	Surface Area of 3D shapes Mark Scheme	
1	$Area\ of\ top = \pi \times 3^2 = 9\pi$ $Area\ of\ base = \pi \times 3^2 = 9\pi$ $12 \times 6\pi = 72\pi$	**[1]** Correct curved surface area
	$Surface\ Area = 72\pi + 9\pi + 9\pi$ $= 90\pi$ $= 282.74cm^2\ (2\ d.p.)$	**[1]** Correct answer
2(a)	$Area\ of\ A\ = 78\ cm^2$ $Area\ of\ B\ = 52\ cm^2$	**[1]** Correct surface area
	$Surface\ Area = 78 + 52 = 130\ cm^2$	**[1]** Correct answer
2(b)	$(3 \times 2) \times 2 = 12$	**[1]** Result is the loss of two regions with area 12 shown
	$130 - 12 = 118\ cm^2$	**[1]** Correct answer
3(a)	$Big\ cuboid$ $(12 \times 3) \times 2 = 72$ $(9 \times 12\ ) \times 2 = 216$ $(3 \times 9\ ) \times 2 = 54$ $total\ SA = 342\ mm^2$	**[1]** Correct surface area
	$Small\ cuboid$ $(3 \times e) \times 2 = 6e$ $(1 \times e) \times 2 = 2e$ $(3 \times 1) \times 2 = 6$ $total\ SA = (6 + 8e)\ mm^2$	**[1]** Correct expression for surface area
	Overlapping surface area $= (3 \times 1) \times 2 = 6$	**[1]** Overlapping surface area
	Total area SA of USB is $342 + (8e + 6) - 6 =$ $342 + 8e$	**[1]** Correct answer
3(b)	$360 = 342 + 8e$ $8e = 18$ $e = 2.25\ mm$	**[1]** Correct answer
4	$Area\ of\ base = \pi \times 4^2 = 16\pi$	**[1]** Substitution into correct formula
	$Area\ of\ curved\ surface = \pi Lr$ $= \pi \times 4 \times 9$ $= 36\pi$	**[1]** Area of curved surface
	$Total\ surface\ area = 36\pi + 16\pi$ $= 52\pi$ $= 163.36\ cm^2$	**[1]** Correct answer
5	Surface Area = $4 \times \pi \times 5^2 = 100\pi$	**[1]** Area of curved surface
	SA = $314.16\ cm^2\ (2d.p.)$	**[1]** Correct answer

6	$Area\ of\ triangles = 1/2 \times base \times height$ $= 1/2 \times 6 \times 8$ $= 24$ $24 \times 2 = 48$ $Area\ of\ base = 6 \times 11 = 66$	**[1]** Area of triangles and base calculated
	$Slanted\ height = \sqrt{73}$	**[1]** Use of Pythagoras to calculate slanted height
	$Slanted\ side\ area = \sqrt{73} \times 11 = 11\sqrt{73}$ $11\sqrt{73} \times 2 = 22\sqrt{73}$	**[1]** Area of slanted face
	$Total\ Area = 48 + 66 + 22\sqrt{73}$ $= 301.97\ cm^2$	**[1]** All areas added together for final answer
7(a)	$2 \times \pi r^2 + \pi Dh$ $2 \times \pi \times 5^2 + \pi \times 10 \times 4$	**[1]** Correct formula used
	$2 \times \pi \times 5^2 + \pi \times 10 \times 4 = 90\pi$	**[1]** Substitution of values with answer in terms of π
7(b)	Surface area of cylinder – 2 cuboid faces. $90\pi\ - (2 \times 6 \times 1) = 270.7433$	**[1]** Correct surface area
	$270.7433 +$ $6 \times 4 \times 2\ = 48$ $4 \times 1 \times 2 = 8$ $270.7433 + 48 + 8 = 326.7433$ $326.74\ cm^2$ (2 d.p.)	**[1]** Correct answer

END