

Physics

SS3: Take Home Assignment

1(a)

L(cm)	t ₁ (s)	t ₂ (s)	t = t ₁ +t ₂ /2 (s)	T= t/20 (s)	LogT
90.00	9.300	9.350			
85.00	9.000	9.000			
80.00	8.500	8.450			
75.00	8.000	8.000			
70	7.500	7.400			

Plot a graph of LogT against L

bi) Explain briefly the purpose of earthing electrical appliance.

(bi) Why does the light bulb connected to a simple cell dim and eventually goes off after a while?

(c) A coil of inductance 0.007 H, a resistor of resistance 8 and a capacitor capacitance 0.001 F

are connected in series an a.c. source of frequency Hz. If the r.m.s voltages

across the coil, the resistor and capacitor are 30v, 20v and 70v respectively;

(i) draw a vector diagram to illustrate the voltage across the components in the circuit.

(ii) Calculate the: () r.m.s voltage of the source . () r.m.s current in the circuit;

() power dissipated in the circuit.

iii) write down the sinusoidal equation for the r.m.s voltage, V, in terms of the time, t.

2(a) Explain the following, illustrating your answer with one example in each case: (i) nuclear fusion: (ii) nuclear fission: (iii) radiation hazards.

(b) State two advantages of fusion over fission and explain briefly why, in spite of these advantages, fusion is not normally used for the generation of power.