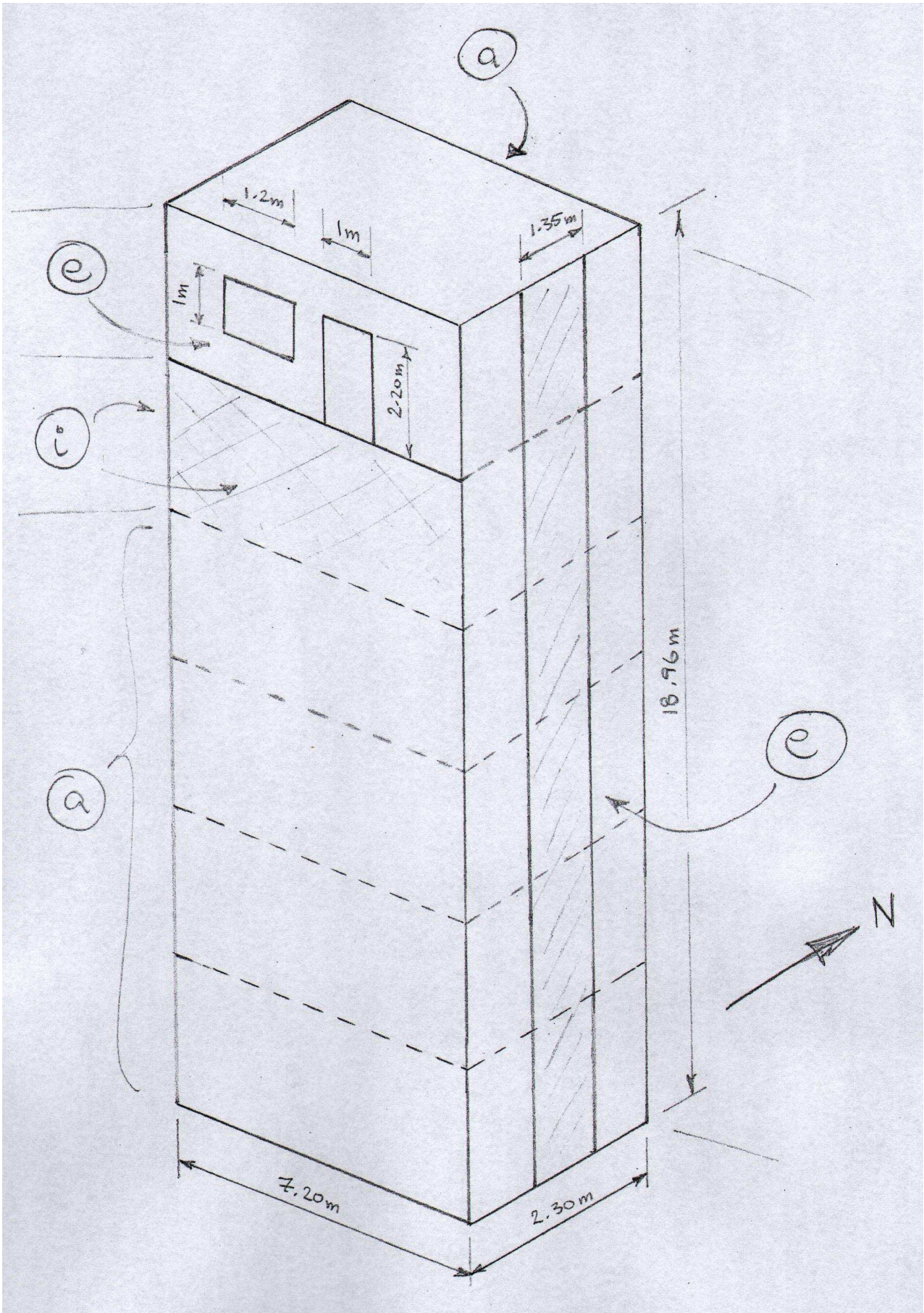
CALCULATION OF UNCONDITIONED SPACE



eu_1 – East fenestration – single glaze

A = (18.96 x 1.35) = 25.6 m^2
U = 6 W/m^2K
frame factor = 0.2
g value = 0.85
Emissivity = 0.92
Light transmittance = 0.9

eu_2 - East wall

A = (18.96 x 2.3) – 25.6 = 18 m^2
U = 2.488 W/ m^2K
Absorptivity = 0.4
Emissivity = 0.92
Shading factor = 1

eu_3 – South fenestration – single glaze

A = (1x 1.2) + (1 x 2.2) = 3.4 m^2
U = 6 $W/ m^2 K$
frame factor = 0.2
g value = 0.85
Emissivity = 0.92
Light transmittance = 0.9

eu_4 – South wall

A = (7.2 x 3.16) – 3.4 = 19.35 m^2
U = 2.488 $W/m^2 K$
Absorptivity = 0.4
Emissivity = 0.92
Shading factor = 1

eu_5 - Roof

A = (7.2 x 2.3) = 16.56 m^2
U value = 2.475 W/ m^2K
Absorptivity = 0.65
Emissivity = 0.92
Shading factor = 1

NOTE Floor height taken as 18.96m/6 = 3.16m

au_1 – North adjacent wall

A = (7.2 x 19.96) = 136.51 m^2
U = 2.24 $W/m^2 K$

au_2 – South and West adjacent walls

A = 3.16 x 4 x (7.2 + 2.3) = 120 m^2
U = 2.24 $W/m^2 K$

iu_1 – Internal wall

A = 3.16 x (7.2 + 2.3) = 30 m^2
U = 2.24 $W/m^2 K$

Inputs for roofs, walls and glazing												
	Roof	Wall 1	Wall 2	Wall 3	Wall 4	Wall 5	Glazing 1	Glazing 2	Glazing 3	Glazing 4	Glazing 5	Glazing 6
Orientation	HOR	E	S	N	N	N	E	S	N	N	N	N
Shading factor	1	1	1				1	1				
Absorptivity	0.65	0.4	0.4									
Rse	0.04	0.06	0.06				0.06	0.06				
U-value	2.475	2.488	2.488				6	6				
Area	16.56	18	19.35				25.6	3.4				
Fr	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Emissivity	0.92	0.92	0.92				0.92	0.92				
Fw							0.9	0.9	0.9	0.9	0.9	0.9
g-value							0.85	0.85				
Frame factor							0.2	0.2				

Calculation for resultant space temperature inside unconditioned spaces											
						Cooling	Heating				
Living area temperature						25	23	degC			
Rest of dwelling temperature						28	15	degC			
Living area fraction (utilisation factor)						0.53					
		Description				U-value	Area				
						W/m^{2}K	m^2				
Element iu1		Apartment wall (iu1)				2.24	30				
Element iu2											
Element iu3											
Element iu4											
Element eu1		Roof (eu5)				2.475	16.56				
Element eu2		East and south wall (eu2 & eu4)				2.488	37.35				
Element eu3		East and south fenestration (eu1 & eu3)				6	29				
Element eu4											
Element au1		Wall appogg north (au1)				2.24	136.51				
Element au2		Wall appogg south and west (au2)				2.24	120				
Element au3											
Element au4											
Correction of U-values for internal walls										Corrected U-value	
Element iu1		Apartment wall (iu1)								-0.606	W/m^{2}K
Element iu2										#DIV/0!	W/m^{2}K
Element iu3										#DIV/0!	W/m^{2}K
Element iu4										#DIV/0!	W/m^{2}K