Question 3

Given data.

S/No	Days.	Average Ambient temperature	
		Day	Night
1	Monday 19/02/20	35°C	25°C
2	Tuesday 18/02/20	36°C	25°C
3	Wednesday 19/02/20	35°C	25°C
4	Thursday 20/02/20	36°C	25°C
5	Friday 21/02/20	37°C	25°C

To calculate Thermal Energy (J).

$Q = mc\Delta T$ Where Q = Thermal Energy (J)

m = mass (kg)

c = Specific heat (J/kg°C)

ΔT = Change in temperature

Step 1 → Calculate ΔT.

For Monday $(\Delta T) = 35 - 25 = 10°C$

Tuesday $(\Delta T) = 36 - 25 = 11°C$

Wednesday $(\Delta T) = 35 - 25 = 10°C$

Thursday $(\Delta T) = 36 - 25 = 11°C$

Friday $(\Delta T) = 37 - 25 = 12°C$.

Step 2 → Taking the following Assumptions.

Area of land in Abuad $(A) = 1{,}300{,}000 m^2$

Recall the formular form $\rho_A = m/A$

Where ρ_A = Average Area density

m = mass of object.

A = Area of Object is $1.67 kg/m^2$

$\therefore \rho_A = m/A$.

$m = \rho_A \times A = 1.67 \times 1{,}300{,}000 = 2{,}171{,}000 Kg$.

Recall the Specific heat Capacity table for Air.

At Temperature 450K

Specific heat Capacity of Air is 1020 J/kg°C

For Step 3 -> Calculate the thermal Energy for monday.

$Q = mc\Delta T$.

$= 2171000 \times 1020 \times 10 = 22,144,200,000$ J.

For Tuesday.

$Q = mc\Delta T$

$= 2171000 \times 1020 \times 11 = 24,358,620,000$ J

For wednesday

$Q = mc\Delta T$

$= 2171000 \times 1020 \times 10 = 22,144,200,000$ J

For Thursday

$Q = mc\Delta T$.

$= 2171000 \times 1020 \times 11 = 24,358,620,000$ J

For Friday

$Q = mc\Delta T$.

$= 2171000 \times 1020 \times 12 = 26,573,040,000$ J

Therefore the Average thermal Energy of Kuad is

[illegible] +

[illegible]

$$= \frac{1195786000}{5} = 239157200 \text{ m}^3.$$