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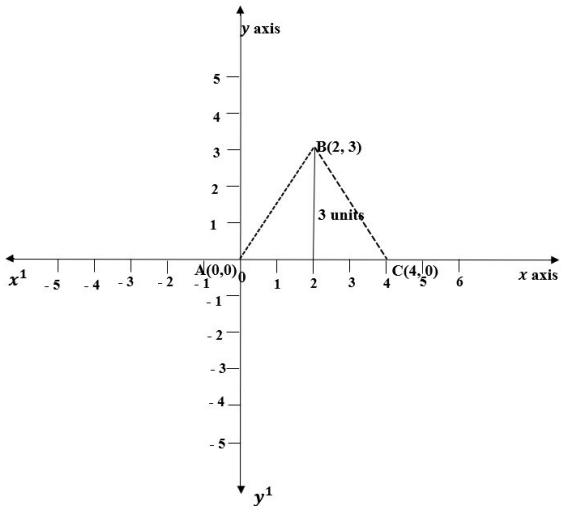
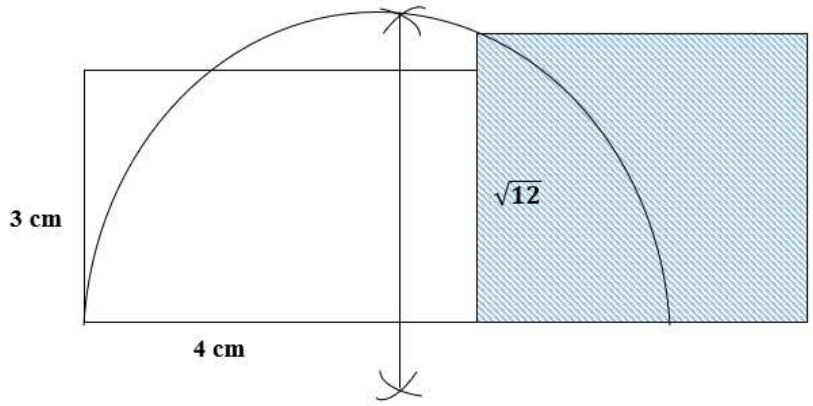
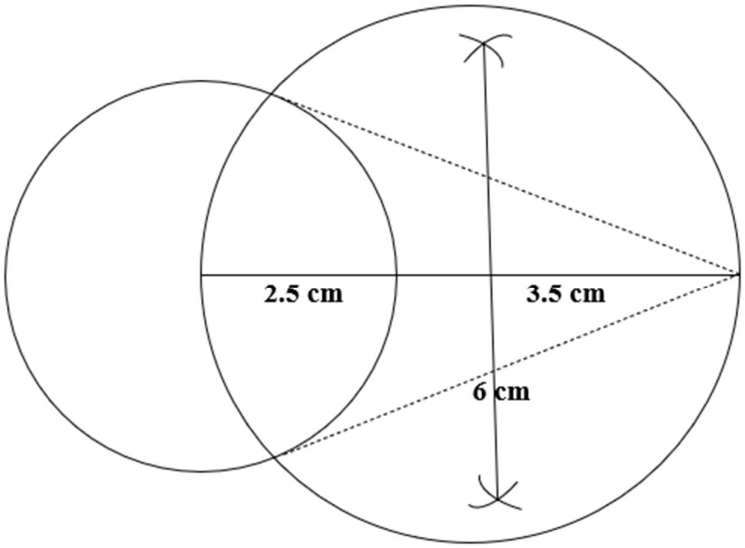
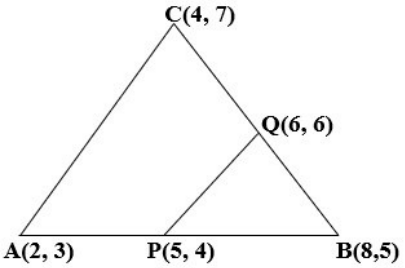
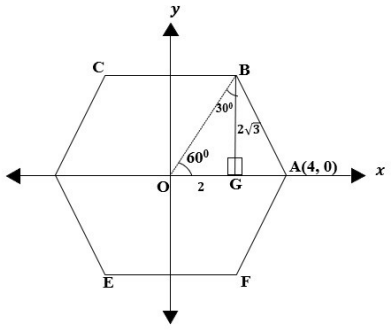
SSLC EXAMINATION MARCH - 2024

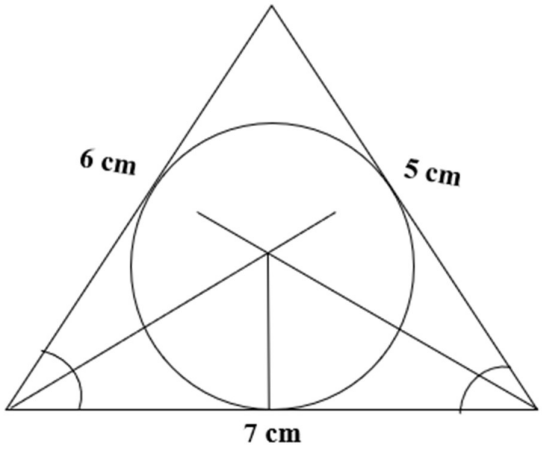
Time: $2^{1/2}$ Hours **MATHEMATICS** Total Score:80

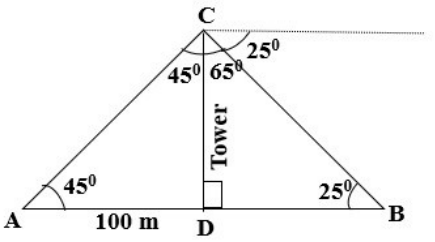
QN	INDICATORS	Total Marks
1	P=inside the circle Q= Outside the circle	2
2	Ascending order 12.0, 12.5, 12.6, 12.9, 13.4, 13.7, 14.1 Median = 12.9	2
3	a) 4, 8, 12 …… b) d=4	2
4	Proability = $\frac{2}{5}$	2
5	a)  BD= 3 unit	3
6	Renuka= x Ajay=$x + 10$ $x(x + 10) = 144$ $x^2 + 10x = 144$ $x^2 + 10x + 25 = 144 + 25$ $(x + 5)^2 = 169$ $x + 5 = \sqrt{169}$ $x + 5 = 13$ $x = 8$ Renuka=$8y$ Ajay= $18y$	3

7		3
8	(3,5) (6,7) Slope= $\frac{7-5}{6-3}$ $= \frac{2}{3}$ (3,5) (9,9) Slope= $\frac{9-5}{9-3}$ $= \frac{4}{6}$ $= \frac{2}{3}$ ∴ (3,5) (6,7)(9,9) are on the same line.	3
9	$x_n = 4n + 1$ a) d=4 b) $x_1 = 4 + 1$ $x_1 = 5$ c) 1	3
10	a) $\angle QOR = 150^0$ b) $\angle A = 80^0$ $\angle B = 70^0$ $\angle C = 30^0$	3
11	a) $\frac{12}{50} = \frac{6}{25}$ b) $\frac{8}{50} = \frac{4}{25}$ c) $\frac{4}{50} = \frac{2}{25}$	4
12	a) Two tangents	4

	b)  	
13	a) 25 is not a term b) $x_n = 6n + 2$ $6n + 2 = 144$ $6n = 142$ $n = \frac{142}{6}$ $n = 23.66$ Which is not a natural number. Hence 144 is not a term in this sequence. c) We can represent perfect squares like this. $(6n)^2$ = Reminder 0 $(6n \pm 1)^2$ = Reminder 1 while dividing $(6n \pm 2)^2$ = Reminder 4 perfect squares $(6n \pm 3)^2$ = Reminder 3 by 6 we will not get remainder 2 $(6n \pm 4)^2$ = Reminder 4 $(6n \pm 5)^2$ = Reminder 1	4
14	 a) $P(5,4)$ $Q = (6,6)$ b) $PQ = \sqrt{(6-5)^2 + (6-4)^2}$ $= \sqrt{1^2 + 2^2}$	4

	$= \sqrt{1+4}$ $PQ = \sqrt{5}\ units$	
15	a) $R = l$ $\therefore l = 15cm$ b) $r = \frac{x}{360} \times l$ $= \frac{120}{360} \times 15$ $= \frac{1}{3} \times 15$ $r = 5$ c) $CSA = \pi rl$ $= \pi \times 5 \times 15$ $= 75\pi cm^2$	4
16	$Sin\ 49 = \frac{QR}{9}$ $QR = Sin\ 49 \times 9$ $= 0.75 \times 9$ $QR = 6.75\ cm$ $Cos\ 49 = \frac{PQ}{9}$ $PQ = Cos\ 49 \times 9$ $= 0.66 \times 9$ $PQ = 5.94\ cm$	4
17	a) $D(-4, 0)$ b) $BG = 4\ unit$  $30^0, 60^0, 90^0$ $1: \sqrt{3}: 2$ $2: 2\sqrt{3}: 4$ $\therefore BG = 2\sqrt{3}\ unit$ c) $B\left(2, 2\sqrt{3}\right)$	4

	$E(-2,-2\sqrt{3})$	
18	$x^2 = x + 12$ $x^2 - x - 12 = 0$ $(x+3)(x-4) = 0$ $x = -3, 4$	4
19	$P(x) = x^2 - 5x + 6$ a) $(x-2)(x-3)$ b) $x = 2, x = 3$	4
20	a) 5: 3 b) $5^2 : 3^2 = 25 : 9$ c) $\frac{100}{x} = \frac{25}{9}$ $25x = 900$ $x = \frac{900}{25}$ $x = 36cm^2$	4
21	$\angle D = 55^0$ $\angle A = 40^0$ $\angle APD = 85^0$	4
22	 	5
23	Age / No of workers Below 30: 9 Below 40: 19 Below 50: 27 Below 60: 32 Below 70: 33 a) $\frac{N+1}{2} = \frac{33+1}{2} = \frac{34}{2} = 17^{th}$ position b) $d = \frac{40-30}{19-9} = \frac{10}{10} = 1$	5

	Assuming age = $x_{10} = 30 + \frac{d}{2}$ $=30+0.5$ $= 30.5$ $x_{17} = x_{10} + 7d$ $= 30.5 + 7 \times 1$ Median $x_{17} = 37.5$	
24	a)  b) Height of the tower = 100 M c) $tan65^0 = \frac{BD}{100}$ $BD = tan65 \times 100$ $= 2.14 \times 100$ $= 214M$	5
25	a) $x_3 = 26$ $x_8 = 61$ $d = \frac{61-26}{8-3}$ $d = \frac{35}{5}$ $d = 7$ b) $x_1 = x_3 - 2d$ $= 26 - 2 \times 7$ $= 26 - 14$ $x_1 = 12$ c) $x_n = 7_n + 5$ d) $x_{15} = 7 \times 15 + 5$ $x_{15} = 110$ $S_{15} = \frac{15}{2}(12 + 110)$ $= \frac{15}{2} \times 122$ $= 15 \times 61$ $S_{15} = 915$	5
26	a=20 $l = 26$ $h = 29$	5

	a) $2 \times 20 \times 26 = 1040$ b) $h = 24$ c) $\frac{1}{3} \times 20^2 \times 24$ 400×8 $= 3200cm^3$ $3.2\ liter$	
27	a) $\angle BAC = 180 - 125 = 55^0$ b) $\angle ACD = 90^0$ c) $\angle ACD = 180 - 55 = 125^0$ d) $\angle ABD = 180 - 125 = 55^0$	5
28	$2x - y - 2 = 0$ a) $2 \times 3 - 4 - 2$ $6 - 6$ 0 (3, 4) is a point on this line b) Cut to $x\ axis$ $\therefore y = 0$ $2x - 0 - 2 = 0$ $2x = 2$ $x = 1$ Coordinate (1,0) Cut to y $axis$ $\therefore x = 0$ $2 \times 0 - y - 2 = 0$ $y = -2$ Coordinate (0, -2)	5
29	a) Second term= 6 3rd term =12 b) (ii) 2, 4, 8, 16 c) 4 d) 81	5

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