GREENLAWNS HIGH SCHOOL

STD 9 | FINAL 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) If the interest is compounded half yearly an amount of Rs 4000 at the end of 1 year at 10% p.a. will be
   a) Rs 441
   b) Rs 4410
   c) 4140
   d) 4401

ii) If $a^2 + 7a + 1 = 0$ then the value of $a + \frac{1}{a}$ will be
   a) 7
   b) -7
   c) 0
   d) None of these

iii) The value of $(x - 9)(x^2 + 9x + 81)$ will be
   a) $x^3 + 81$
   b) $x^3 - 81$
   c) $x^3 + 729$
   d) $x^3 - 729$

iv) The factors of $x^2 - x - 12$ are
   a) (x-4) (x+3)
   b) (x+4) (x+3)
   c) (x-4) (x-3)
   d) (x+4) (x-3)

v) If the radius of a circle is 17cm then the length of a chord which is at a distance of 15cm from the centre is
   a) 8cm
   b) 16cm
   c) 13cm
   d) 18cm

vi) Equal _____ of congruent circles subtend equal angles at the centre

a) Segments
b) Radii
c) Diameters
d) Chords

vii) If $\operatorname{cosec}\theta = 2$ then the value of $\cos\theta$ is

a) $\frac{2}{\sqrt{3}}$
b) $\sqrt{3}$
c) $\frac{\sqrt{3}}{2}$
d) $\frac{1}{\sqrt{3}}$

viii) Assertion: If arc AB= arc BC= arc CD=arc AD then quadrilateral ABCD is a square
Reason: Equal arcs subtend equal chords

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

ix) If $\sin\theta = 1$ then the value of θ is

a) 30°
b) 45°
c) 60°
d) 90°

x) Another term for raw data is

a) Grouped Data
b) Ungrouped Data
c) Arrayed Data
d) None of these

xi) Two cubes each of surface area $726m^2$ are joined end to end. Then the dimensions of the resulting cuboid will be

a) 11cm , 11cm ,22cm
b) 22cm , 11cm, 11cm
c) 11cm, 22c, 11cm
d) None of these

xii) $4\cot^2 45° - \sec^2 60° =$

a) 0
b) 1
c) 2
d) 3

xiii) If AB is side of a regular octagon and O is centre of the circle then $\angle AOB$ is

a) 60°
b) 90°
c) 72°
d) 45°

xiv) If the compound interest for two consecutive years is Rs 480 and Rs 518.40 respectively then the rate of interest is

a) 6%
b) 8%
c) 10%
d) 12%

xv) The class intervals 0-10, 10-20, 20-30..... are in the _____ form

a) inclusive
b) exclusive
c) cumulative
d) none of these

QUESTION 2

a) A man invests Rs 15000 for 2 years at a certain rate of interest compounded Annually. At the end of 1 year it amounts to Rs 16500 calculate (4)

i) Rate of interest
ii) Amount at the end of 2nd year
iii) Compound interest earned in 2 years

b) If sec2θ= 2 find θ hence find the value of $\cos^2\theta + \tan\theta + \text{cosec}\,\theta$ (4)

c) A cubical water tank whose each edge measures 3.5m has to be covered with square tiles each of side 25cm. Calculate the cost of laying the tiles on all sides if one dozen tiles cost Rs 360. (4)

QUESTION 3

a) Two chords of lengths 24cm and 32cm are parallel to each other and are on the Opposite side of the centre of the circle. If the distance between them is 28cm. find the radius of the circle. (4)

b) Expand the following (4)

i) $(3x - \frac{y}{9})^3$

ii) $(2x + 3b - c)^2$

c) Use a graph paper for this question (5)

Draw a frequency polygon using a histogram for the following distribution

CI	60-69	70-79	80-89	90-99	100-109

SECTION B

(Solve any 4 questions out of 5)

QUESTION 4

a) Calculate the amount and compound interest when a sum of Rs 2500 is invested for 2 years at 5% and 8% for successive years. (3)

b) Factorise $(x-a)^2 - 20(x-a) + 51$ (3)

c) In a class of 70 students , 30 are girls and the remaining are boys. In a test Out of 100 marks the mean marks scored by girls was 73 and that of boys was 71. Calculate the mean marks of the whole class. (4)

QUESTION 5

a) The median of the observations 11, 12, 14, x-2, x+4, x+8 arranged in ascending order is 24 find 'x' hence find the mean of the 4^{th}, 5^{th} and 6^{th} terms (3)

b) In how much time will Rs 8000 amount to Rs 8820 at 5% compound interest (3)

c) If $x^2 + \frac{1}{x^2} = 66$ find (4)

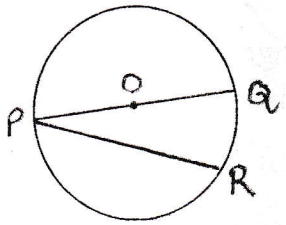
i) $x - \frac{1}{x}$

ii) $x^3 - \frac{1}{x^3}$

QUESTION 6

a) Evaluate $\frac{\sin 69^\circ}{\cos 21^\circ} + \frac{\text{cosec}\, 43^\circ}{\sec 47^\circ} - 2\tan^2 45^\circ$ (3)

b) In the given figure PQ is the diameter of the circle. If PQ= 50cm and PR = 48cm Calculate the distance of PR from the centre of the circle (3)



c) The marks obtained by 40 students is given below (4)

28	31	45	03	05	18	35	46	49	17
10	50	31	36	40	44	47	13	19	25
24	31	38	32	27	19	25	28	48	15
18	31	37	46	06	01	20	10	45	02

i) Taking class intervals 0-10,10-20,20-30..... construct a frequency distribution table

ii) Write the classmark of the 4^{th} class interval

iii) Write the class size of the 2^{nd} class interval

QUESTION 7

a) Prove that $\frac{cos30°+\sin 60°}{1+cos60°+sin30°} = \frac{\sqrt{3}}{2}$ (3)

b) Calculate the mean of the first 10 prime numbers (3)

c) A circular plot of land 42m in diameter has a path 7m wide running round it on (4)
The outside , find the cost of levelling the path at the rate of Rs 5 per m^2

QUESTION 8

a) Complete the table drawn below and answer the question that follows (3)
(Redraw the table in your answer booklet)

CI	f	cf
20-. 30	2	2
30-40		11
40-50	17	
50-60		32
60-70	8	

Write the true limits of the 4th class interval

b) The length breadth and height of a rectangular solid are in the ratio 5:4:2. (3)
If its volume is $2560cm^3$ find its total surface area

d) In the given figure O is the centre of the circle AB= BC=CD find (4)

i) $\angle AOD$

ii) $\angle OAD$

iii) $\angle ABC$