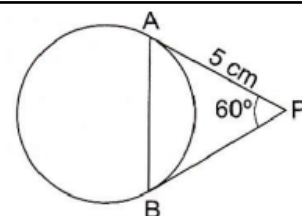


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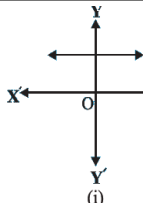
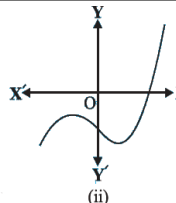
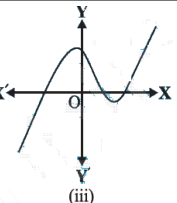
<u>PRE-BOARD-II, 2022-23</u>		
Subject:	Mathematics Standard (041)	Class: X
Time:	3 hrs.	Max. Marks: 80
Instructions: 1. This Question Paper has 5 Sections A-E. 2. Section A has 20 MCQs carrying 1 mark each 3. Section B has 5 questions carrying 02 marks each. 4. Section C has 6 questions carrying 03 marks each. 5. Section D has 4 questions carrying 05 marks each. 6. Section E has 3 case based integrated units of assessment (04 marks each) with subparts of the values 1 and 2 marks each respectively. 7. All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 1 Q of 3 marks and 1 Questions of 2 marks has been provided. 8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.		
SECTION : A		
(Section A consists of 20 questions of 1 mark each.)		
S.NO.		M
Q. 1	What is the degree of the constant polynomial? (a) 2 (b) 1 (c) 0 (d) 4	1
Q. 2	Which of the following cannot be the probability of an event? (a) $\frac{2}{3}$ (b) -1.5 (c) 15% (d) 0.7	1
Q. 3	Which one of the following option is true, $y = 3x + 5$ has: (a) unique solution (b) infinite solution (c) two solution (d) none	1
Q. 4	For what values of k will the following pair of linear equations have infinitely many solutions? (i) $kx + 3y - (k - 3) = 0$ (ii) $12x + ky - k = 0$ (a) -6 (b) 0 (c) 6 (d) All of these	1
Q. 5	What is the common difference of following AP: $3, 3 + \sqrt{2}, 3 + 2\sqrt{2}, 3 + 3\sqrt{2}, \dots$ (a) 3 (b) 2 (c) $\sqrt{2}$ (d) $2\sqrt{2}$	1
Q. 6	If $T_n = 2n - 3$ then what is the common difference of A.P ? (a) -2 (b) 5 (c) 3 (d) 2	1

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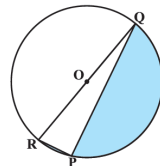
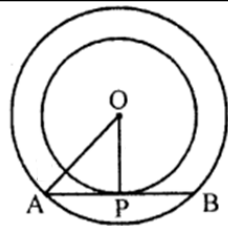
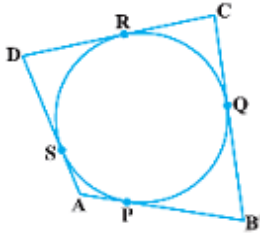
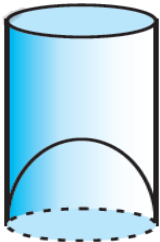
Q. 7	If TP and TQ are the two tangents to a circle with centre O so that $\angle POQ = 110^\circ$, then $\angle PTQ$ is equal to: (a) 60° (b) 70° (c) 80° (d) 90°	1
Q. 8	Find the value of k for which the quadratic equation $2x^2 - kx + k = 0$ has equal roots. (a) only 0 (b) only 8 (c) 0 and 8 (d) can't find	1
Q. 9	What is the product of zeroes of the polynomial $2x^2 - 7x + 6$? (a) 12 (b) 9 (c) 3 (d) -7	1
Q. 10	The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is : (a) 5 units (b) 12 units (c) 11 units (d) $(7 + \sqrt{5})$ units	1
Q. 11	In a ΔABC , If $\tan A = \cot B$, then $A + B$ is equal to : (a) 60° (b) 120° (c) 90° (d) 75° .	1
Q. 12	If $\sin A = \frac{3}{5}$ then $\cos A$ is equal to : (a) 0 (b) 1 (c) $\frac{4}{5}$ (d) $\frac{5}{8}$	1
Q. 13	On comparing the ratios $\frac{a_1}{a_2}$, $\frac{b_1}{b_2}$ and $\frac{c_1}{c_2}$ find out whether the following pair of linear Equations is consistent, or inconsistent. $2x + 5y - 5 = 0$ and $4x + 10y + 7 = 0$ (a) Consistent (b) Inconsistent (c) Nothing to say (d) none	1
Q. 14	If $x = \frac{1}{\sqrt{3}}$ is a root of the equation $Px^2 + (\sqrt{3} - \sqrt{2})x - 1 = 0$, then the value of $P^2 + 1$ is : (a) $\sqrt{6}$ (b) 6 (c) 7 (d) 8	1
Q. 15	In the given figure, PA and PB are tangents to the given circle such that $PA = 5$ cm and $\angle APB = 60^\circ$. The length of chord AB is : (a) $5\sqrt{2}$ cm (b) 5 cm (c) $5\sqrt{3}$ cm (d) 7.5 cm	1
Q. 16	If two positive integers p and q can be expressed as $p = ab^2$ and $q = a^3b$, where a, b being prime numbers, then LCM (p, q) is equal to: (a) ab (b) a^2b^2 (c) a^3b^2 (d) a^3b^3	1
Q. 17	Simplest rationalizing factor of $\sqrt{8}$ is : (a) $\sqrt{8}$ (b) $\sqrt{2}$ (c) $3\sqrt{2}$ (d) $\sqrt{32}$	1
Q. 18	If LCM of 12 and 42 is $10m+4$ then value of m is :	1



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	(a) 6	(b) 7	(c) 0	(d) 8	
DIRECTION: In the question number 19 and 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option					
Q. 19	Statement A (Assertion): Ravi goes 30 m due East and then 40 m due North . His distance from the starting point is 50 m. Statement R(Reason) : In right angled triangle ABC , right angled at B, $AB^2 = BC^2 + AC^2$ (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.				
Q. 20	Statement A (Assertion): If $\sin(\theta + 30^\circ) = \cos \theta$ and θ is acute then $\theta = 30^\circ$ Statement R(Reason) : $\sin(90^\circ - \theta) = \cos \theta$. (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation of assertion (A) (c) Assertion (A) is true but reason (R) is false. (d) Assertion (A) is false but reason (R) is true.				
SECTION :B (Section B consists of 5 questions of 2 marks each.)					
Q. 21	The graphs of $y = p(x)$ are given in Fig. for some polynomials $p(x)$. Find the Number of zeroes of $p(x)$, in each case.  (i)  (ii)  (iii)				

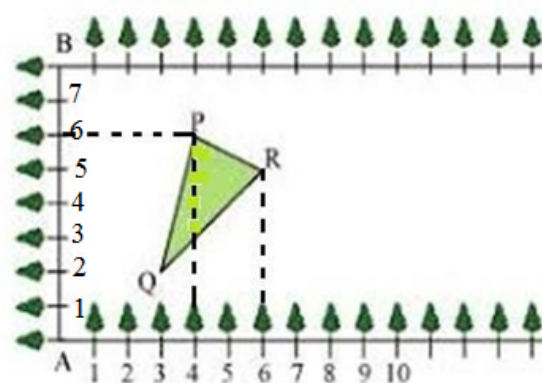
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Q. 22	Find the discriminant of the quadratic equation $2x^2 - 4x + 3 = 0$, and hence find the nature of its roots. OR Find the zeroes of the polynomial $X^2 + \frac{1}{6}X - 2$, and verify the relation between the coefficients and the zeros of the polynomial	2
Q. 23	Find the area of the shaded region, if PQ = 24 cm, PR = 7 cm and O is the centre of the Circle	2
		
Q. 24	A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be (i) Red ? (ii) Not green?	2
Q. 25	Two concentric circles (as given in figure below) are of diameters 30 cm and 18 cm. Find the length of the chord of the larger circle which touches the smaller circle.	2
		
SECTION :C (Section C consists of 6 questions of 3 marks each.)		
Q. 26	A quadrilateral ABCD is drawn to circumscribe a circle. Prove that $AB + CD = AD + BC$	3
		
Q. 27	Given that $\sqrt{2}$ is irrational, prove that $5 - 3\sqrt{2}$ is irrational.	3
Q. 28	A juice seller was serving his customers using glasses as shown in Figure .The inner diameter of the cylindrical glass was 5 cm, but the bottom of the glass had a hemispherical raised portion which reduced the capacity of the glass. If the height of a glass was 10 cm, find the apparent capacity of the glass and its actual capacity. (Use $\pi = 3.14$) OR . A vessel is in the form of an inverted cone. Its height is 8 which cm and the radius of its top, is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm are dropped	3
		

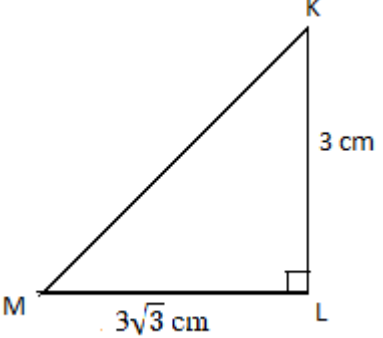
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	into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel.																	
Q. 29	A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears (i) a two-digit number . (ii) a perfect square number. (iii) a number divisible by 5.	3																
Q. 30	If α and β are zeroes of a quadratic polynomial $x^2 - 5$, then form a quadratic polynomial whose zeroes are $1+\alpha$ and $1+\beta$.	3																
Q. 31	In given figure $DE \parallel AC$ and $DF \parallel AE$. Prove that $\frac{BF}{FE} = \frac{BE}{EC}$		3															
SECTION :D (Section D consists of 4 questions of 5 marks each.)																		
Q. 32	A chord of a circle of radius 12 cm subtends an angle of 120° at the centre. Find the area of the corresponding segment of the circle. (Use $\pi = 3.14$ and $\sqrt{3} = 1.73$)	5																
Q. 33	Prove that the lengths of tangents drawn from an external point to a circle are equal, Also find the lengths of tangents if radius of the circle is 6cm and distance between centre of the circle and external point is 8cm. OR Prove that a parallelogram circumscribing a circle is a rhombus.	5																
Q. 34	If the median of the distribution given below is 28.5, find the values of x and y . <table><tr><td>Class interval</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>Total</td></tr><tr><td>Frequency</td><td>5</td><td>x</td><td>20</td><td>15</td><td>y</td><td>5</td><td>60</td></tr></table>	Class interval	0-10	10-20	20-30	30-40	40-50	50-60	Total	Frequency	5	x	20	15	y	5	60	5
Class interval	0-10	10-20	20-30	30-40	40-50	50-60	Total											
Frequency	5	x	20	15	y	5	60											
Q. 35	The angles of depression of the top and bottom of a 8m tall building from the top of a multi storied building are 30° and 45° , respectively. Find the height of the multi storied building and the distance between the two buildings. OR Prove that $\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\operatorname{cosec} A - 1}{\operatorname{cosec} A + 1}$	5																
SECTION :E																		

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(Case study based questions are compulsory.)		
Q. 36	A high-quality PE curriculum enables all students to enjoy and succeed in many kinds of physical activity. They develop a wide range of skills and the ability to use tactics, strategies and compositional ideas to perform successfully. When they are performing, they think about what they are doing, they analyse the situation and make decisions. They also reflect on their own and others' performances and find ways to improve upon them. As a result, they develop the confidence to take part in different physical activities and learn about the value of healthy, active lifestyles. Your friend Veer wants to participate in a 200m race. He can currently run that distance in 51 seconds and with each day of practice it takes him 2 seconds less. He wants to do in 31 seconds . Based on the above information, answer the following questions	
(i)	Write the Arithmetic Progression (AP) for the given situation .	1
(ii)	Find the n^{th} term of the AP.	1
(iii)	What is the minimum number of days he needs to practice till his goal is achieved	2
Q. 37	Class X students of a secondary school in Krishnagar have been allotted a rectangular plot of a land for gardening activity. Saplings of Gulmohar are planted on the boundary at a distance of 1m from each other. There is a triangular grassy lawn in the plot as shown in the fig. The students are to sow seeds of flowering plants on the remaining area of the plot. Considering A as origin, answer question (i) , (ii) and (iii)	
(i)	Find the co-ordinate of points P,Q and R.	1
(ii)	Find the distance AP.	1
(iii)	Is point Q is equidistance from point P and R verify it?	2

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Q. 38	Ritu's daughter is feeling so hungry and so thought to eat something. She looked into the bag and found some chips packed. She decided to eat. She open the chips packet and found that it forms a right angled triangle, which perpendicular sides are 3cm and $3\sqrt{3}$ cm as shown in figure . On the basis of above information, answer the following questions.	
(i)	Find the length of side MK.	1
(ii)	What is the measurement of $\angle K$ in degree ?	1
(iii)	Find the value of $\sec^2 M - 1$.	2