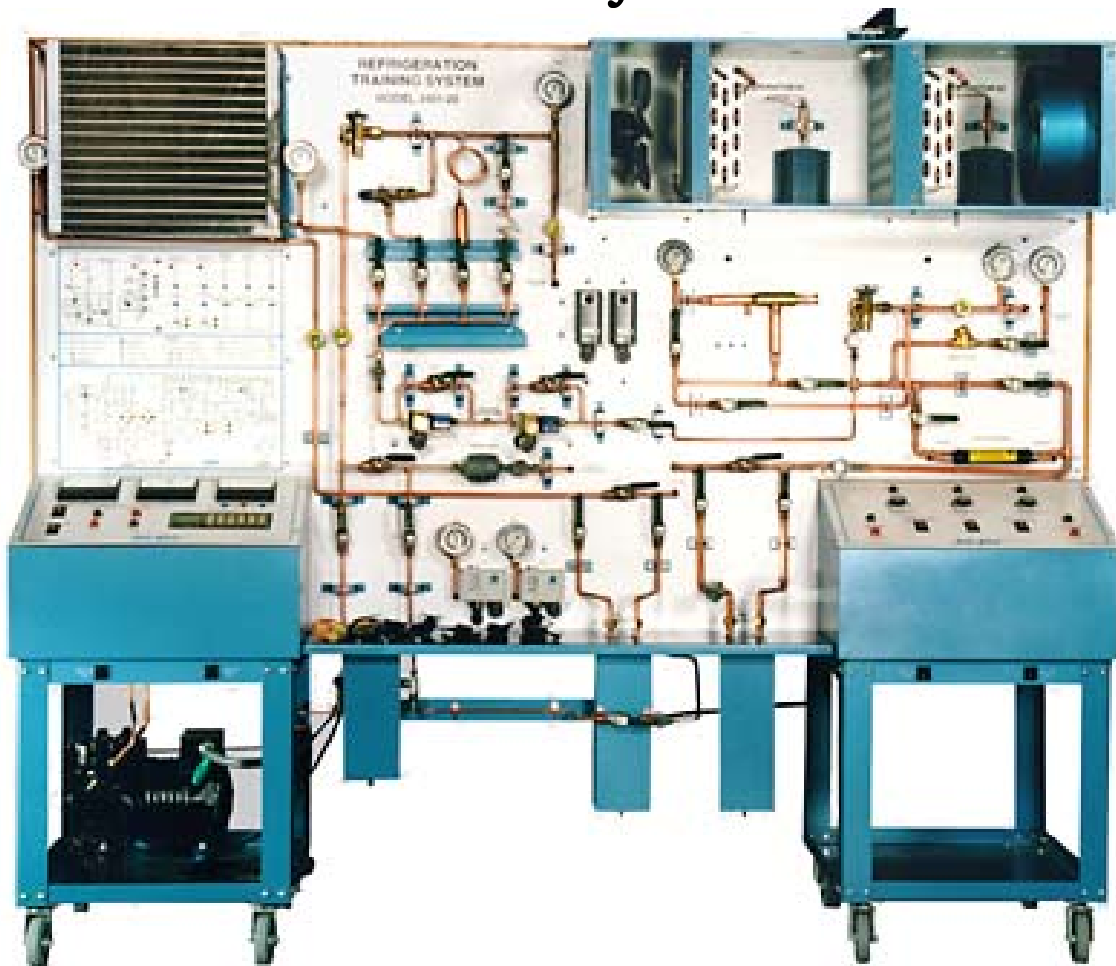




National Skill Competition worldskills *Industrial Maintenance*

Test Project



Skill Area: Refrigeration

WorldSkills Jamaica Competition April 24 to 25, 2008

General Instructions

1. Each competitor will be required to carry out the test project as specified and will be available on the website three months before the competition.
www.worldskillsjamaica.org
2. Each competitor will be required to carry out the test project as specified on the schedule to be handed out two days before the competition.
3. The time will be specified according to the test project.
4. 20% change will be made to the test project on the day of the competition where a new test project will be issued to the competitor.
5. All materials, ingredients, large equipment and specialized hand tools will be provided.
- 6. Please note that all competitors should provide their own small tools and utensils.**
7. Competitors are expected to identify all equipment/ materials/ingredients needed and submit list to the competitions committee no later than March 7, 2008.
8. Debriefings will also be conducted for all competitors on April 22, 2008.
9. All competitors will get an opportunity to arrange work areas the day before the competition. Where applicable competitors for the second day will arrange their work areas on the evening of day one. Competitors who fall in the second shift will get an opportunity to do their preparation at offsite locations (to be decided) where necessary.
- 10. Competitors and coaches are expected to find their way to the competition village on April 22, 2008 and to depart back home on April 26, 2008**
- 11. Transportation will be provided at designated times for all competitors and coaches to and from the competition venue.**
- 12. All coaches will play the role of experts (judges) for the competition**
- 13. Accommodation and meals will be provided for all competitors**

14. Accommodation will be provided for coaches only.

15. All other persons that support the competitors will need to make their own accommodation arrangements.

16. Lunch and light refreshment only will be provided for coaches, (experts), workshop supervisors, national trade managers and volunteers.

17. All competitors should be present for the opening ceremony along with their coaches.

18. Rehearsal for the opening ceremony will be held on the evening of April 22, 2008 in the Indoor Sports Centre.

19. Competitors are not allowed out of the competition village unless permission is granted by the dorm master.

20. All competitors are required to register at the competition village to qualify for entry into the competition.

21. Special permission must be granted if competitors need to reside off campus.

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Section 2: Candidate's Instructions

Section 3: Tools, Materials and Equipment Listing

Section 4: Project Working Diagram

SECTION 1

TRADE NAME: Refrigeration and Air Conditioning

SKILLS JAMAICA 2008

INTRODUCTION

This Project Proposal is designed to test, over a period of 4 hours, within two (2) days, the range of skills that a Refrigeration or Air Conditioning Technician uses to layout and hardwire an electrical schematic diagram of a walk-in freezer unit.

Add two running lights to the circuit diagram to indicate the following:

1. When the heater eliminate is on
2. When the compressor is running.

Practically install the lamps within the circuit that you have constructed.

SECTION 2

Candidate's Instructions

Competition Details

All competitors will be allocated a competitor number and work stations by the expert/judges using a ballot other wise.

EQUIPMENT

Adequate materials and refrigerant will be available to each competitor. Please check all materials when they are supplied to you to ensure they are correct and not damaged. Marks will be deducted if more material is required unless it was faulty when supplied.

Replacement parts for any equipment must be requested through an Expert.

Personal Safety Rules

During the competition, all candidates **MUST** follow the safety rules listed below:

SHOES

- **Fully enclosed work shoes or boots must be worn at all times.**

Clothing:

- Legs must be covered at all times, by either long work trousers or overalls.
- Upper body must be covered all times.

Goggles

- Must be worn when necessary to protect your eyes.

Electrical

- Candidates must not switch on (apply power) to any electrical equipment until they receive permission from an expert, except for hand power tools.

Any candidate, who in the opinion of the experts, is not wearing the correct safety attire or is engaging in any unsafe practice, will be stopped and NOT allowed to continue until the issue is resolved. The candidate will also lose marks.

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SECTION 3

Tools, Materials and Equipment Listing

Equipment to be supplied by candidate

The tools listed below are to be supplied by each candidate, for their own use. These are the minimum tools required; candidates may bring other tools that are part of the trade.

❖ **Personal Safety clothing and equipment including**

- Clear safety goggles
- Safety shoes
- Overalls or Long Sleeve Shirt and Long Pants
- Hair Net, if your hair can hang over your face

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EQUIPMENT TO BE PROVIDED BY THE ORGANIZERS

The equipment and tools is be supplied by the organizers.

CANDIDATE WORK AREA

Each candidate work area should contain the following equipment.

EQUIPMENT

Digital Multimeter

Clampon-ammeer

Megohmmeter

TOOLS

6 "Phillips Screwdriver

6' Flat Screwdriver

Diagonal pliers

Linesman pliers

Tape measure

Crimping tool

Ball pien hammer

MATERIALS

1 - Defrost time clock

1 - Digital thermostat

1 - Liquid line solenoid (1/4")

1 - Defrost heater (40 watts)

1 - Low pressure switch

1 - High pressure switch

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- 1 - Contactor 20 Amp (220V coil)
- 1 - 20 Amp 2 pole Isolator
- 1 - Evaporator fan motor 220 volts, 1 Hp
- 1 - Compressor 1/6 Hp (R 134A)
- 1 - Condenser fan motor (10 Watts CCW / 220 Volts motor w/base & Fan blade
- 1 - Potential relay (110 – 220 volts {0 – 5 Hp]
- 1 - Start capacitor
- 1 - Defrost termination switch
- 1 Roll - 2.5mm wire
- 50 - Tie strap 4"
- 50 - 1/4" Push on terminals
- 50 - Dry wall screw
- 2 - 1/2" Ply 4 ft square
- 2 - Running Light Indicator (Red & Green @ 220 Volts)
- 2 - Lamp Holder or batten Holder

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SECTION 4

Project Working Diagram

**OBJECTIVE MARKING
 FORM 5
 SKILLS JAMAICA 2008**

Skill Area Refrigeration
 Competitor # _____ Competitor Name _____

Criterion #	Aspect of Criterion Description	Mark allotted for objective marking	Total Mark received for objective Marking	Total Mark received for Subjective Marking	Overall Mark Awarded
1	Component/System installation/assembly (a) Levelness of evaporator and conducting unit (b) Aesthetics (c) Drain properly fitted	10			
		4			
		2			
		4			
2	Pipe Work (a) Smooth, completely welded joint (b) No unnecessary bends on piping (c) No crimp bends (d) Properly insulated pipes	10			
		3			
		1			
		3			
3	Welding	10			
		3			

	(a) No flame work on equipment	4			
	(b) Joints properly welded				
	(c) Properly gauge regulation	3			

Total Mark awarded _____ **Type of Medal** _____

Signatures

Judge 1	Judge 2	Judge 3	Judge 4

Chief Judge
Date

CIS scoring

All competitors will be scored using the Computer Information System (CIS) – (400 to 600 possible points)

500 – Medallion of excellence

Top three scores will receive gold, then silver, then bronze

**OBJECTIVE MARKING
 FORM 5
 SKILLS JAMAICA 2008**

Skill Area Refrigeration

Competitor # _____ Competitor Name _____

Criterion #	Aspect of Criterion Description	Mark allotted for objective marking	Total Mark received for objective Marking	Total Mark received for Subjective Marking	Overall Mark Awarded
4	Electrical Wiring	20			
	(a) Wires properly terminated	6			
	(b) Good grounding	6			
	(c) Wire properly	8			
5	Changing Systems	20			
	(a) Rate of charging and approach	10			
	(b) Correct temperature and pressures	10			
6	Commissioning/Adjusting/trouble shooting	15			
	(a) Leak test	5			
	(b) Correct pressure	5			
	(c) Voltage	3			

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	(d) Proper documentation of data	2			
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Total Mark awarded _____ **Type of Medal** _____

Signatures

Judge 1	Judge 2	Judge 3	Judge 4

Chief Judge
Date

Key for Medals

Gold 90 – 100

Silver 70 –89

Bronze 50 –69

Certificate of Participation 49 and under

FORM 5
SKILLS JAMAICA 2008

Skill Area Refrigeration
 Competitor # _____ Competitor Name _____

Criterion #	Aspect of Criterion Description	Mark allotted for objective marking	Total Mark received for objective Marking	Total Mark received for Subjective Marking	Overall Mark Awarded
7	Recovery & Emission Control a) Environment –pipe practices b) Minimal emission of refrigerant	10			
8	Knowledge of subject Candidate to be able to answer questions posed by judges on the air conditioning/refrigeration subject in the wider area in industry	5			

Total Mark awarded _____ **Type of Medal** _____

Signatures

Judge 1	Judge 2	Judge 3	Judge 4
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Chief Judge
Date

Key for Medals

Gold 90 – 100

Silver 70 –89

Bronze 50 –69

Certificate of Participation 49 and under

**SUBJECTIVE MARKING
 FORM 5A
 SKILLS JAMAICA 2008**

Skill Area: Refrigeration

Competitor # _____ **Competitor Name** _____

Criterion #	Aspect of Criterion - Description	Judge score (Out of 10)					Mark Awarded
		1	2	3	4	5	
1	Preparation						
2	Selection of Tools						
3	Use of Tools						
4	Job Knowledge						
5	Material Usage						
6	House Keeping						
7	Safety						
8	Presentation						
9	Creativity						
10	Originality						

**Formula for Subjective Marking total score:
Exclude the highest and the lowest score and find the average of the remaining three.**

Total Mark awarded _____

Signatures

Judge 1	Judge 2	Judge 3	Judge 4

Chief Judge
Date

Score for subjective marking should be entered on form 5 for