$ کا گراف کیجئے۔

v- دیے ہوئے نقطے کو درجہ ذیل مستوی کے ریل کا قیمن کیجئے:
 $P(-4, 3)$, $S(2, -6)$

vi- نقطہ $(6, 6)$ ، $(4, -2)$ کا درمیانی نقطہ معلوم کیجئے۔

vii- نقطہ $(7, 5)$ ، $(1, -1)$ کے درمیان فاصلہ معلوم کیجئے۔

viii- اگر $\triangle ABC \cong \triangle LMN$ ہو تو

(i) $m\angle N \cong \dots\dots\dots$
(ii) $m\angle A \cong \dots\dots\dots$

ix- دی گئی شکل میں معلوم x° ، y° ، m° اور n° کی مقدار معلوم کیجئے۔

4- کوئی سے چھ (6) سوالات کے مختصر جوابات تحریر کیجئے۔

i- دی گئی متماثل مثلثوں LMO اور LNO میں معلوم x اور m کی مقدار معلوم کیجئے۔

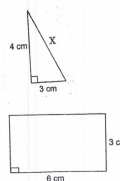
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ii- What will be angle for shortest distance from an outside point to the line?

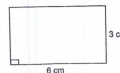
iii- Define similar triangles.

iv- Verify that the triangle having $a = 5$ cm, $b = 12$ cm, $c = 13$ cm measures of sides a right-angled triangle.

v- Find the value of x in the figure:



vi- Find the area of the figure:



vii- Define triangular region.

viii- Construct $\triangle XYZ$, in which

$m\overline{ZX} = 6.4$ cm, $m\overline{YZ} = 2.4$ cm, $m\angle Y = 90^\circ$

ix- Define centroid.

(ہر سوال کے 8 نمبر اور ہر جزو کے 4 نمبر ہیں)

Section II

5- (الف) دی ہوئی مساواتوں کو تالیوں کے معکوس کی مدد سے حل کیجئے:
Solve the following system of linear equations by using matrix inversion method:
 $2x - 2y = 4$
 $3x + 2y = 6$

(ب) Simplify $\sqrt{\frac{(216)^{\frac{2}{3}} \times (25)^{\frac{1}{2}}}{(0.04)^{\frac{3}{2}}}}$

6- (الف) لوگاریتم جدول کی مدد سے قیمت معلوم کیجئے: $(438)^3 \sqrt{0.056}$
(388)⁴

(ب) اگر $x - y = 4$ and $xy = 21$, then find the value of $x^3 - y^3$

7- (الف) Factorize: $8x^3 - 125y^3 - 60x^2y + 150xy^2$

(ب) Simplify $\frac{x^2 - x - 6}{x^2 - 9} + \frac{x^2 + 2x - 24}{x^2 - x - 12}$

8- (الف) مساوات $\frac{5(x-3)}{6} - x = 1 - \frac{x}{9}$ کا حل سیٹ معلوم کیجئے۔

(ب) Construct $\triangle XYZ$. Draw its three medians:
 $m\overline{XY} = 4.5$ cm, $m\overline{YZ} = 3.4$ cm and $m\overline{ZX} = 5.6$ cm

9- ثابت کیجئے کہ اگر ایک نقطہ کسی خطہ خط کے عمودی نامف پر واقع ہو تو وہ نقطہ خطہ خط کے سروں سے مساوی الفاصلہ ہوگا۔

OR

Prove that any point on the bisector of an angle is equidistant from its arms.

10-121-111000

Roll No. _____

Mathematics (Science Group)

Paper: I

121-(II) (سیکنڈری سکول پارٹ I، کلاس 11م)

پرچہ I

ریاضی (سائنس گروپ)

Time: 20 Minutes

Group: II

Objective معروضی

دوسرا گروپ

وقت: 20 منٹ

Marks: 15

Code: 5194

مارکس: 15

نوٹ: ہر سوال کے چار ممکنہ جوابات A، B، C اور D دیئے گئے ہیں۔ جوابی کاپی پر ہر سوال کے سامنے دیئے گئے دائروں میں سے درست جواب کے مطابق متعلقہ دائرہ کو مارکر یا پین سے بھر دیجئے۔ ایک سے زیادہ دائروں کو پُر کرنے یا کاٹ کر پُر کرنے کی صورت میں مذکورہ جواب غلط تصور ہوگا۔

- 1- 1- The right bisectors of the three sides of a triangle are _____
 (A) متماثل congruent
 (B) ہم خط collinear
 (C) ہم نقطہ concurrent
 (D) متوازی parallel
- 2- If x is no larger than 10, then _____
 (A) $x \geq 8$
 (B) $x \leq 10$
 (C) $x < 10$
 (D) $x > 10$
- 3- L.C.M. of $a^2 + b^2$ and $a^4 - b^4$ is _____
 (A) $a^4 - b^4$
 (B) $a^2 + b^2$
 (C) $a^2 - b^2$
 (D) $a - b$
- 4- If $a^x = n$, then _____
 (A) $a = \log_x n$
 (B) $x = \log_n a$
 (C) $x = \log_a n$
 (D) $a = \log_n x$
- 5- Write $4^{2/3}$ with radical sign _____
 (A) $\sqrt[3]{4^2}$
 (B) $\sqrt[3]{4^3}$
 (C) $\sqrt[2]{4^3}$
 (D) $\sqrt{4^6}$
- 6- Which is order of a square matrix _____
 (A) $2 - by - 2$
 (B) $1 - by - 2$
 (C) $2 - by - 1$
 (D) $3 - by - 2$
- 7- The medians of a triangle cut each other in the ratio _____
 (A) $4 : 1$
 (B) $3 : 1$
 (C) $2 : 1$
 (D) $1 : 1$
- 8- Point $(-3, -3)$ lies in quadrant _____
 (A) I
 (B) II
 (C) III
 (D) IV
- 9- If $\begin{vmatrix} 2 & 6 \\ 3 & x \end{vmatrix} = 0$, then x is equal to _____
 (A) -9
 (B) -6
 (C) 6
 (D) 9
- 10- Mid-point of the points $(2, 2)$ and $(0, 0)$ is _____
 (A) $(1, 1)$
 (B) $(1, 0)$
 (C) $(0, 1)$
 (D) $(-1, -1)$
- 11- If $x, y, z \in R$ and $z < 0$, then $x < y \Rightarrow \dots\dots\dots$
 (A) $xz < yz$
 (B) $xz > yz$
 (C) $xz = yz$
 (D) none of these
- 12- Find m so that $x^2 + 4x + m$ is a complete square _____
 (A) 8
 (B) -8
 (C) 4
 (D) 16
- 13- What should be added to complete the square of $x^4 + 64$ _____
 (A) $8x^2$
 (B) $-8x^2$
 (C) $16x^2$
 (D) $4x^2$
- 14- The value of $\log\left(\frac{p}{q}\right)$ is = _____
 (A) $\log p - \log q$
 (B) $\frac{\log p}{\log q}$
 (C) $\log p + \log q$
 (D) $\log q - \log p$
- 15- The degree of polynomial $4x^4 + 2x^2y$ is _____
 (A) 1
 (B) 2
 (C) 3
 (D) 4

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نوٹ: حصہ اول لازمی ہے۔ حصہ دوم میں سے تین (3) سوالات حل کیجئے۔ تاہم سوال نمبر (9) لازمی ہے۔

Section I

(2 x 6 = 12)

2- Write short answers to any SIX questions:

i- Verify that if $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, then $(A^t)^t = A$

ii- If $D = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 0 & 2 \end{bmatrix}$, then find

$$D + \begin{bmatrix} 0 & 1 & 0 \\ 2 & 0 & 1 \end{bmatrix}$$

iii- Express each complex number in the standard form $a + bi$

$$-(-3 + 5i) - (4 + 9i)$$

iv- Simplify $5^{2^3} + (5^2)^3$

v- Find the value of x if $\log_{625} 5 = \frac{1}{4}x$

vi- Express 416.9 in scientific notation.

vii- Evaluate $\frac{x^2y^3 - 5z^4}{xyz}$, for

$$x = 4, y = -2, z = -1$$

viii- Simplify $2(6\sqrt{5} - 3\sqrt{5})$

ix- Factorize $3x - 243x^3$

3- Write short answers to any SIX questions:

(2 x 6 = 12)

i- Find L.C.M. of $102xy^2z$, $85x^2yz$, $187xyz^2$

ii- Solve the equation $\sqrt{3x+4} = 2$

iii- Solve for x $\left| \frac{x+5}{2-x} \right| = 6$

iv- Determine the quadrant for the points:

$$P(-4, 3), S(2, -6)$$

v- Verify whether the point $(5, 3)$ lies on the line $2x - y + 1 = 0$ or not.

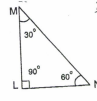
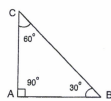
vi- Find the mid-point of the points $(-5, -7)$ and $(-7, -5)$

vii- Find the distance between the points $A(0, 0)$, $B(0, -5)$

viii- If $\triangle ABC \cong \triangle LMN$, then

(i) $m\angle N \cong \dots\dots\dots$

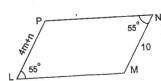
(ii) $m\angle A \cong \dots\dots\dots$



ix- If LMNP is a parallelogram and sum of its two opposite angles is 110° .

Find the remaining angles.

(درجہ لکھئے)



ix- اگر LMNP ایک متوازی الاضلاع ہے اور

اس کے دو مخالف زاویوں کا مجموعہ 110° ہے تو

بقیہ زاویوں میں سے ہر ایک کی قیمت معلوم کیجئے۔

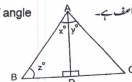
$m\angle N \cong \dots\dots\dots$ (i)

$m\angle A \cong \dots\dots\dots$ (ii)

4- Write short answers to any SIX questions:

(2 x 6 = 12)

i- In equilateral triangle ABC, $\overline{AD}$ is bisector of angle A, then find the value of x° , y° and z°



ii- 3 cm, 4 cm and 7 cm are not the lengths of the triangle. Give the reason.

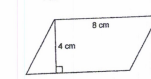
iii- Define similar triangles.

iv- Verify that the $\triangle$ having the following measure of sides is right-angled: $a = 16$ cm, $b = 30$ cm, $c = 34$ cm

v- Find the value of x in the figure:



vi- Find the area of figure:



vii- Define altitude or height of a triangle.

viii- Construct a $\triangle ABC$

$$m\overline{AB} = 3.2 \text{ cm}, m\overline{BC} = 4.2 \text{ cm}, m\overline{CA} = 5.2 \text{ cm}$$

ix- Define incentre.

حصہ دوم Section II (ہر سوال کے 8 نمبر اور ہر حصہ کے 4 نمبر ہیں)

5- (a) Solve by using the matrix inversion method:

$$2x - 2y = 4, 3x + 2y = 6$$

(b) Simplify $\sqrt{\frac{(216)^{2/3} \times (25)^{1/2}}{(0.04)^{-3/2}}}$

6- (a) Use log tables to find the value of $\frac{(8.97)^3 \times (3.95)^2}{\sqrt[3]{15.37}}$

(b) If $x = \frac{\sqrt{5} - \sqrt{2}}{\sqrt{5} + \sqrt{2}}$, then find the values of $x + \frac{1}{x}$

and $x^2 + \frac{1}{x^2}$

7- (a) Determine the value of k if $p(x) = kx^3 + 4x^2 + 3x - 4$ and $q(x) = x^3 - 4x + k$ leaves the same remainder when divided by $(x - 3)$

(b) Simplify $A - \frac{1}{A}$ as a rational expression where $A = \frac{a+1}{a-1}$

8- (a) Solve $\frac{2}{x^2-1} - \frac{1}{x+1} = \frac{1}{x+1}$, $x \neq \pm 1$

(b) Construct a $\triangle ABC$ and draw perpendicular bisectors of its sides:

$$m\overline{AB} = 5.3 \text{ cm}, m\angle A = 45^\circ \text{ and } m\angle B = 30^\circ$$

9- Prove that any point on the right bisector of a line segment is equidistant from its end points.

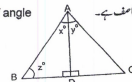
OR

Prove that any point on the bisector of an angle is equidistant from its arms.

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4- کوئی سے چھ (6) سوالات کے مختصر جوابات تحریر کیجئے۔

i- مساوی الاضلاع مثلث ABC میں $\overline{AD}$ زاویہ A کا نامف ہے۔ x° , y° اور z° کی قیمت معلوم کیجئے۔



ii- 3 cm, 4 cm and 7 cm are not the lengths of the triangle. Give the reason.

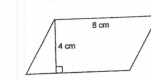
iii- Define similar triangles.

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vi- Find the area of figure:



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6- (a) Use log tables to find the value of $\frac{(8.97)^3 \times (3.95)^2}{\sqrt[3]{15.37}}$

(b) If $x = \frac{\sqrt{5} - \sqrt{2}}{\sqrt{5} + \sqrt{2}}$, then find the values of $x + \frac{1}{x}$

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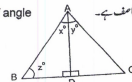
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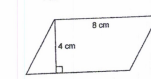
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7- (a) Determine the value of k if $p(x) = kx^3 + 4x^2 + 3x - 4$ and $q(x) = x^3 - 4x + k$ leaves the same remainder when divided by $(x - 3)$

(b) Simplify $A - \frac{1}{A}$ as a rational expression where $A = \frac{a+1}{a-1}$

8- (a) Solve $\frac{2}{x^2-1} - \frac{1}{x+1} = \frac{1}{x+1}$, $x \neq \pm 1$

(b) Construct a $\triangle ABC$ and draw perpendicular bisectors of its sides:

$$m\overline{AB} = 5.3 \text{ cm}, m\angle A = 45^\circ \text{ and } m\angle B = 30^\circ$$

9- Prove that any point on the right bisector of a line segment is equidistant from its end points.

OR

Prove that any point on the bisector of an angle is equidistant from its arms.

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