

سامية محمد مصطفى



شبكة المعلومات الجامعية

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



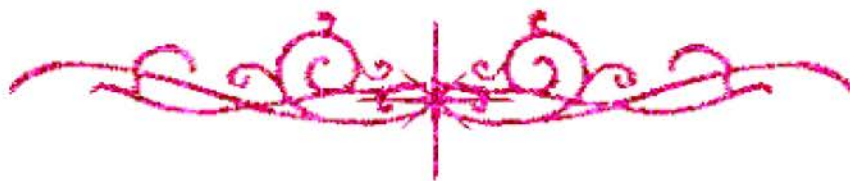
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شبكة المعلومات الجامعية



شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



سامية محمد مصطفى



شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

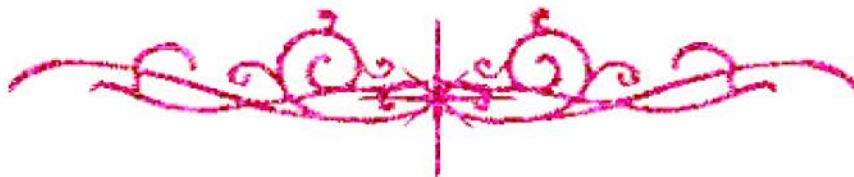
قسم

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



يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



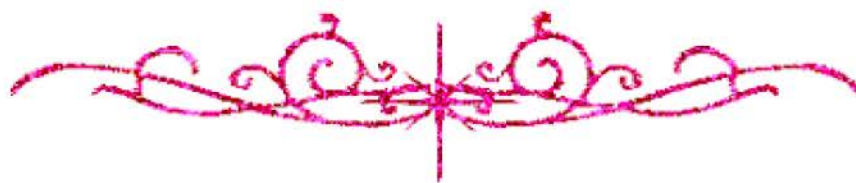
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بعض الوثائق الأصلية تالفة



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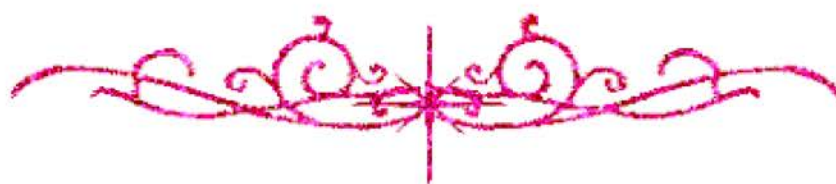


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بالرسالة صفحات

لم ترد بالأصل



ALEXANDRIA UNIVERSITY
FACULTY OF ENGINEERING

***A COMPUTER-AIDED DESIGN SUBSYSTEM
FOR
CONTAINER SHIPS***

**A THESIS SUBMITTED TO THE DEPARTMENT OF
MARINE ENGINEERING
&
NAVAL ARCHITECTURE**

**FACULTY OF ENGINEERING
ALEXANDRIA UNIVERSITY
ALEXANDRIA, EGYPT**

**IN PARTIAL FULFILLMENT
OF
THE REQUIREMENTS
FOR
THE DEGREE OF
MASTER OF SCIENCE
IN ENGINEERING**

by

Eng. K.A.Hafez
B. Sc. Marine Engineering & Naval Architecture

Alexandria 1995

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CERTIFICATION



We certify that we have read this thesis and we are sure it is fully adequate in scope and quality to be a dissertation for the degree of master of science.

Examination Committee

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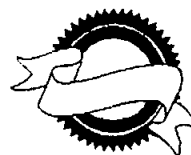
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DECLARATION



This thesis is entirely the work of Eng. K.A.Hafez., and has not been submitted before for a degree in this or any other University.

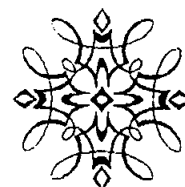
Eng. K.A.Hafez is a demonstrator at Marine Engineering and Naval Architecture Department, Faculty of Engineering, Alexandria University, Alexandria, Egypt, and has obtained his B.Sc. from the same department in June 1991, with a final grade of "Distinction with Honor Degree".

In addition to the research work described in this thesis, he has passed successfully the assigned post-graduate courses in June 1992. The following are the grades he has obtained in the different courses:

- | | |
|--|---------------------|
| 1. Advanced Computer Programming (FORTRAN-77). | <i>Distinction.</i> |
| 2. Operation's Research. | <i>Very Good.</i> |
| 3. Ship Structural Design (I). | <i>Distinction.</i> |
| 4. Ship Structural Design (II). | <i>Distinction.</i> |
| 5. Special Course (Design of Container Ships). | <i>Distinction.</i> |



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Eng. H. A. Hafex.



NOMENCLATURE

<u>Symbol</u>	<u>Meaning & Recommended Measuring Unit</u>
A_M	Maximum immersed section area, (m^2).
A_w	Load waterline area, based on length between perpendiculars, (m^2).
B	Maximum breadth on load water line, (m).
BAR	Blade area ratio of the propeller.
B_C	Breadth of the container, (m).
BE	Brake specific fuel consumption, (g/hp.h).
BHP	Brake horsepower.
B_H	Breadth of the hatchway amidships, (m).
B_{LS}	Breadth of the longitudinal deck strip, (m).
BM	Transverse metacentric radius at the load water line, (m).
B_M	Moulded breadth of the vessel, (m).
B_P	Propeller loading coefficient.
B_S	Breadth of the ship's side structure (wing tanks) amidships, (m).
B/T	Breadth-draught ratio.
B_{TS}	Breadth of transverse deck strip amidships, (m).
C_B	Block coefficient based on length between perpendiculars.
C_{BD}	Block coefficient referred to the ship's depth.
C_F	Frictional resistance coefficient.
C_M	Midship section area coefficient.

CN	Cubic number, (m ³).
C _{PT}	Transverse prismatic coefficient.
C _{PL}	Longitudinal prismatic coefficient.
CR	Cruising radius, (nautical miles).
C _R	Residuary resistance coefficient.
C _T	Total resistance coefficient.
CW	Crew wages, (\$/day).
C _w	Water plane area coefficient.
D _C	Depth of container, (m).
DHP	Developed horsepower.
D _M	Moulded depth of the ship amidships, (m).
D _P	Propeller diameter, (m).
D _{POPT}	Propeller optimum diameter, (m).
D/T	Depth-draft ratio.
DWT	Dead weight, (tonnes).
ECG	End clearance between container and cell guide, (m).
EHP	Effective horsepower.
EHP _T	Effective horsepower in trial condition.
EHP _N	Effective horsepower for naked hull.
FB	Freeboard, (m).
g	Gravitational acceleration, (m/s ²).
GM _{MAX}	Maximum limit set on the transverse metacentric height, (m).

GM_{MIN}	Minimum limit set on the transverse metacentric height, (m).
GM_T	Transverse metacentric height above the center of gravity, (m).
GZ	Righting arm, (m).
H_C	Height of camber amidships, (m).
H_{DB}	Height of double bottom amidships, (m).
H_{HC}	Height of hatch coaming amidships, (m).
H_O	Clearance between hatch cover and top of the upper container, (m).
KB	Vertical position of center of buoyancy above the keel, (m).
KG_C	Vertical position of containers center of gravity above the keel, (m).
KG_{FO}	Vertical position of fuel oil center of gravity above the keel, (m).
$KG_{M/C}$	Vertical position of machinery center of gravity above the keel, (m).
KG_{MIS}	Vertical position of misc. items center of gravity above the keel, (m).
KG_{OF}	Vertical position of outfit center of gravity above the keel, (m).
KG_S	Vertical position of hull steel center of gravity above the keel, (m).
KG_T	Total vertical position of center of gravity above the keel, (m).
KM	Height of transverse metacentre M above the keel, (m).
L_{APK}	Length of after peak, (m).
LBP	Length between perpendicular, (m).
L/B	Length-breadth ratio.
L_C	Length of the container, (m).
LCB_A	Position of the longitudinal center of buoyancy expressed as percentage of LBP, measured from amidship, (m).

LCB _S	Standard position of the longitudinal center of buoyancy expressed as percentage from LBP, measured from amidship, positive values measured forward, (m).
LCF	Longitudinal position of center of floatation of the load waterline expressed as a percentage of LBP or LWL, measured from amidships, positive values measured forward, (m).
LCG _S	Longitudinal position of the hull steel center of gravity, measured from amidships, positive values measured forward, (m).
L _{ERM}	Length of engine room, (m).
L _{FPK}	Length of forward peak, (m).
L _{HD}	Length of hold, between two successive WTBHDS, (m).
L _{OP}	Length of open portion, (m).
LWL	Length on load water line, (m).
L/V ^{1/3}	Length-displacement ratio.
N _C	Owner specified number of containers, (TEU).
N _{HD}	Number of holds.
N _P	Rate of rotation of the propeller, (revolutions per minute).
N _S	Number of hatch openings amidships.
PR	Propeller pitch ratio.
QPC	Quasi propulsive coefficient.
R _C	Number of rows of containers.
ROF	Rise of floor, expressed as a ratio of the draught.

SAC	Sectional area ordinate expressed as a ratio of the maximum immersed area.
S	Wetted surface area, excluding the rudder area, (m ²).
S _C	Number of stacks of containers.
SCG	Side clearance between container and cell guide, (m).
SM	Fuel oil service margin.
SMCF	Ship model correlation factor.
t	Thrust deduction fraction.
T	Design draught, (m).
T _C	Number of tiers of containers amidships.
TCB	Width of cross bracing member, or clearance between a guide rail and that of neighboring cell, (m).
TCG	Thickness of the cell guide, (m).
T _D	Number of tiers of containers above the deck.
T _h	Propeller thrust, (tonnes).
T _{HEAVE}	Periodic time of heave, (sec.).
T _{PITCH}	Periodic time of pitch, (sec.).
T _{PH}	Ratio between periodic time of pitch and periodic time of heave.
T _{RH}	Ratio between periodic time of roll and periodic time of heave.
T _{ROLL}	Periodic time of roll, (sec.).
T _{RP}	Ratio between periodic time of roll and periodic time of pitch.
V	Design speed, (knots).
V _A	Propeller advance speed, (knots).
