GREENLAWNS HIGH SCHOOL

STD 9   TERMINAL EXAMINATION   80M

Time 3 hours   Mathematics   2025

Attempt all questions from Section A and any four questions from Section B. All working including rough work must be clearly shown and done on the same page as the rest of the answer. Omission of essential steps will result in loss of marks.

SECTION A

(Attempt all questions from this section)

QUESTION 1

Choose the correct answers to the questions from the given options   (15)

i)   Mr Shah has coins only of Rs 1 and Rs 2 denomination with him. If the total number of coins that he has is 40 and the total amount with him is Rs 70 then the number of Rs 1 and Rs 2 coins respectively are
   a) 30 , 10
   b) 10 , 30
   c) -10 , 30
   d) 10 , -30

ii)   Which of the following is not an irrational number
   a) $\sqrt{2} + \sqrt{3}$
   b) $\sqrt{2} - \sqrt{3}$
   c) $(\sqrt{2} + \sqrt{3})(\sqrt{2} - \sqrt{3})$
   d) $2\sqrt{3}$

iii) $14^3 + 5^3 + (-19)^3$ is
   a) -3990
   b) 3990
   c) 3909
   d) -3909

iv)   If $4^x = 64$ then the value of x is
   a) 1
   b) 2
   c) 3
   d) 4

v)   In the adjoining figure $\Delta PQR \cong \Delta XYZ$ by which of the following test
   a) SSS Test
   b) AAA Test
   c) SAS Test
   d) None of the above
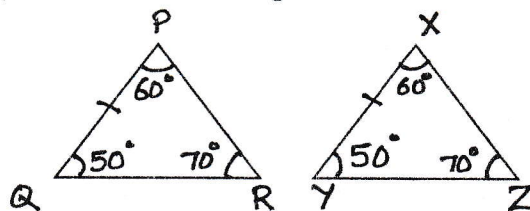
vi)   In the figure drawn below the value of 'x' is

   a) 132°   c) 126°
   b) 128°   d) 130°
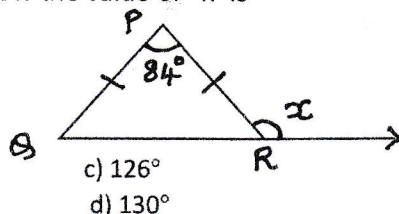
vii) The distance between the origin and X(-4,3) is
a) 5 units
b) -5 units
c) ±5 units
d) None of the above

viii) If the ordinate and abscissa of a point are -5 and 7 respectively then the coordinates of that point are
a) (5,7)
b) (-5,7)
c) (7,5)
d) (7,-5)

ix) The point (8,0) lies on the
a) X axis
b) Y axis
c) Origin
d) None of the above

x) The hypotenuse of a right angled triangle is the side opposite to the
a) Acute angle
b) Right angle
c) Obtuse angle
d) None of the above

xi) If $a + \dfrac{1}{a} = 5$ then $a - \dfrac{1}{a}$ is
a) 21
b) -21
c) $\sqrt{21}$
d) $-\sqrt{21}$

xii) The factors of $x^3 - 6x^2 - x + 6$ are
a) (x-6) (x +1) (x-1)
b) (x+6) (x +1) (x+1)
c) (x-6) (x -1) (x-1)
d) (x+6) (x +1) (x-1)

xiii) The rationalising factor of $\sqrt{7} - \sqrt{11}$ is
a) $\sqrt{7} - \sqrt{11}$
b) $\sqrt{11} - \sqrt{7}$
c) $\sqrt{7} + \sqrt{11}$
d) None of the above

xiv) The point (-4,-2) lies in the
a) 1st Quadrant
b) 2nd Quadrant
c) 3rd Quadrant
d) 4th Quadrant

xv) Assertion : $(-1)^{20} = 1$
Reason: $(-a)^m = a^m$ if m is an even number
a) Both A & R are true and R is the correct explanation for A
b) Both A & R are true but R is not the correct explanation for A
c) A is true but R is false
d) A is false but R is true

QUESTION 2

i) Solve the following simultaneous equations using the <u>cross multiplication method</u> (4)
$$11x + 15y = -23$$
$$7x - 2y = 20$$

ii) Find p and q if $(\sqrt{243})^p \div 3^{q+1} = 1$ and $27^q - 81^{4-p/2} = 0$ (4)

iii) If $a^2 - 6a + 1 = 0$ find (4)
    a) $a + \frac{1}{a}$
    b) $a + \frac{1}{a}$
   c) $a^2 - \frac{1}{a^2}$

QUESTION 3

i) Points X(-1,a) and Y(5,7) lie on a circle with centre O(2, -3a). Find the value of 'a' hence find the radius of the circle. (4)

ii) The second side of a right-angled triangle is longer than the first side by 1cm. The third side is shorter than the first side by 31cm. find the three sides of the right-angled triangle. (4)

iii) Solve the following simultaneous equations <u>graphically</u> (5)
$$x - y = -1$$
$$3x + 2y - 12 = 0$$
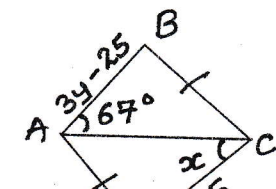
SECTION B
(Solve any 4 questions out of 5)

QUESTION 4

i) If $\sqrt{2} = 1.414$ then find the value of $\sqrt{\dfrac{\sqrt{2} - 1}{\sqrt{2} + 1}}$ (3)

ii) Factorise $x^6 - 64$ completely (3)

iii) In the figure drawn below $L_1 \parallel L_2 \parallel L_3$ and PQ = QR. If PX = 2x+5 and XY = 7x -15 find 'x' and hence find the length of PY. (4)
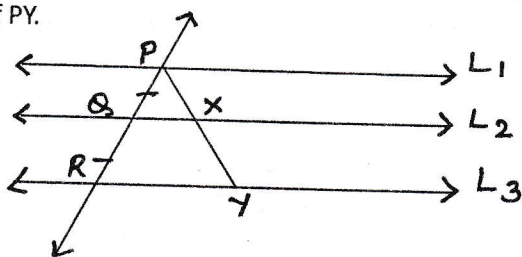
QUESTION 5

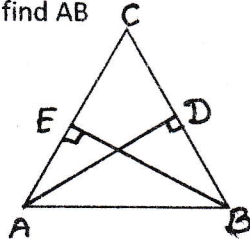i) In the figure drawn below MN ∥ PQ $\angle ZXN = 75°$ find $\angle YXZ$ (3)

ii) In the figure drawn below prove $\triangle ABC \cong \triangle CDA$ hence find x and y (3)

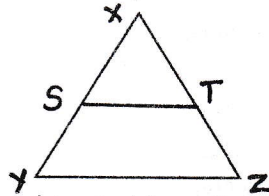iii)   Plot $\sqrt{5}$ on a number line using a compass and ruler only   (4)

QUESTION 6

i)   In the figure drawn below BE⊥ AC and AD⊥ BC , AE=BD   (3)
     a) Prove that AD =BE
     b) If AE = 5cm ,BE = 12cm find AB

ii)   In the figure drawn below S and T are midpoints of XY and XZ respectively find m and n   (3)
     ST=2m +3 &YZ =m+9
     $\angle STZ = 3n - 15$
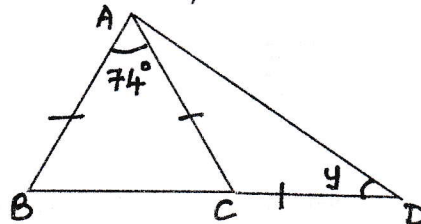 $\angle TZY = 2n + 5$

iii)   A fraction becomes $\frac{1}{3}$ when 1 is subtracted from the numerator and it becomes $\frac{1}{4}$ (4)
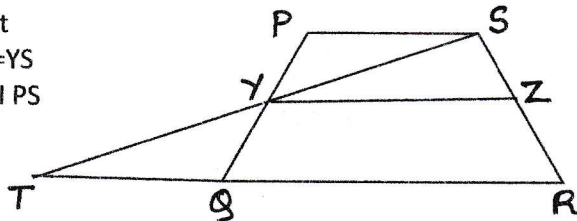   When 8 is added to the denominator find the fraction.

QUESTION 7

i)   Factorise $9a^3b + 41a^2b^2 + 20ab^3$ (3)

ii)   In the figure drawn below AB =AC=CD find y

iii)   In the figure drawn below PQRS is a trapezium , PS II QR . Y is the midpoint of PQ &   (4)
     Z is midpoint of SR
     Prove that
       a) YT =YS
       b) YZ II PS

QUESTION 8

i)   In a right angled triangle two sides are equal and the length of the longest side is $9\sqrt{2}$ (3)
     Calculate the length of the remaining sides.

ii)   Find the coordinates of point P on the X axis which is equidistant from points A(-3,4)   (3)
     and B(7,6)

iii)   Simplify   (4)
$$\left(\frac{x^a}{x^b}\right)^{a^2+ab+b^2} \times \left(\frac{x^b}{x^c}\right)^{b^2+bc+c^2} \times \left(\frac{x^c}{x^a}\right)^{c^2+ac+a^2}$$