Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
100 level 2nd Semester Examination – Dec./Jan. 2017
SCT 161-1 Basic Electricity and Electronics (Repeat)

Uva Wellassa University

Instructions to candidates
Duration: 01 hour
Number of questions: 02
Answer **all** questions
Mark allocation: 100

1.

a. Write a relationship among turns ratio, voltage ratio, and current ratio of an ideal transformer.

(12 marks)

b. Calculate the voltage and current through the load resistor R_L in the circuit given in Figure 01 below.

(12 marks)

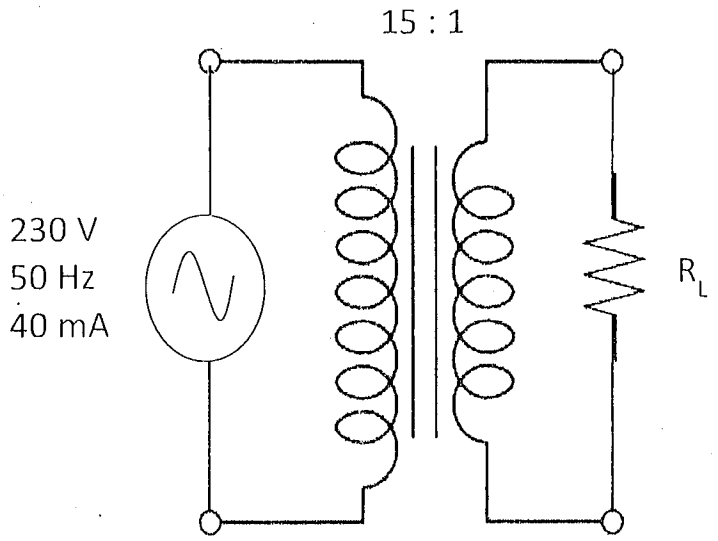

Figure 01

c. Draw the wave form through the load resistor R_L in Figure 01.

(06 marks)

(5) (14)

d. An ideal transformer, connected to a 240 V main power supply, has a secondary circuit which consists of a 16 V, 120 W lamp. Calculate the transformer turns ratio and the current taken from the primary circuit.

(20 marks)

2.

a. An *npn* transistor is biased in the forward-active mode. The base current (I_B) is 8.50 μA and the current gain beta (β) is 150. Determine I_C, I_E and alpha (α).

(20 marks)

b. Calculate I_B, I_C, I_E, and V_{CE} for the following circuit, given that β = 100 and V_{BE} = 0.7 V.

(30 marks)