



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ





شبكة المعلومات الجامعية



شبكة المعلومات الجامعية

التوثيق الالكتروني والميكرو فيلم

جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
على هذه الأفلام قد أعدت دون أية تغيرات



يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %



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بعض الوثائق الأصلية تالفة



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بالرسالة صفحات
لم ترد بالأصل



Ain Shams University
Faculty of Engineering
Cairo – Egypt

Department of Electronics and Communication Engineering

LED Based Spectrophotometer

by

Karim Aly Mohammad Aly

A thesis

Submitted in partial Fulfillment of the

Requirement for the degree of

Master of Science

In Electrical Engineering

At Faculty of Engineering – Ain Shams University

Supervised by

Prof. Dr. Abdelhalim Zekry

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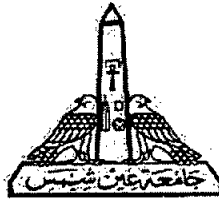
Doctor in the electronics and communications Engineering
Department

Faculty of Engineering – Ain Shams University

Cairo, 2015

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**AIN SHAMS UNIVERSITY
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STATEMENT

This thesis is submitted in partial fulfilment for the degree of Master of Science in Electronics Communications Engineering, Faculty of Engineering, Ain Shams University.

No Part of this thesis has been submitted for degree or qualification at any other university.

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ABSTRACT

Spectrophotometers are the common device used for blood analysis. These analyses are simply optioned from the transmittance of monochromatic light through a blood sample. It disperses their light sources by different techniques; the simplest one is the use of interference filters in front of broad band light source. As Interference band-pass filters are relatively inexpensive wavelength selectors. Interference filters that allow transmission of a predetermined wavelength while rejecting or blocking other wavelengths are widely used in instrumentation for clinical chemistry. On the other hand the lights emitting diodes (LEDs) emits a specified band and have a wide selection options. An economic device based on LEDs (LED based spectrometer) is explained in this work. Instead of the wide spectrum light source and filters (commercial spectrophotometer), The LED based spectrophotometer is calibrated with standard solutions, and its measurement results is compared with the Mindray BS-200 Chemistry Analyzer (commercial spectrophotometer). The comparison shows acceptable results between both spectrophotometers with maximum error 2.33%. The errors can be reduced by applying more fining alignment. Other benefit of the new designee is to minimize testing costs.

Keywords: LED; Spectrophotometer; Mindray BS-200; blood analysis; chemical analysis.

