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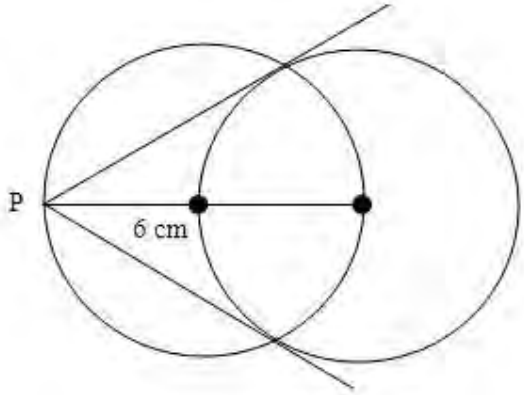
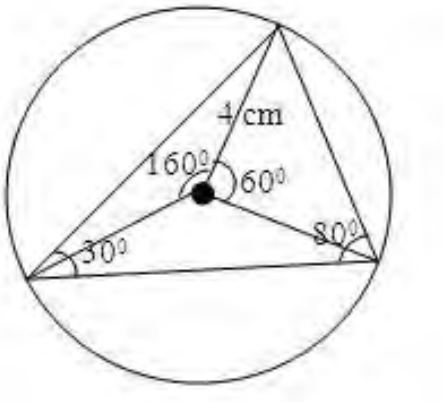
SSLC EXAMINATION, MARCH-2019

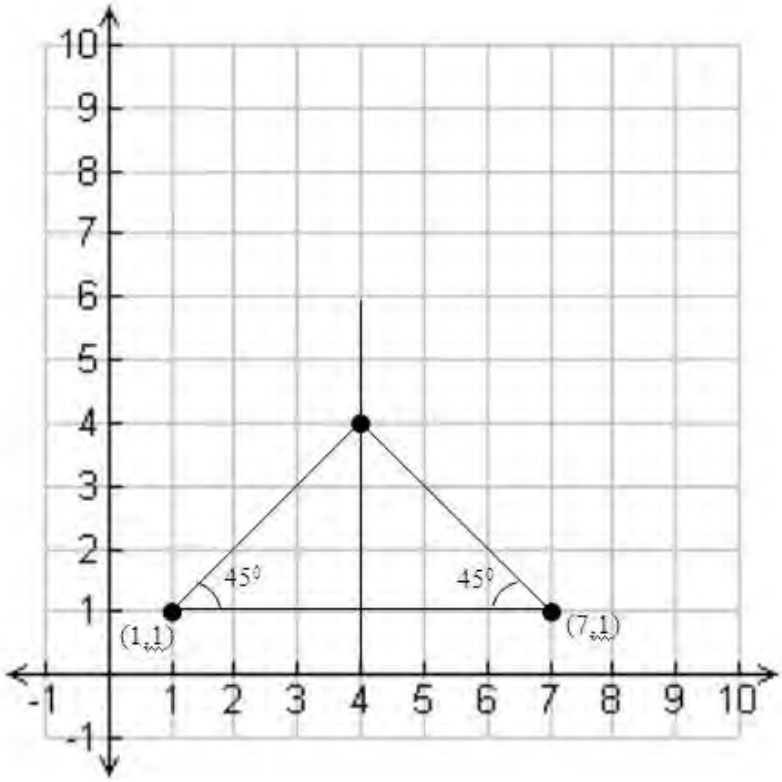
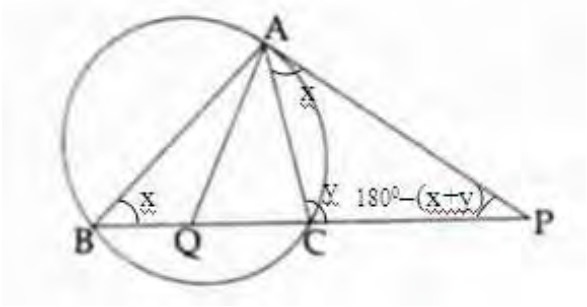
MATHEMATICS

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

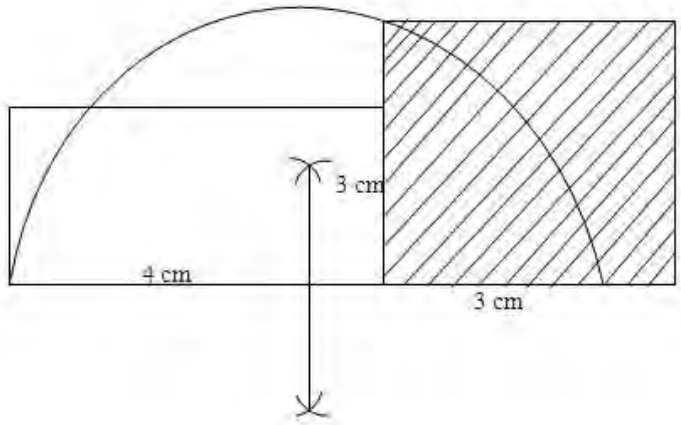
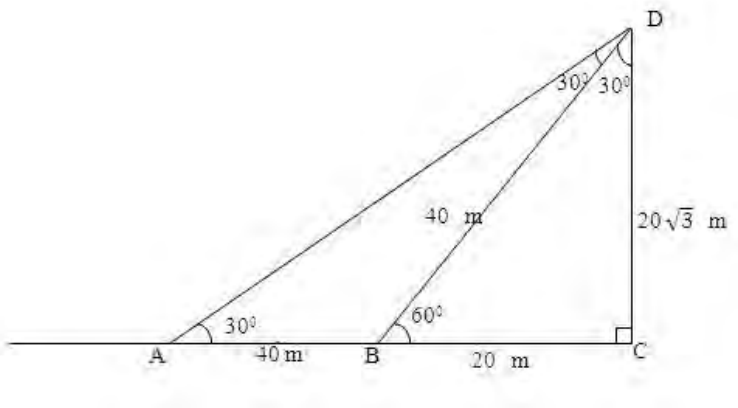
Qn No	INDICATORS	MARK
Answer any three questions from 1 to 4 , each question carries 2 scores (3x2=6)		
1	a) $\angle ABC = 40°$ b) $\angle ADC = 140°$	1
2	a) 1 b) 4	1
3	a) $K = -2$ b) $2x - y = 0$	1
4	a) $P(1) = 1^2 + 2\times 1 + 5$ $= 1+2+5 = 8$ b) $P(1) = 1^2 + 2\times 1 + K = 0$ $1+2+K = 0$ $K = -3$	1
Answer any five questions from 5 to 11 , each question carries 3 scores		
5	a) 2 b) 101,108,115……..997	3
6	a) $\angle ADB = 90°$ $\angle ACB = 110°$ $\angle ACB + \angle ADB + \angle AEB = 270°$ $\angle AEB = 270 - (110° + 90°) = 70°$	3
7	a) 9 b) $a = 8$ c) $\left(\frac{a}{2}\right)^2 = b$ $\therefore \frac{a^2}{4} = b$ $a^2 = 4b$	3
8	a) $\angle A = 46°$ b) $\frac{AB}{BC}$ $\tan 44° = \frac{AB}{BC}$	3

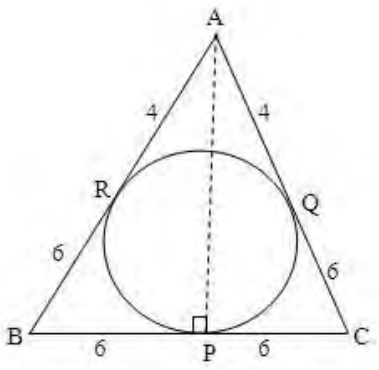
	$\tan 46° = \frac{BC}{AB}$ $\tan 44° \times \tan 46° = \frac{AB}{BC} \times \frac{BC}{AB} = \frac{ABxBC}{ABxBC} = 1$	
9		3
10	a) (3,0) b) (0,0), (6,0)	3
11	a) 15+15=30cm b) $l = \sqrt{25^2 - 15^2}$ $= \sqrt{400} = 20$ Lateral surface area = 2al $= 2x30x20 = 1200cm^2$	3
Answer any 7 questions from 12 to 21 , each question carries 4 scores		
12		4

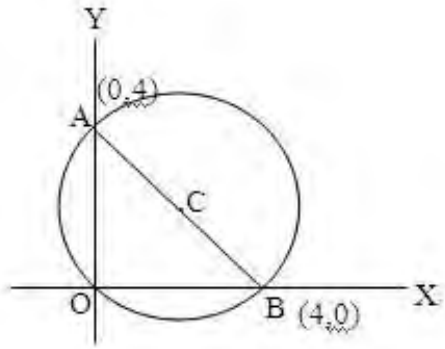
13	a) $\frac{100 \text{ x } 101}{2} = 5050$ b) $50^2 = 2500$ c) $\frac{50}{2}[2+100] = \frac{50}{2} \text{ x } 102$ 50x51=2550 d) $\frac{199-3}{4} + 1$ $\frac{196}{4} + 1$ 49+1 =50 Sum = $\frac{50}{2}[3+199]$ = 25x202 =5050	4
14	a) Total number of balls= 24 b) Number of blue ball = $\frac{1}{3}$ x 24 = 8 c) Number of green ball = 24 – (8+7) =9 The probability of getting a green ball from the box = $\frac{9}{24} = \frac{3}{8}$	4
15	a) Rectangle b) Let the sde of the squre = x x^2- 2x =440 $(x-1)^2$ =441 $x - 1 = 21$ x = 22 Length of the remaining ground =22 m	4
16	AP=PD= radius a) ∠A = 40° AP = $\frac{5}{\sqrt{2}}$ b) Area of triagle APD = $\frac{1}{2}$ bh $\frac{1}{2} \text{ X } \frac{5}{\sqrt{2}} \text{ x } \frac{5}{\sqrt{2}} = \frac{5}{4}$ AB = 2 x $\frac{5}{\sqrt{2}} = 5\sqrt{2}$	4

	c) Area of parallogram ABCD $5\sqrt{2}$ x $\frac{5}{\sqrt{2}}$ = 25 cm^2	
17		4
18	 a) ∠PAC = ∠ABC b) In ΔABP, ∠A = 180- (∠B +∠P) ∠A = 180- [x+ 180- (x+y)] = -x+x+y =y ∠BAC =∠A-∠PAC = y-x c) ∠PAQ = ∠PAC + ∠CAQ = x+ $\frac{\angle BAC}{2}$	4

	$= x + \frac{y-x}{2} = \frac{2x+y-x}{2} = \frac{x+y}{2}$	
19	a) P(0) = -5 $ax0^2+bx\ 0+c = -5$ c = -5 b) (x-1) is a factor P(1) = 0 a+b+c = 0 a+b-5 = 0 a+b =5 c) $2x^2 +3x -5 = 0$	4
20	a) 200° b) $\frac{r_1}{l} = \frac{x}{360}$ $\frac{8}{l} = \frac{160}{360}$ $l = \frac{360}{160}$ x 8 =18 c) $\frac{r_2}{18} = \frac{200}{360}$ $r_2 = \frac{200}{360}$ x 18 =10 l =18 cm	4
21	3x – 2y = 6 a) 0 b) A(0,y) 3x 0 – 2y = 6 2y = -6 Y= -3 A(0,-3) OA= 3 c) B (x,0) 3X – 2 x 0 = 6 X= $\frac{6}{3}$ =2	4

	B (2,0) OB = 2 d) $3X - 2X = 6$ $X = 6$ P(6,6)	
Answer any five question from 22 to 28, each question carries 5 scores		
22	a) 1 b) $\frac{5}{9} + \frac{6}{9} + \frac{7}{9} = 2$ c) $\frac{9}{2}[\frac{2}{9} + \frac{10}{9}]$ $\frac{9}{2}$ x $\frac{12}{9} = 6$ d) $\frac{300}{2}[\frac{2}{9} + \frac{301}{9}]$ $\frac{300}{2}$ x $\frac{303}{9}$ 150 x $\frac{101}{3}$ =5050	5
23		5
24		5

	$\angle A = \angle BDA = 30°$ $\therefore$ BD = 40 m In ΔDBC 30°, 60°, 90° 1: $\sqrt{3}$: 2 20, $20\sqrt{3}$, 40 a) Height 0f the tree = $20\sqrt{3}$ m b) Width of the river = 20 cm	
25	 a) CP = 6 cm b) Perimeter = 10+ 10+12 =32 cm AP = $\sqrt{10^2 - 6^2}$ Area = $\frac{1}{2}$ x 12 x 8 = 48 cm^2 c) r = $\frac{A}{S}$ = $\frac{48}{16}$ = 3 cm S= $\frac{32}{2}$ =16	5
26	<table><tr><td>Solids</td><td>Measures</td><td>Volume</td></tr><tr><td>Cone</td><td>radius=height=r</td><td>$\frac{1}{3}$ πr3</td></tr><tr><td>Hemisphere</td><td>Radius = r</td><td>$\frac{2}{3}$ πr3</td></tr><tr><td>Sphere</td><td>Rsdius= r</td><td>$\frac{4}{3}$ πr3</td></tr></table> a) $\frac{1}{3}\pi r^3 : \frac{2}{3}\pi r^3 : \pi r^3 : \frac{4}{3}\pi r^3$ $\frac{1}{3} : \frac{2}{3} : 1 : \frac{4}{3}$ 1: 2: 3:4 (multiplied by 3) b) r = 6	5

	number of cones $= \frac{\frac{4}{3}\pi r3}{\frac{1}{3}\pi r3}$ $= \frac{\frac{4}{3}}{\frac{1}{3}}$ $= 4$	
27	 a) c $\left(\frac{0+4}{2}, \frac{4+0}{2}\right)$ c(2,2) b) OB = 4 $\therefore$AB = $4\sqrt{2}$ r = $2\sqrt{2}$ Equation of the circle is $(x-2)^2 + (y-2)^2 = (2\sqrt{2})^2$ $x^2 - 4x + 4 + y^2 - 4y + 4 = 8$ $x^2 + y^2 - 4x-4y = 0$ c) Given x=y $x^2 + x^2 - 4x-4x = 0$ $2x^2 - 8x = 0$ $x^2 - 4x = 0$ (divided by 2) x-4= 0 (divided by x) x= 4 The point is (4,4)	5
28	<table><tr><td>Up to 140</td><td>7</td></tr><tr><td>Up to 150 x_1</td><td>16 y_1</td></tr><tr><td>Up to 160 x_2</td><td>26 y_2</td></tr><tr><td>Up to 170</td><td>36</td></tr><tr><td>Up to 180</td><td>45</td></tr></table> $\frac{x-x1}{x2-x1} = \frac{y-y1}{y2-y1}$ y= $\frac{45}{2}$ = 22.5 $\frac{x-150}{160-150} = \frac{22.5-16}{26-16}$	5

	∴ x= 156.5 a) 23 b) 150 – 160 c) 156.5	
29	a) 4 b) 3,6,9……. c) d=3 the remainder on dividing the terms by 3 is 0. Also remainder on $\frac{2019}{3}$ is 0 ∴ it is a term of the sequence d) 1 e) 1,4,7……. d =3 $x_n = 3n - 2$ f) 2^{3n-2}	6

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