

PERFORMANCE EVALUATION OF PROTON  
WAJA CAR AIR CONDITIONING SYSTEM

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We certify that the project entitled “*Performance Evaluation of Proton Waja Car Air Conditioning System*” is written by Mohamad Nadzif Bin Zahirudin. We have examined the final copy of this project and in our opinion; it is fully adequate in terms of scope and quality for the award of the degree of Bachelor of Engineering. We herewith recommend that it be accepted in partial fulfillment of the requirements for the degree of Bachelor of Mechanical Engineering with Automotive Engineering.

.....

Examiner

.....

Signature

PERFORMANCE EVALUTION OF PROTON WAJA CAR AIR CONDITIONING  
SYSTEM

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A report submitted in partial fulfillment of the  
requirements for the award of the degree of  
Bachelor of Mechanical Engineering with Automotive Engineering

Faculty of Mechanical Engineering  
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## **SUPERVISOR'S DECLARATION**

We hereby declare that we have checked this project and in our opinion this project is satisfactory in terms of scope and quality for the award of the degree of Bachelor of Mechanical Engineering.

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**STUDENT'S DECLARATION**

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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**LIST OF SYMBOLS**

$P$	Pressure
$T$	Temperature
$H$	Enthalpy
$Q_{high}$	Heat Rejection
$Q_{low}$	Cooling Effect
$W_c$	Work of Compressor
$\rho$	Density
$V_c$	Compressor Displacement Volume
$N_c$	Speed of Compressor
$\eta_v$	Compressor Volumetric Efficiency
$R$	Gas Constant
$\dot{M}$	Mass Flow Rate
$\dot{V}$	Compressor Volumetric Rate
$Kg$	Kilogram
$^{\circ}C$	Degree Celcius
$kJ$	Kilojoule
$Pa$	Pascal
$M$	Meter

**LIST OF ABBREVIATIONS**

COP	Coefficient of Performance
TXV	Thermostatic Expansion Valve
FOV	Fixed Orifice Tube
VCRC	Vapor Compression Refrigeration Cycle