Q1) Newton's law of cooling for big colorimeter only and 15 minutes?$\theta_0=22^0C$

Time/min	Temp**b**/0c
1	47
2	45.2
3	43.4
4	41.9
5	40.9
6	39.6
7	38.7
8	37.8
9	37
10	36.3
11	35.5
12	34.9
13	34.5
14	33.9
15	33.4

Q2) Newton's law of cooling for small colorimeter only and 15 minutes? $\theta_0=22^0C$

Time/min	Temp**s**/^{0}c
1	49
2	47.9
3	47
4	46
5	45.3
6	44.5
7	43.7
8	43
9	42.4
10	41.8
11	41.2
12	40.7
13	40.2
14	39.6
15	39.1

Q3) Find thermal conductivity for a good conductor (Cu)? If you have $C_w=4.2*10^3$ *J/Kg.K, l=10cm, d=3.8cm?*

Q4) In Lee's disc method find the thermal conductivity of a bad conductor? If you have the data; (θ=91 and θ=82)

Time (sec)	temp. C
12.0	92
22.0	91
30.0	90
45.0	89
60.0	88
80.0	87
100.0	86
120.0	85
122.0	84
148.0	83
174.0	82
201.0	81
231.0	80
263.0	79
293.0	78
327.0	77
362.0	76
397.0	75
432.0	74
471.0	73
508.0	72

Q5) Find coefficient of cubical expansion of water if you have the data(r=1.7);

Temp/^{0}C	Level/cm^3
30	**0**
40	**1**
44	**2**
47	**3**
51	**4**
54	**5**
57	**6**
60	**7**
63	**8**
66	**9**
68	**10**

Q6) Find thermal expansion coefficient for (Cu) (for two data only)?

For l_0=600mm

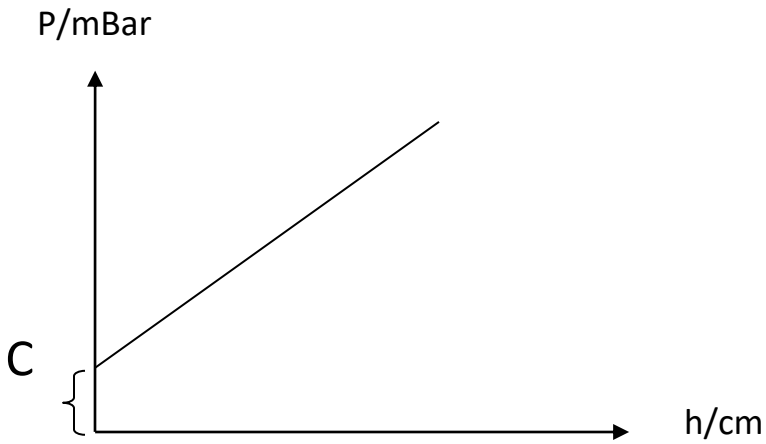
Q7) Find thermal expansion coefficient for (Fe) (for two data only)?

For l_0=600mm

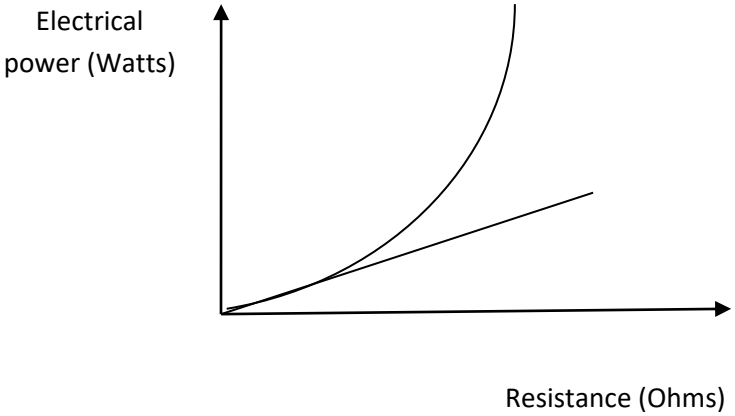
8)Find Gravity of earth using zero law of gases?

Q9)Using Lee's method find the thermal conductivity coefficient for glass?

Q1)a) From the following figure , What represents the C region? (2 marks)



b) In the following figure show the region when ohm's law applied in Stefan's law for black body radiationexperiment ? (2 marks)



Q2) Write the statement of Newton's law, and show graphically (step by step) the relation between temperature (θ) and time? (3 marks)

Q3)Why in Lee's disk method for calculating thermal conductivity of bad conductor, the disk is (3 marks)

1. **Black?**
2. **thin?**

Q4) In calculating thermal conductivity experiments(which more than one thermometer used)it is important the thermometers must be the same type or not ? Why? (3 marks)

Q5) Define (each one 2 marks)

1-Thermal conductivity

2-Emissivity

3-Stefan-Boltzman law

4-Black body

Q6) Define thermal expansion in solids ? α_{Fe} or α_{Cu} is greater ? Why? (4 marks)

Q7) Show the negative point in the measuring of coefficient cubical expansion of water? (3 marks)