1ST PRE BOARD EXAMINATION 2021-22

SUBJECT – Mathematics

CLASS – X

TIME: 1 $\frac{1}{2}$ hrs M.M. – 40

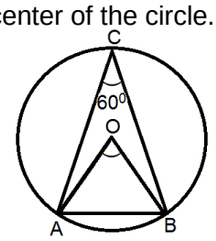
Answers to this paper must be written on paper provided separately.
You will not be allowed to write during the first 10 minutes.
This time is to be spent in reading the question paper.
The time given at the head of this paper is the time allowed for writing the answers.
Attempt all questions from Section A and any three questions from section B.
The intended marks for questions or parts of the questions are given in the brackets. [ ]

Section – A
Attempt all question 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 Point P (2,–5) reflects under reflection in the x-axis, then p^{l} is:
(a) (2,5)
(b) (,–2, ,–5)
(c) (2,–5)
(d) (–2,5)

(ii) In the adjoining figure, O is the center of the circle. If $\angle$ ACB =60^0 the $\angle$ AOB is equal to:
(a) 40^0
(b) 80^0
(c) 120^0
(d) 160^0



(iii) The diameter of a cylinder is 7cm and its height is 16cm. Then the curved surface area of cylinder is:
(a) 132cm^2
(b) 200cm^2
(c) 352cm^2
(d) 304cm^2

(iv) The vertices of a triangle are (3, –7), (–8,6) and (5,10). Then the centroid if is:
(a) (0,9)
(b) (0,3)
(c) (1.3)
(d) (3,3)

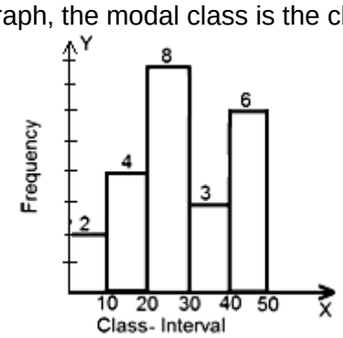
(v) $\cot^2\theta - \frac{1}{\sin^2\theta}$ is equal to:
(a) 1
(b) –1
(c) $\sin^2\theta$
(d) $\sec^2\theta$

(vi) Find the mode of the following sets of numbers 5,7,6,8,9,0,6,8,1,8:
(a) 7,
(b) 6,
(c) 5
(d) 8

(vii) If $2x-3y+5=0$ and $Px+6y+7=0$ are parallel lines, the value of P is:
(a) –4
(b) 6
(c) 8
(d) 2

(viii) If the curved surface area of a cylinder is 94.2cm^2 and its height is 5cm, then the radius its base is (use π = 3.14):
(a) 3cm
(b) 5cm
(c) 6cm
(d) 4cm

(ix) In the given graph, the modal class is the class with frequency:
(a) 4
(b) 8
(c) 6
(d) 2



(x) A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag. Then the probability that the ball drawn red is:

(a) $\frac{3}{8}$

(b) $\frac{5}{8}$

(c) $\frac{16}{9}$

(d) $\frac{1}{6}$

Section – B
Attempt any three questions from this section

Question 2)

(i) The line segment joining A (–3, 1) and B (5, –4) is a diameter of a circle whose centre is C. Find the coordinates of point C. [2]

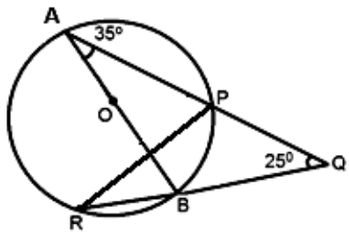
(ii) A letter is chosen from the word 'TRIANGLE'. What is the probability that it is a vowel? [2]

(iii) In the given figure, AB is a diameter of the circle APBR. APQ and RBQ are straight lines, $\angle A=35^0$, $\angle Q=25^0$ Find: [3]

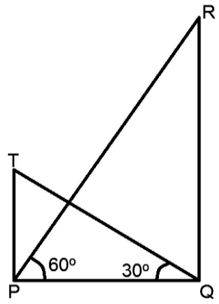
(a) $\angle PRB$

(b) $\angle PBR$

(c) $\angle BPR$



(iv) In the adjoining figure, the angle of elevation from a point P of the top of a tower. QR, 50m high is 60^0 and that of tower PT from a point Q is 30^0. Find the height of tower PT, correct to the nearest meter. [3]



Question 3)

(i) Two concentric circles are of radii 13cm and 5cm. Find the length of the chord of outer circle which touches the inner circle. [2]

(ii) If the volume of a cylinder of height 7cm is 448π cm^3. Find its lateral surface area and total surface area. [2]

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

(iv) Using the data given below construct the cumulative frequency table and draw the ogive from the ogive determine the median: [3]

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	3	8	12	14	10	6	5	2

Question 4)

(i) If $6x+5y-7=0$ and $2px+5y+1=0$ are parallel lines. Find the value of p. [2]

(ii) Calculate the mean of the following distribution: [2]

Class Interval	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	8	5	12	35	24	16

(iii) Find the volume of sphere whose surface area is 154cm^2. [3]

(iv) Using a graph paper, plot the points A(6,4) and B (0,4) [3]

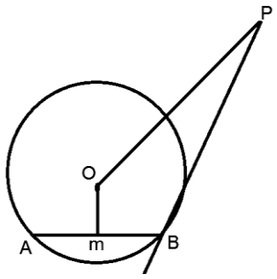
(i) Reflect A and B in the origin to get images A' and B'

(ii) Write the coordinates A' and B'.

(iii) State the geometrical a name for the figure AB A'B'.

Question 5)

(i) In the given figure, PB is tangent to a circle with center O at B. AB is a chord of length 24cm at a distance of 5cm from the center. If the length of the tangent is 20cm. Find the length of OP. [2]



(ii) $\frac{Sin^3A + Cos^3A}{SinA + CosA} + \frac{Sin^3A - Cos^3A}{SinA - CosA} = 2$ [2]

(iii) If the lines $3x + by + 5 = 0$ and $ax - 5y + 7 = 0$ are perpendicular to each other, find the relation connecting a, and b. [3]

(iv) Draw a histogram (use graph paper) and estimate the mode for the following frequency distribution. [3]

Classes	0–10	10–20	20–30	30–40	40–50	50–60
Frequency	2	8	10	5	4	3

Question 6)

(i) An integer is chosen between 0 and 100. What is the probability that it is: [2]
(a) Divisible by 7?
(b) Not divisible by 7?

(ii) P divides the distance between A (–2,1) and B (1,4) in the ratio 2:1. Calculate the coordinates of P. [2]

(iii) The angles of depression of two ships A and B as observed from the top of a light house 60m high are 60^0 and 40^0 respectively. If two ships are on the opposite sides of the light house, find the distance between two ships. Give your answer correct to the nearest whole number. [3]

(iv) The mean of the following distribution is 52 and the frequency of class interval of 30–40 is f find f. [3]

Class Interval	10–20	20–30	30–40	40–50	50–60	60–70	70–80
Frequency	5	3	f	7	2	6	13