PAWAR PUBLIC SCHOOL, BHANDUP						
Class	**Subject**	**Exam**	**Marks**	**Date**	**Duration**	**No. of Printed Pages**
X	**Mathematics**	**Prelim 2**	**40**	**15.02.2022**	**1 ½ hours**	**5**

Answers to this Paper must be written on the paper provided separately.
*You will **not** be allowed to write during the first **10** 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.

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*Attempt **all** questions from **Section A** and **any three** questions from **Section B.***
The intended marks for questions or parts of questions are given in brackets [ ].

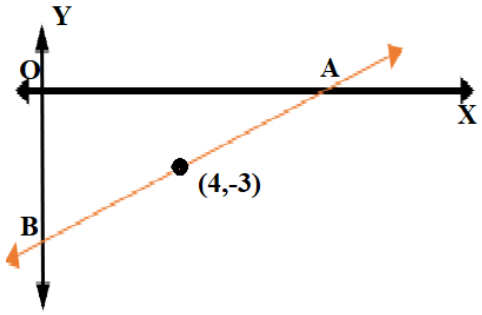
SECTION A

Attempt all questions from this Section

Question 1

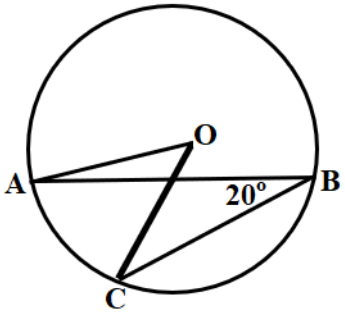
Choose the correct answers to the questions from the given options. (Do not copy the question. Write the correct answer only.) **[10]**

(i) The mid-point of the line segment AB shown in the adjoining diagram is (4, –3). Find the co–ordinates of A and B.



(a) A(4, 0) ; B(0, –3)
(b) A(0, 4) ; B(–3, 0)
(c) A(8, 0) ; B(0, –6)
(d) A(0, 8) ; B(–6, 0)

(ii) In the adjoining figure, O is the centre of the circle. If $\angle ABC = 20^o$, then $\angle AOC =$ _____.



(a) 20^o
(b) 40^o
(c) 60^o
(d) 10^o

(iii) The volume of the largest right circular cone that can be carved out from the cylinder of diameter 10 cm and height 21 cm will be _____.

(a) 2100π cm^3
(b) 525π cm^3
(c) $175\ \pi$ cm^3
(d) $700\ \pi$ cm^3

(iv) $cos\ \theta - cot\theta\ sin\theta$ is equal to _____.

(a) 0
(b) 1
(c) $tan\ \theta$
(d) $cos\ \theta$

(v) Weights of 40 oranges were recorded as below:

Weight in g.	85 – 90	90 – 95	95 – 100	100 – 105	105 – 110
No. of oranges	10	12	12	4	2

The lower limit of the median class is _____.
(a) 85
(b) 90
(c) 95
(d) 100

(vi) The reflection of the point A (0,5) in the y–axis is_____.
(a) (0, –5)
(b) (5, 0)
(c) (0, 5)
(d) (0, 0)

(vii) Find slope of AB if A (7, –3) and B (1, 9).

(a) $\frac{-1}{2}$
(b) –2
(c) 2
(d) –1

(viii) During conversion of a solid from one shape to another, the volume of the new solid will _____ and surface area of the new solid will _____.

(a) increase , remains same
(b) decrease , increase
(c) unaltered , depend on the shape
(d) be doubled and will decrease

(ix) Daily wages of a factory workers are recorded as:

Daily wages in ₹	130 – 135	135 – 140	140 – 145	145 – 150	150 – 155
No. of workers	5	27	20	18	12

The modal class is _____.
(a) 130 – 135
(b) 135 – 140
(c) ₹ 137.5
(d) ₹ 132.5

(x) Probability of any event can never be _____.

(a) less than 0 or more than 1
(b) more than 0 or less than 1
(c) equal to 1
(d) equal to 0

SECTION B

*(Attempt **any three** questions from this Section.)*

Question 2

(i) Cards are marked with number from 15 to 36 and well shuffled. One card is drawn at random. Find the probability that the card drawn bears: **[2]**
(a) A number neither divisible by 2 nor by 3.
(b) A perfect square number.

(ii) The centroid of Δ ABC is G (–1, 4). If A (5, –6) and B (–2, 3), find the coordinates of C. **[2]**

(iii) A man on the top of a tower observes a car moving at a uniform speed towards it. If it takes 12 minutes for the angle of depression to change from 30^o to 60^o, how soon will the car reach the tower? **[3]**
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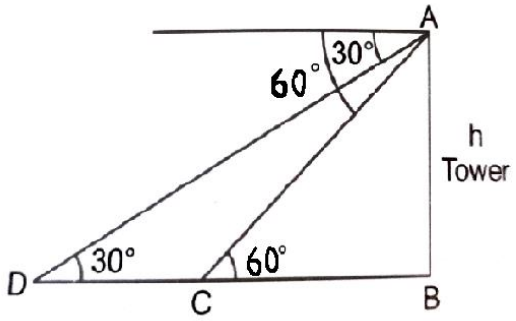
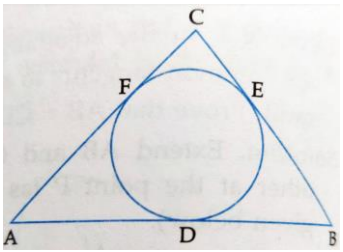


(iv) The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is ₹ 50. Find the value of f. **[3]**

Daily pocket allowance (in ₹)	0 – 20	20 – 40	40 – 60	60 – 80	80 – 100
No. of children	17	f	32	24	19

Question 3

(i) In the adjoining figure, a circle is inscribed in a Δ ABC having sides BC = 8 cm, AC = 10 cm and AB = 12 cm. Find AD. **[2]**



(ii) Prove that: $(1 + tan^2\theta)sin\theta\ cos\theta = tan\ \theta$ **[2]**

(iii) Find equation of the line parallel to the line 3x + 2y = 8 and passing through the point (0, 1). **[3]**

(iv) IQ of 50 students was recorded as follows: **[3]**

IQ score	80 – 90	90 – 100	100 – 110	110 – 120	120 – 130	130 – 140
No. of students	6	9	16	13	4	2

Draw a histogram for the above data and estimate the mode.

Question 4

(i) If A(–3, 5), B(2, –1) and C(a, 11) are collinear, find the value of 'a' without using distance formula. **[2]**

(ii) The curved surface area of a cylinder of radius 35cm is 3850 cm^2. Find the height of the cylinder. **[2]**

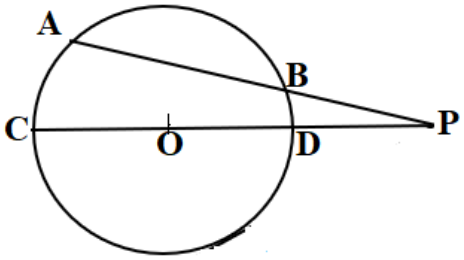
(iii) Prove that: $1 - \frac{cos^2\theta}{1+sin\,\theta} = sin\theta$ **[3]**

(iv) Use a graph sheet for this question **[3]**
(Take 1cm = 1 unit along both *x*-axis and *y*-axis.)

(a) Plot the points A (2, 1) and B (5, 5) and C (8, 1)
(b) Reflect A and C in *x*-axis to get A' and C'.
(c) Write the co–ordinates of A' and C'.
(d) Give the geometrical name for the figure ABCC'A'.
(e) Find the area of figure ABCC'A'.

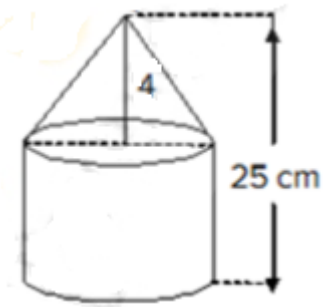
Question 5

(i) In the figure given alongside, chord AB and diameter CD of a circle with centre O meet at P. If AP = 16 cm , AB = 12 cm and DP = 2 cm, find the radius of the circle. **[2]**



(ii) Find the ratio in which the line segment joining A (2,–5) and B (–3,10) is divided by y-axis. **[2]**

(iii) The given solid figure is a cylinder surmounted by a cone. The diameter of the base of the cylinder is 6 cm. The height of the cone is 4cm and the total height of the solid is 25cm. Find the total surface area of the solid.(Take $\pi = 3.14$) **[3]**



(iv) Use graph paper for this question, take 2 cm = 10 years along one axis and 2 cm = 10 patients along the other axis. **[3]**

Age(yrs.)	5–15	15–25	25–35	35–45	45–55	55–65	65–75
No. of patients due to Omicron	6	10	14	13	24	8	7

Draw the ogive for the above distribution and hence estimate the median.

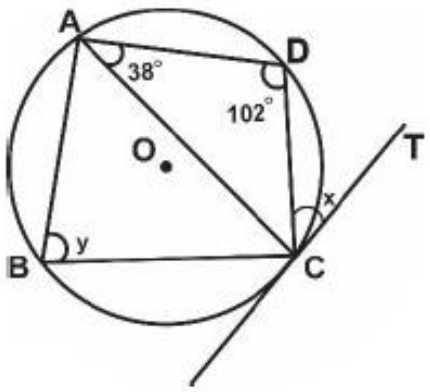
Question 6

(i) A box consists of 48 mobiles phones of which 42 are good, 3 have only minor defects and 3 have major defects. Varnika will buy a phone if it is good but the trader will buy a mobile if it has no major defect. One phone is selected at random from the box. What is the probability that it is: **[2]**

(a) acceptable to Varnika?
(b) acceptable to the trader?

(ii) How many solid right circular cones of radius 2 cm and height 3 cm can be made by melting a solid right circular cylinder of diameter 24 cm and height 30 cm? **[2]**

(iii) In the figure given alongside $\angle CAD = 38^o$ and $\angle ADC = 102^o$.Find the value of x, y and $\angle AOC$. **[3]**



(iv) A statue 1 m tall stands on the top of a pedestal. From a point on the ground, the angle of elevation of the top and bottom of the statue are 60° and 45° respectively. Find the height of the pedestal. **[3]**