

Cork Institute of Technology
Bachelor of Engineering in Electrical Engineering - Stage 1
(NFQ – Level 7)
Autumn 2007

Industrial Electronics
(Time: 3 Hours)

INSTRUCTIONS:

Answer Five Questions.

All formula and calculations must be shown.

Examiners:

Mr. R. Daly
 Prof. E. McQuade
 Mr. M. Hennessy

- Q1 (a) What is the purpose of rectifiers in electronic equipment?

2 marks

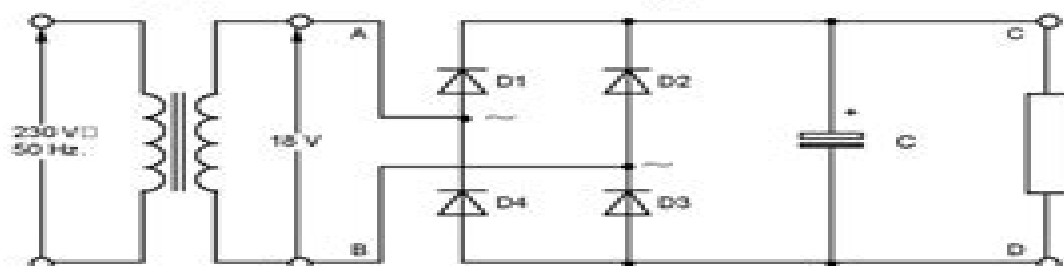


Fig.1

- (b) Using the reference points in Fig. 1, explain (ignoring the capacitor) the operation of the full-wave bridge rectifier circuit and indicate the polarity at the output terminals C and D. 8 marks

- (c) Show the waveforms with important values for:

- (i) The voltage at AB;
 (ii) The voltage at CD without the capacitor connected;
 (iii) The smoothed output at CD.

3 marks

3 marks

4 marks

- Q2 (a) Construct a 5-column binary table with appropriate headings to represent the decimal numbers from 0 to 15. Write the decimal digits in the left hand column. 6 marks

- (b) Draw the circuit logic symbols and truth tables for, a 2-input AND gate, and a 2-input XOR gate. 6 marks

- (c) Show how the gates in (b) can be connected to construct a half-adder. Include in your answer the truth table for the half-adder. 8 marks

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