AMBASSADOR SCHOOL,DUBAI

GRADE: 10   **PREBOARD II EXAMINATION (Sample)**   **DATE:**

Marks: 80   **MATHEMATICS**   **Duration: 2 ½ Hrs**

*Answers to this Paper must be written on the paper provided separately. You will not be allowed to write during the first 15 minutes. This time is to be spent in reading the question paper. The time given at the head of this Paper is the time allowed for writing the answers. Attempt all questions from **Section A** and any four questions from **Section B**. All working, including rough work, must be clearly shown and must be done on the same sheet as the rest of the answer. Omission of essential working will result in loss of marks. The intended marks for questions or parts of questions are given in brackets [ ].*

Section A (40 Marks)
Attempt all questions from this section

Question 1

a) David opened a Recurring deposit Account in a bank and deposited Rs 300 per month for two years.If he received a sum of Rs 7725 at the time of maturity.Find the rate of interest per annum.   [3]

b)Solve the inequation and represent on the number line .

$$-5 \le \frac{1}{2} - \frac{3x}{2} \le 2\frac{3}{4}, x \in N$$ [3]

c)If 9x-5y =3x + 10y i)find the value of x:y.

ii)Using properties of proportion ,find the value of $\frac{4x^2+9y^2}{4x^2-9y^2}$.   [4]

Question 2

a)A tent in the form of a right circular cone is 3 metres high and its base has a diameter of 14 metres.If 100 men sleep in it, find the average number of cubic metres of air space per man.   [3]

b)A dealer in Mumbai sold a telescope to an end user in Bangalore, the marked price of the telescope was Rs 30,000 and the dealer offered a discount of 20%.If the rate of G.S.T is 28% ,calculate the IGST,CGST and SGST charged from the end user. Also determine the total amount of bill.   [3]

c)If A $= \begin{bmatrix} 1 & 2 \\ 2 & 3 \end{bmatrix}, B = \begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix} C = \begin{bmatrix} 1 & 3 \\ 3 & 1 \end{bmatrix}$ .Find the matrix C(B-A)+A² .   [4]

Question 3

a)Which term of the sequence $17, 14\frac{1}{2}, 12, 9\frac{1}{2}, ...$is the first negative term?   [3]

b) Prove that $\frac{cosA\ cosecA-sinA\ secA}{cosA+sinA} = cosecA - secA$ [3]

c)Find the values of a and b if (x-1) is a factor of ax³ - x² + bx + 6 and when this polynomial is divided by (x-3) the remainder is 30.   [4]

Question 4

a)Let P = (-4,1) and Q = (7,-3) .If PQRS is a parallelogram and its diagonals intersect at point (2,5) find the coordinates of R and S. [3]

b)In the figure AD is the diameter.O is the centre of the circle.AD//BC and $\angle CBD = 23°.$ Find
i)$\angle OBD$ ii)$\angle AOB$ iii)BED [3]
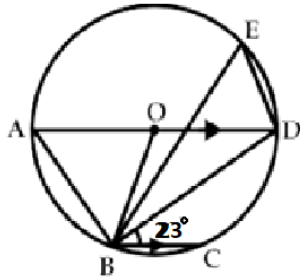
c)Calculate the mean by assumed mean method. Also find the modal class. [4]

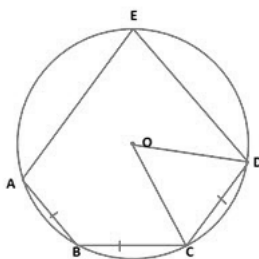| Class	0-20	20-40	40-60	60-80	80-100
frequency	7	11	10	9	13

Section B (40 marks)

Attempt any four questions from this section

Question 5

a)How many terms of the A.P 9,17,25,……must be taken to give a sum of 636? [3]

b) In the given diagram, $AB = BC = CD$ and $\angle ABC = 132°$. Find:

(i) $\angle AEB$ (ii) $\angle AED$ iii) $\angle COD$.

c)Use a graph paper for this question. (Take 2cm = 1 unit on both axis) [4]
i) Plot the points A(-4,2) and B (2,4).
ii) A' is the image of A when reflected in the y axis.Plot it on the graph paper and write the coordinates of A'
iii)B' is the image of B when reflected in the line AA'.Write the coordinates of B'

iv)Write the geometric name of the figure ABA'B'.Also write the equation of AA'.
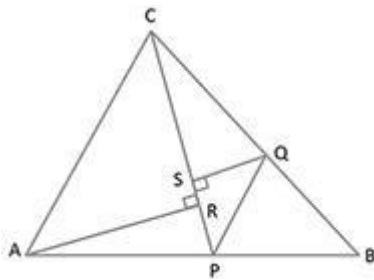
Question 6

a) If a,b,c are in continued proportion ,prove that $\frac{a^3+b^3+c^3}{a^2b^2c^2} = \frac{1}{a^3} + \frac{1}{b^3} + \frac{1}{c^3}$ [3]

b) In the figure given below, P is a point on AB such that $AP : PB = 4 : 3$. $PQ \parallel AC$.
(i) Calculate the ratio $PQ : AC$, giving reasons for your answer.
(ii) In $\triangle ARC, \angle ARC = 90°$ and in $\triangle PQS, \angle PSQ = 90°$. Given $QS = 6\ cm$, calculate length of AR

c)A shopkeeper buys a number of books for Rs80.If he had bought 4 more books for the same amount,each book would have cost Re 1 less. How many books did he buy? [4]

Question 7

a)Point P divides the line segment joining the points A(2,1) and B(5,-8) such that AP/AB = 1/3 .If P lies on the line 2x- y + k = 0 find the value of k. [3]

b) If A $= \begin{bmatrix} 2 & 3 \\ 0 & -2 \end{bmatrix}$ and $B = \begin{bmatrix} -8 \\ 8 \end{bmatrix}$ find matrix X such that $2AX = B$ [3]

c) The king, queen, and jack of clubs are removed from a deck of 52 playing cards and the remaining cards are shuffled. A card is drawn from the remaining cards. Find the probability of getting i) a card of heart ii) a queen   iii) a card of clubs   iv) a face card. [4]

Question 8

a) $Prove: (cosecA - sinA)(secA - cosA)sec^2A = tanA$ [3]

b)ABCD is a cyclic quadrilateral. PC is a tangent at C.$\angle DCP = 40°\ and\ \angle DCA = 65°$.Find the angles marked x,y and z. [3]
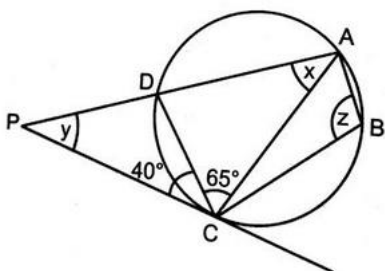
c)How many terms of the A.P -15,-13,-11,……… are needed to make the sum -55?Explain the reason for double answer.

Question 9

a)Find the value of 'k' for which the quadratic equation $x^2 + k(2x+k – 1) +2 = 0$ have real and equal roots. [3]

b) Solve the equation: $-4 + (-1) + 2 +…….+ x = 437$. [3]

c) Find the amount of bill for the following intra-state transaction of goods/services. [4]

MRP (in Rs.)	12,000	15,000	9500	18,000
Discount %	30	20	30	40
GST %	12	18	28	5

Question 10

a)From a window 15 metres high above the ground in a street,the angles of elevation and depression of the top and the foot of another house on the opposite side of the street are 30° and 45° respectively.Find the height of the opposite house correct to the nearest metre. [4]

b) The following distribution represents the height of 160 students of a school.

Height (in cm)	130-135	135-140	140-145	145-150	150-155	155-160	160-165	165-170
No of students	12	20	30	38	24	16	12	8

Draw an ogive for the given distribution taking 2cm = 5cm height on one axis and 2cm = 20 students on the other axis.Using the graph ,determine i) median height   ii) interquartile range   iii) number of students whose height is above 152cm. [6]

Question 11

a)A circus tent is in the shape of a cylinder surmounted by a conical top of same diameter.If their common diameter is 56m, the height of the cylindrical part is 6m and the total height of the tent above the ground is 27m,find the area of the canvas used in making the tent. [3]

b)Cards numbered from 11 to 60 are kept in a box. If a card is drawn at random from the box,find the probability that the number on the drawn card is   i) a perfect square number   ii) divisible by 5
iii) a prime number less than 20 [3]

c) In the figure DE//BC and AD:DB = 5:4 . i) Find DE: BC   ii) Find $\frac{Ar \, \Delta DEF}{Ar \, \Delta CFB}$. [4]

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