GREENLAWNS HIGH SCHOOL

STD 10 **PRELIMINARY EXAMINATION 2026** **80M**

Time 3 hours **Mathematics**

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) The cost of an article marked art Rs 4500 is Rs 5310. Then the rate of SGST is
   a) 18%
   b) 9%
   c) 5%
   d) 2.5%

ii) If P × A = B where the order of matrix P is 2× 2 and order of matrix B is 2 × 1 then the order of matrix A is
   a) 2× 2
   b) 2 × 1
   c) 1 × 2
   d) 1 × 1

iii) Mr Rao deposited Rs 500 per month in a recurring deposit account for three years. He receives Rs 2331 as interest at the time of maturity. Then the rate of interest is
   a) 5%
   b) 6%
   c) 7%
   d) 8%

iv) The money needed to buy 250 , RS 40 shares at a premium of Rs 10 is
   a) Rs 7500
   b) Rs 8500
   c) Rs 10000
   d) Rs 12500

v) The discriminant for the quadratic equation $x^2 - 6x - 12 = 0$ is
   a) 84
   b) 12
   c) -12
   d) 21

vi) The sum of the first 32 terms of an AP is 1312 then their average is
   a) 41
   b) 42
   c) 43
   d) 44

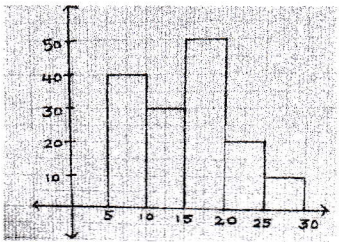
vii) If P(E) denotes the probability of an event E then which of the following statements is true

a) $0 < P(E) < 1$
b) $0 \leq P(E) \leq 1$
c) $0 \leq P(E) < 1$
d) $0 < P(E) \leq 1$

viii) The mean proportional to b^4 *and* $16b^2$ is

a) $4b^3$
b) $4b^2$
c) $4b$
d) None of the above

ix) The histogram for a frequency distribution is drawn below



The cumulative frequency of the class interval 20 – 25 is

a) 120
b) 130
c) 140
d) 150

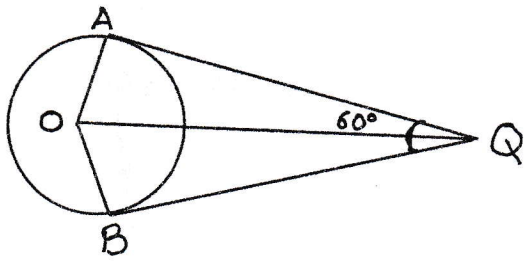
x) If $\begin{bmatrix} x-3y & 6y \\ 5x & 2 \end{bmatrix} = \begin{bmatrix} 0 & -6 \\ 15 & 2 \end{bmatrix}$ then $x+y$ is

a) 0
b) 2
c) 3
d) 4

xi) If A(2,-1) is reflected in the line $y = -3$ to get A' then the coordinates of A' are

a) A' (2 ,-4)
b) A' (-2 ,-4)
c) A' (2 ,-5)
d) A' (-2 ,-5)

xii) In the figure drawn below two tangents are inclined at an angle of 60° are drawn to a circle of radius 3cm then $\angle AOQ$ is



a) 30°
b) 60°
c) 90°
d) None of the above

xiii) The given table shows the distance covered and the time taken by a car moving at a uniform speed

Distance (m)	90	180	q
Time (sec)	2	p	6

The values of p and q respectively are

a) 4 , 220
b) 4 , 240
c) 4 , 250
d) 4 , 270

xiv) A number is selected at random from the numbers 4,5,5,6,6,6,6,7,7 & 8. The probability that the number selected is their mode is

a) $^1/_5$
b) $^6/_{10}$
c) $^4/_{10}$
d) $^2/_5$

xv) Assertion : The market value of a share always remains the same
Reason: The value of a share printed on the share certificate is called its face value

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

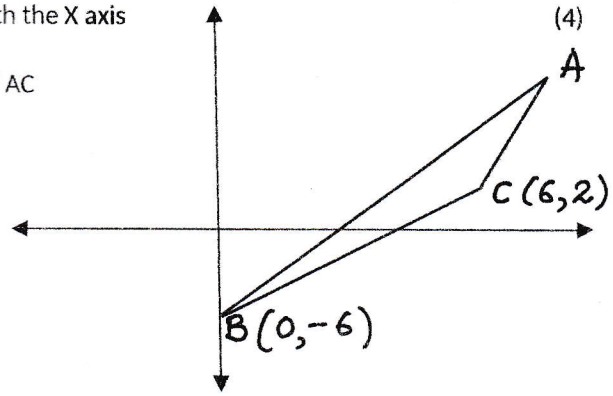
a) If (x^2-1) is a factor of $2x^3 + px^2 - qx - 3$, find the values of p & q. Hence factorise the given expression completely. (4)

b) Numbers 1 to 50 are written on identical cards and put in a bag. One card is drawn at random (4)
Find the probability that the card drawn has a number which is

i) Divisible by 7
ii) A perfect cube
iii) A multiple of 4 & 8
iv) A prime number

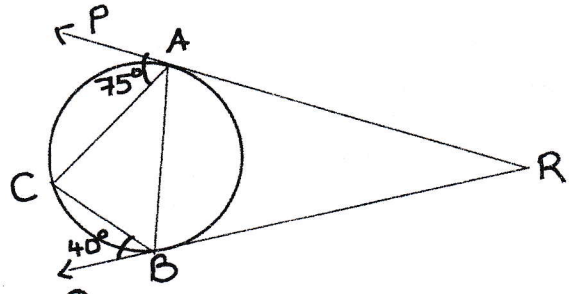
c) In the figure drawn AB makes an angle of 45° with the X axis (4)

i) Find the equation of AB
ii) If slope of AC = $^1/_2$ find the equation of AC
iii) Find the co-ordinates of A



QUESTION 3

a) In the figure drawn below , RP & RQ are tangents to the circle at A and B respectively, find $\angle ACB$ & $\angle ARB$ (4)



b) Three numbers are in GP such that their product is -1 and their sum is $\frac{13}{12}$, find the numbers (4)

c) Use a graph paper for this question (5)
Take 2cm =1 unit

i) Plot A(0,4) , B(2,1) and C(4,1)

ii) Reflect A, B and C in the X axis to get F, E and D respectively

iii) Reflect B, C , D and E in the Y axis to get J, I , H , G respectively

iv) Write the geometrical name for ABCDEFGHIJ

v) Write the coordinates of a point on the figure invariant in the X axis.

SECTION B

(Solve any 4 questions out of 7)

QUESTION 4

a) Solve the following quadratic equation and express your answer correct to 1 significant figure (3)

$$x - \frac{12}{x} = 7$$

b) Anjali pays Rs 7140 for a watch including 5% GST. Calculate the GST paid by her if the government Increases the GST by 6% (3)

c) Prove $\frac{(\sin A - \sin^3 A)}{(\cos^3 A - \cos A)} \times \frac{(\sec A - \operatorname{cosec} A)}{} = \operatorname{cosec} A(\cot A - 1)$ (4)

QUESTION 5

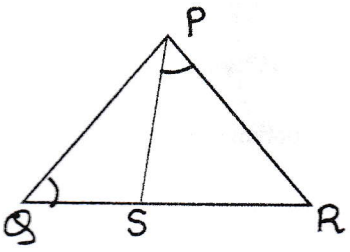
a) The sum of the first five terms of an AP and the sum of the first seven terms of the same AP is 167. If the sum of the first ten terms of the same AP is 235 find the first term and common difference. (3)

b) The outer and inner diameters of a hemispherical bowl are 17cm and 15cm respectively. Find the Cost of polishing the bowl all over at the rate of Rs 5 per cm^2 (3)

c) In the figure drawn below $\angle PQR = \angle RPS$, PQ = 6cm , PR = 3cm and PS= 4cm (4)

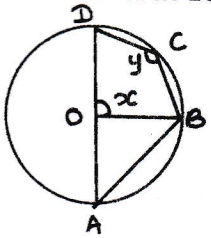
i) Find QR and RS

ii) $A(\Delta PRS) : A(\Delta PQR)$



QUESTION 6

a) In the figure drawn below O is the centre of the circle $\angle OAB = 50°$ find x & y (3)



b) Suman invests Rs 2500 per month in a recurring deposit account at the rate of 7% p.a. Calculate the Amount she will get on maturity after 2 years (3)

c) If x , y & z are in continued proportion proportion (4)

$$\frac{x}{z} = \frac{2x^2 - 3xy + y^2}{2y^2 - 3yz + z^2}$$

QUESTION 7

a) Rs 100 shares of a company giving 10% dividend are selling at a Rs 150. Mr Shah invests Rs 18000 to buy these shares. He sells 80% of his shares after 1 year, find (3)

i) Number of shares purchased
ii) Number of shares sold
iii) His annual income from the remaining 20% shares he still holds

b) Solve the following linear inequation and graph the solution on a real number line (3)

$$-2\frac{5}{6} < \frac{1}{2} - \frac{2x}{3} \leq 2 \ , \ x \in N$$

c) Use a graph paper for this question. Estimate the mode of the following frequency distribution (4)

C. I.	30 - 39	40 - 49	50 - 59	60 - 69	70 - 79	80 - 89
f	9	10	16	12	11	8

QUESTION 8

a) Use a compass and ruler only (3)

i) Construct ΔABC such that AB = 4.2cm BC = 7cm $\angle ABC = 120°$
ii) Construct a circle with BC as diameter
iii) Find point P such that P is equidistant from AB and BC and $\angle BPC = 90°$
iv) Measure BP

b) Given $R = \begin{bmatrix} x & 3 \\ y & 3 \end{bmatrix}$ if $R^2 = 3I$ where I is an identity matrix of order 2×2 find x & y (3)

c) Rohit purchased 4500, 8% Rs 100 shares at Rs 130, when the share price rises to Rs 150 he sells all the shares and invests the proceeds in 10% Rs 50 at Rs 75. Which investment was better and what was the difference in his annual income. (4)

QUESTION 9

a) A certain group of students enter for a game of long jump competition. The distance covered is recorded below. (6)

Distance (in cm)	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170
No. of students	14	21	13	9	12	8	9	14

Use a graph paper for this question
Draw an ogive for the above distribution. Use the ogive to estimate

i) Median
ii) Lower Quartile
iii) Number of students who covered less than 152 cm
iv) Number of students who qualified for the next round (the student qualifies if the length covered is more than 163 cm)

b) From the top of a building 20m high the angle of elevation of the top of another building is 45° and the angle of depression of the foot of the building is 20° calculate (4)

i) Height of the second building
ii) Distance between the buildings

QUESTION 10

a) Oil is stored in a spherical vessel whose diameter is 56cm occupying $\frac{3}{4}$ th of its full capacity. (3)
This oil is poured into a cylindrical vessel with a radius 21cm. find the height of the oil in the cylindrical vessel. (express your answer correct to the nearest cm)

b) A two digit number is such that the product of its digit is 12. When 36 is added to the number the digits interchange their place. Find the number. (3)

c) Calculate the mean of the following distribution using the step deviation method (4)
Express your answer correct to 3 significant figures.

CI	45-50	50-55	55-60	60-65	65-70	70-75	75-80
f	5	8	30	25	14	12	6