سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

سامية محمد مصطفى

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

Mathematics Department,
Faculty of Science,
Assiut University

Numerical Treatment of Some Problems for Heat and Fluids Flow through Porous Media

A THESIS

Submitted to Faculty of Science Assiut University
In Partial Fulfillment for
The Degree of Doctor of Philosophy of Mathematics

By

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Approval Sheet

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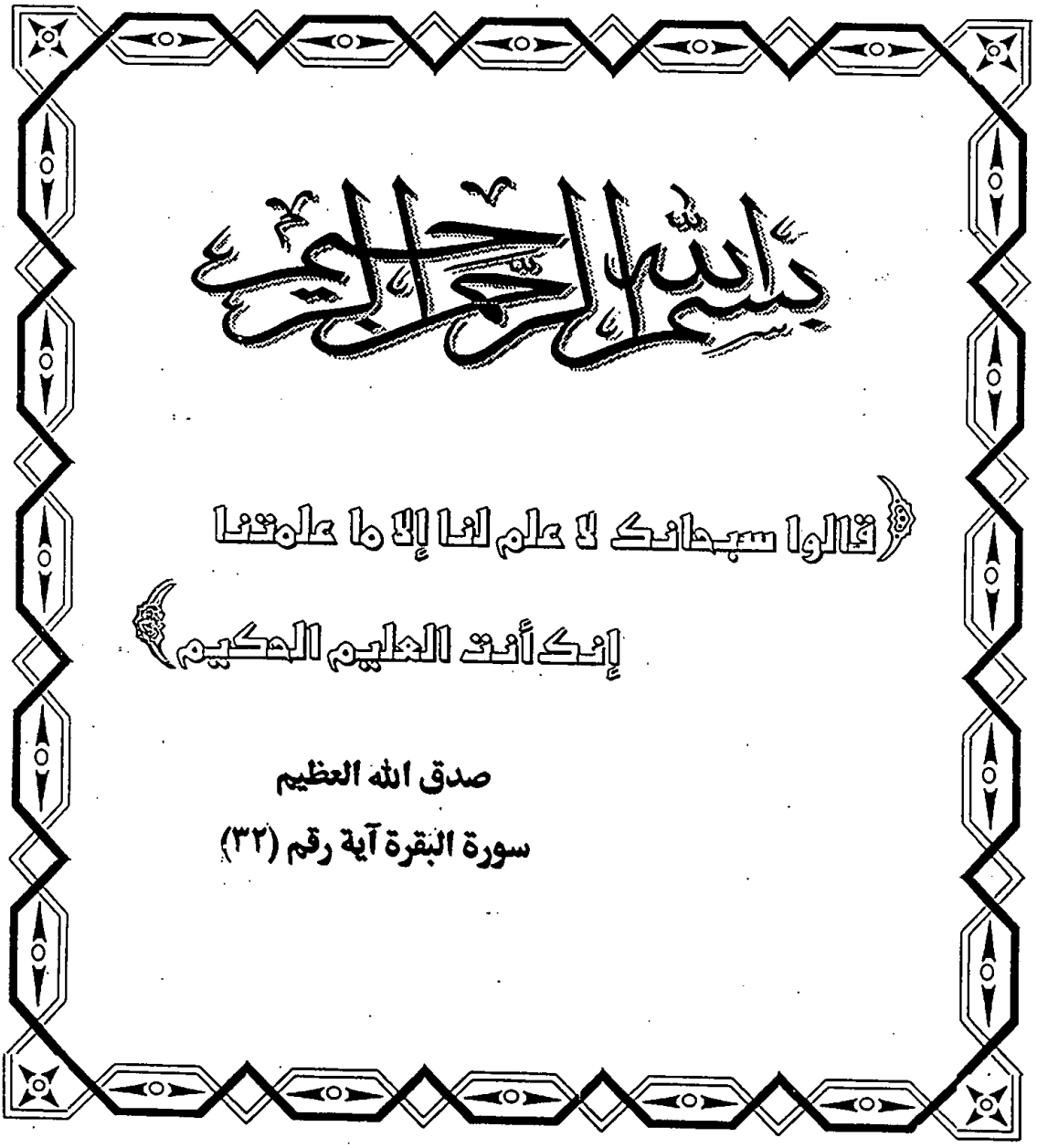
بسم الله الرحمن الرحيم
﴿قالوا سبحانك لا علم لنا إلا ما علمتنا
إنك أنت العليم الحكيم﴾
صدق الله العظيم
سورة البقرة آية رقم (٣٢)

To
Memory of my
Father

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S. M. Abdel-Gaied

ABSTRACT

The study of heat and mass transfer during fluid flow through porous medium is of great interest for scientists and physicians. Many practical applications in petroleum industry, nuclear reactors, geophysics, agriculture and food industries need more investigations about thermal convection through saturated fluid in porous medium.

The present thesis deals with the study of heat and mass transfer for eight different problems of viscous incompressible fluid flow.

Different models of physical fluid properties have been treated in the Thesis. The fluid is assumed to be non-viscous, non-Newtonian or Newtonian. The porous surrounding medium is chosen to be either obeying Darcy's low or non-Darcian.

For each proposed physical problem, the basic equations have been deduced, and the corresponding boundary and initial condition are formulated. Hence numerical solutions are suggested and the calculated results are tabulated and represented in graphs.

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