

GREENLAWNS HIGH SCHOOL
PRELIMINARY EXAMINATION 2021

STD X
TIME 2 HOURS

SUBJECT – MATHEMATICS
MARKS -60

(Attempt all Questions)

Question 1

- a) Suman gets Rs 10,200 at the end of 2 years at the rate of 6% p.a. in a recurring deposit account. Find the monthly instalment. (3)
- b) How many terms of the AP 51, 54, 57.....are required to get a sum of 810? (3)
- c) Solve the quadratic equation $x(x - 2) = 7$ and express your answer correct to one decimal place. (4)

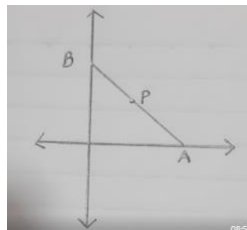
Question 2

- a) Solve the following linear inequation and graph the solution on a real number line (3)
$$2 \leq 2x - \frac{3}{2} \leq 5, x \in N$$
- b) A wholesaler purchases some furniture for Rs 1,60,000. He sold it to a retailer for Rs 1,90,000. The retailer sold it to a customer for Rs 2,30,000. If all the transactions are within the state and the rate of GST is 18%, calculate (3)
 - (i) GST paid by wholesaler
 - (ii) Tax paid by retailer to the state government
 - (iii) Price paid by customer

c) If $B = \begin{pmatrix} 1 & -1 \\ 0 & 2 \end{pmatrix}$ and $C = \begin{pmatrix} 3 & 5 \\ 4 & 6 \end{pmatrix}$, then find matrix A such that $2A + 3B = 3C$ (4)

Question 3

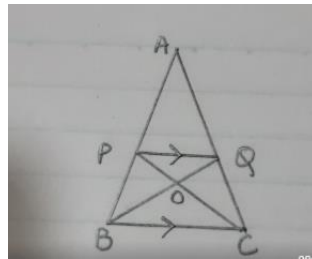
- a) If a,b and c are in continued proportion then prove that (3)
$$\frac{a+b}{b+c} = \frac{a^2(b-c)}{b^2(a-b)}$$
- b) In the figure drawn below A and B are points on the X and Y axis respectively. If P (4,6) (3) is a point on AB such that $2PA = 3PB$, then find the coordinates of A and B.



- c) Use a graph paper for this question (4)
 - (i) Plot points P (0,5), Q (2,3) and R (1,0)
 - (ii) Reflect Q and R in the Y axis to get Q' and R' respectively
 - (iii) Name the figure PQRR'Q'
 - (iv) Name a point on the figure which is invariant in the Y axis.

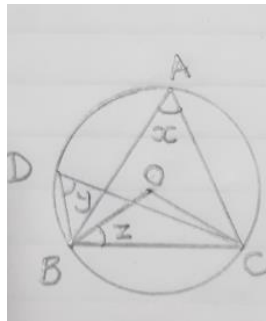
Question 4

- a) If the numbers 25 ,22 ,21 , $x+6$, $x+4$,9 ,8 ,6 are arranged in descending order and their Median is 16. Find x and hence find their mean. (3)
- b) The radius of the base of a right circular cone is 7cm and height is 24cm find the volume and curved surface area of the cone. (3)
- c) In the figure drawn below $PQ \parallel BC$ and $AP:PB = 3:4$ find (4)
 - (i) $PQ:BC$
 - (ii) $QO:O$



Question 5

- a) Identical cards labeled a, b, c, d.....t. A card is drawn at random. (3)
Find the probability that the card drawn is a
 - (i) A vowel
 - (ii) A vowel and a consonant
 - (iii) A letter from the word "mango"
- b) In the figure drawn below O is the center of the circle $\angle BOC = 80^\circ$ find the, values of x , y (3) and z



- c) If $f(x) = x^3 - ax^2 + bx + 1$ is divided by $(x-1)$, it leaves a remainder of 1 and when it is divided by $(x+1)$ it leaves a remainder -5. Find the values of a and b . (4)

Question 6

a) The table drawn below shows the age of a certain group of people. (6)

Age (in yrs)	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No. of people	9	36	15	9	33	39	40	12	7

Draw an ogive for the above distribution. Use the ogive to estimate

- (i) Median
- (ii) Lower Quartile
- (iii) Number of people above the age of 45 years.
- (iv) Number of people below the age of 32 years.

b) The angles of depression of two people standing on the opposite side of a building 160m high is 45° and 60° respectively. Find the distance between them. Express your answer to the nearest whole number. (4)