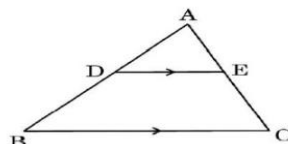
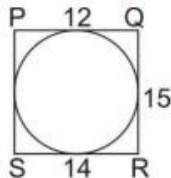
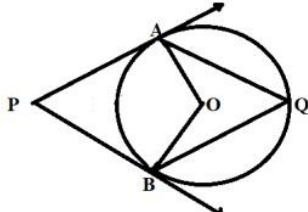


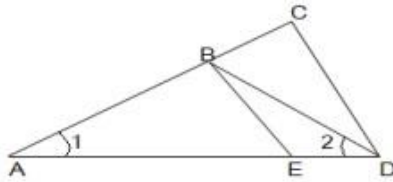
General Instructions:

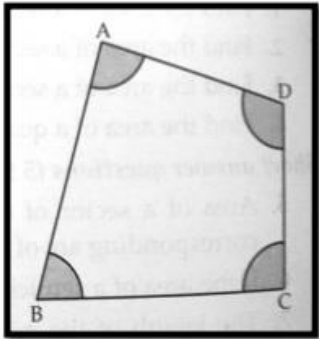
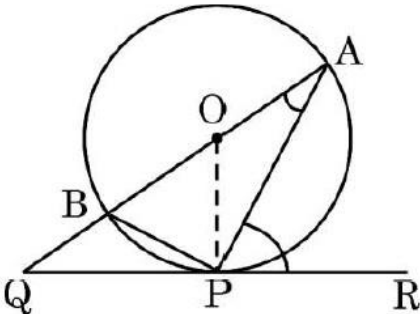
1. This Question Paper has 5 Sections A, B, C, D and E.
2. Section A has 20 MCQs carrying 1 mark each
3. Section B has 5 questions carrying 02 marks each.
4. Section C has 6 questions carrying 03 marks each.
5. Section D has 4 questions carrying 05 marks each.
6. Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts
7. All Questions are compulsory.
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

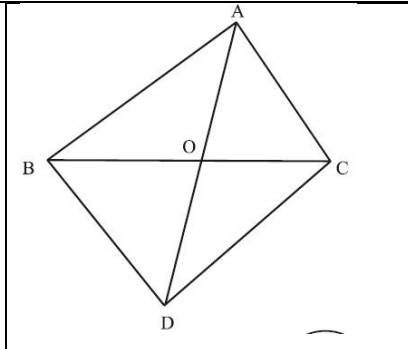
	SECTION - A	
	Section A consists of 20 questions of 1 mark each.	
1.	If $p^2 = 32/50$, then p is a/an (A) whole number (B) integer (C) rational number (D) irrational number	1
2.	If α and β are the zeroes of the polynomial $2x^2 + 3x + 5$, then the value of $\frac{1}{\alpha} + \frac{1}{\beta}$ is (A) $-2/3$ (B) $2/5$ (C) $3/5$ (D) $-3/5$	1
3.	The nature of roots of the quadratic equation $9x^2 - 6x - 2 = 0$ is: (A) No real roots (B) 2 equal real roots (C) 2 distinct real roots (D) More than 2 real roots	1
4.	The distance of the point $(-6, 8)$ from x-axis is (A) 6 units (B) 8 units (C) -6 units (D) 10 units	1
5.	The point of intersection of the line represented by $3x - y = 3$ and y-axis is given by (A) $(0, -3)$ (B) $(0, 3)$ (C) $(2, 0)$ (D) $(-2, 0)$	1
6.	The common difference of an AP, whose nth term is $a_n = (3n + 7)$, is (A) 3 (B) 7 (C) 10 (D) 6	1
7.	In ABC, DE BC. If AD : DB = 2 : 3, then DE : BC is equal to (a) 2 : 3 (b) 3 : 5 (c) 2 : 5 (d) 3 : 2	1



8.	A quadrilateral PQRS is drawn to circumscribe a circle. If PQ = 12 cm, QR = 15 cm and RS = 14 cm, then find the length of SP is (a) 15 cm (b) 14 cm (c) 12 cm (d) 11 cm		1
9.	In the given figure PA and PB are tangents from external point P to a circle with centre C where $\angle APB = 55^\circ$ and Q is the any point on the circle, then the measure of $\angle AQB$ is (A) 62.5° (B) 125° (C) 55° (D) 90°		1
10.	The value of p for which $(2p + 1)$, 10 and $(5p + 5)$ are three consecutive terms of an AP is (A) -1 (B) -2 (C) 1 (D) 2		1
11.	The value of k, for which the pair of linear equations $kx + y = k^2$ and $x + ky = 1$ have infinitely many solutions is (A) + 1,-1 (B) 1 (C) -1 (D) 2		1
12.	If a pole 18 m high casts a shadow $6\sqrt{3}$m long on the ground, then the Sun's elevation is (A) 60° (B) 45° (C) 30° (D) 90°		1
13.	It is proposed to build a new circular park equal in area to the sum of areas of two circular parks of diameters 16 m and 12 m in a locality. The radius of the new park is (A) 10m (B) 15m (C) 20m (D) 24m		1
14.	Two dice are rolled simultaneously. What is the probability that 6 will come up at least once? (A) $1/6$ (B) $7/36$ (C) $11/36$ (D) $13/36$		1
15.	The sum of the length, breadth and height of a cuboid is $6\sqrt{3}$cm and the length of its diagonal is $2\sqrt{3}$cm. The total surface area of the cuboid is (A) 48 cm^2 (B) 72 cm^2 (C) 96 cm^2 (D) 108 cm^2		1
16.	A bag contains 3 red, 5 black and 7 white balls. A ball is drawn from the bag at random. The probability that the ball drawn is not black, is (A) $1/3$ (B) $9/15$ (C) $5/10$ (D) $2/3$		1
17.	Which is the correct value of $\sin \beta$ in the terms of $\tan \beta$ (A) $\frac{\tan \beta}{1+\tan \beta}$ (B) $\frac{\tan \beta}{1-\tan \beta}$ (C) $\frac{\tan \beta}{\sqrt{1-\tan^2 \beta}}$ (D) $\frac{\tan \beta}{\sqrt{1+\tan^2 \beta}}$		1
18.	What is the length of the arc of the sector of a circle with diameter 14 cm and of central angle 90° ?		1

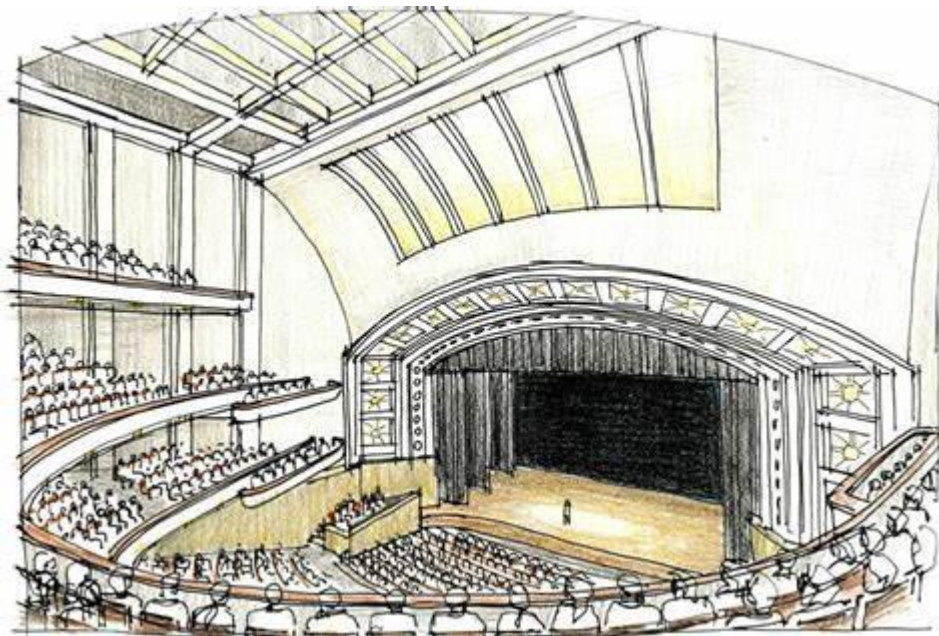
	(A) 22 cm	(B) 88 cm	(C) 11 cm	(D) 44 cm	
	DIRECTION: In the question number 19 and 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option				1
19.	Assertion (A) : The probability that a leap year has 53 Sundays is $\frac{2}{7}$ Reason (R) : The probability that a non-leap year has 53 Sundays is $\frac{1}{7}$ (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.				1
20	Assertion (A) : For $0 < \theta \leq 90^\circ$, $\operatorname{cosec} \theta - \cot \theta$ and $\operatorname{cosec} \theta + \cot \theta$ are reciprocal of each other. Reason (R) : $\operatorname{cosec}^2 \theta - \cot^2 \theta = 1$ (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.				1
	SECTION - B				
	Section B consists of 5 questions of 2 marks each.				
21.	Prove that 4^n can never end with digit 0, where n is a natural number.				2
22.	In the given figure below, $\frac{AD}{AE} = \frac{AC}{BD}$ and $\angle 1 = \angle 2$. Show that $\triangle BAE \sim \triangle CAD$.				2
23.	If $\sin (A+B) = 1$ and $\cos (A-B) = \frac{\sqrt{3}}{2}$, $0^\circ < A+B \leq 90^\circ$ and $A > B$, then find the measures of angles A and B. OR If $\tan \theta = \sqrt{3}$ then find the value of $\frac{2 \sec \theta}{1 + \tan^2 \theta}$				2
24.	The length of the minute hand of a clock is 6 cm. Find the area swept by it when it moves from 7:05 p.m. to 7:40 p.m.				2

	OR In the given figure, arcs have been drawn of radius 7cm each with vertices A, B, C and D of quadrilateral ABCD as centres. Find the area of the shaded region. 	
25.	Prove that the lengths of tangents drawn from an external point to a circle are equal.	2
	SECTION - C	
	Section C consists of 6 questions of 3 marks each	
26.	Prove that $\sqrt{7}$ is an irrational number.	3
27.	In the given figure, O is the centre of the circle and QPR is a tangent to it at P. Prove that $\angle QAP + \angle APR = 90^\circ$.  OR Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.	3
28.	(A) Prove that $\frac{\sin\theta}{1+\cos\theta} + \frac{\sin\theta}{1-\cos\theta} = \frac{2}{\sin\theta}$ OR (B) Prove that $\sec A (1 - \sin A) (\sec A + \tan A) = 1$.	3
29.	Find the zeroes of the quadratic polynomial $x^2 + 7x + 10$, and verify the relationship between the zeroes and the coefficients.	3
30.	Yash scored 40 marks in a test, getting 3 marks for each right answer and losing 1 mark for each wrong answer. Had 4 marks been awarded for each correct answer and 2 marks been deducted for each incorrect answer, then Yash would have scored 50 marks. How many questions were there in the test?	3
31.	The weights (in kg) of 50 wild animals of a National Park were recorded and the following data was obtained :	3

	<table><tr><td>Weight (in kg)</td><td>100 -110</td><td>110-120</td><td>120-130</td><td>130-140</td><td>140-150</td></tr><tr><td>Number of animals</td><td>7</td><td>14</td><td>23</td><td>8</td><td>3</td></tr></table>	Weight (in kg)	100 -110	110-120	120-130	130-140	140-150	Number of animals	7	14	23	8	3					
Weight (in kg)	100 -110	110-120	120-130	130-140	140-150													
Number of animals	7	14	23	8	3													
Find the mean weight (in kg) of animals.																		
SECTION – D																		
Section D consists of 4 questions of 5 marks each																		
32.	Two water taps together can fill a tank in $9\frac{3}{8}$ hours. The tap of larger diameter takes 10 hours less than the smaller one to fill the tank separately. Find the time in which each tap can separately fill the tank. OR Sum of the areas of two squares is 468 m^2. If the difference of their perimeters is 24 m, find the sides of the two squares.	5																
33.	In the given figure, $\triangle ABC$ and $\triangle DBC$ are on the same base BC. If AD intersects BC at O, prove that $\frac{\text{area (ABC)}}{\text{area (DBC)}} = \frac{AO}{DO}$ OR Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of triangle PQR. Prove that $\triangle ABC \sim \triangle PQR$	 5																
34.	The mode of the following frequency distribution is 55. Find the missing frequencies 'a' and 'b'. <table><tr><td>Class Interval</td><td>0-15</td><td>15-30</td><td>30-45</td><td>45-60</td><td>60-75</td><td>75-90</td><td>Total</td></tr><tr><td>Frequency</td><td>6</td><td>7</td><td>a</td><td>15</td><td>10</td><td>b</td><td>51</td></tr></table>	Class Interval	0-15	15-30	30-45	45-60	60-75	75-90	Total	Frequency	6	7	a	15	10	b	51	5
Class Interval	0-15	15-30	30-45	45-60	60-75	75-90	Total											
Frequency	6	7	a	15	10	b	51											
35.	A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in the figure. If the height of the cylinder is 10 cm and its base is of radius 3.5 cm, find the total surface area of the article. 	5																
SECTION – E																		

Section E consists of 3 questions of 4 marks each

- 36. The school auditorium was to be constructed to accommodate at least 1500 people. The chairs are to be placed in concentric circular arrangement in such a way that each succeeding circular row has 10 seats more than the previous one.**



(i) If the first circular row has 30 seats, how many seats will be there in the 10th row?

(ii) For 1500 seats in the auditorium, how many rows need to be there?

OR,

If 1500 seats are to be arranged in the auditorium, how many seats are still left to be put after 10th row?

(iii) If there were 17 rows in the auditorium, how many seats would be there in the middle row?

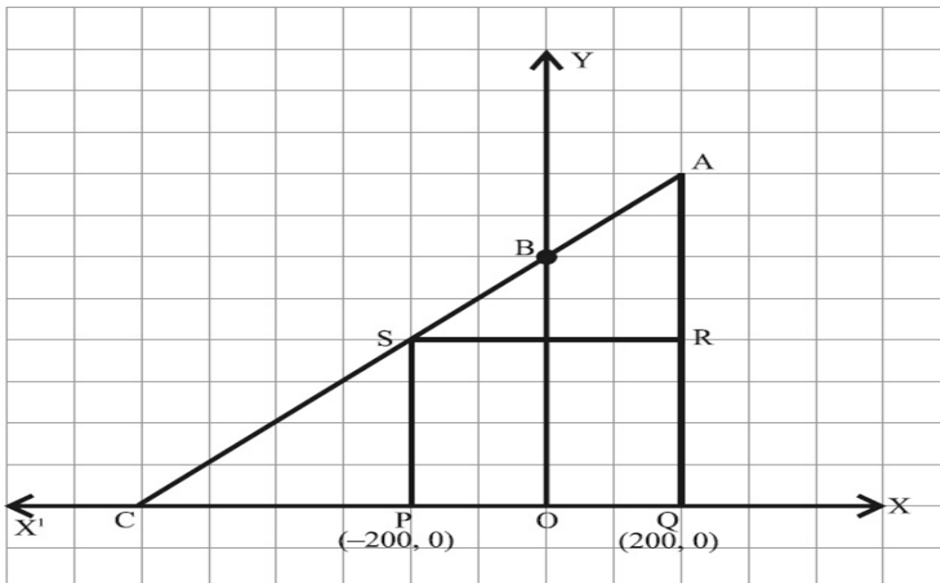
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37.

Jagdish has a field which is in the shape of a right angled triangle **AQC**. He wants to leave a space in the form of a square **PQRS** inside the field for growing wheat and the remaining for growing vegetables (as shown in the figure).



In the field, there is a pole marked as **O**.

(i) Taking **O** as origin, coordinates of **P** are $(-200, 0)$ and of **Q** are $(200, 0)$. **PQRS** being a square, what are the coordinates of **R** and **S** ?

(ii) What is the length of diagonal **PR** in square **PQRS** ?

(iii) What is the area of square **PQRS** ?

OR

If **S** divides **CA** in the ratio **K:1**, what is the value of **K**, where point **A** is $(200, 800)$?

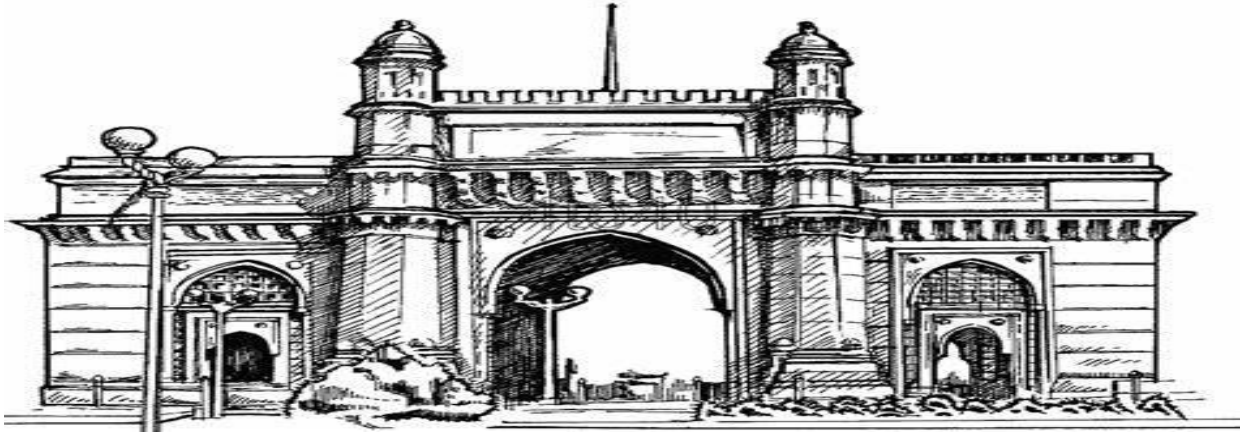
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38.

A group of students of class **X** visited India Gate on an education trip. The teacher and students had interest in history as well. The teacher narrated that India Gate, official name Delhi Memorial, originally called All-India War Memorial, monumental sandstone arch in New Delhi, dedicated to the troops of British India who died in wars fought between 1914 and 1919. The teacher also said that India Gate, which is located at the eastern end of the Rajpath (formerly called the Kingsway), is about 138 feet (42 metres) in height.



(i) What is the angle of elevation if they are standing at a distance of 42 m away from the monument?

1

(ii) They want to see the tower at an angle of 60° . So, they want to know the distance they should stand and hence find the distance.

2

OR

What is height of tower if the altitude of the sun is at 60° and length of shadow is 20 m.

(iii) A 21 m pole is situated away from monuments. The elevation of pole observed at 30° . Find the distance between the pole and monuments?

1