

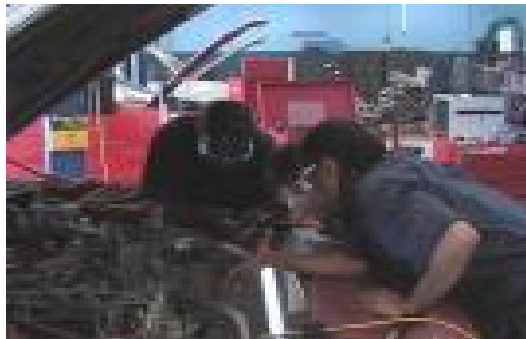


*National Skills Competition*



# *Automotive Technology*

## *Test Project*



## *Skill Area: Automotive Technology*

**National Skills Competition Date: March 30 –31, 2005**

## Skills Jamaica Competition March 30-31, 2005

### General Instructions

- (1) 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.
- (2) The time will be specified according to the test project.
- (3) Minor adjustments may be made to the test project on the day of the competition where a new test project will be issued to the competitor.
- (4) Competitors are expected to identify all equipment/ materials/ingredients needed and submit list to the competitions committee no later than January 28, 2004.**
- (5) Please note that all competitors should provide their own small tools and utensils.**
- (6) Competitors will be given a schedule two days before the competition. Debriefings will also be conducted for all competitors on March 28, 2004.
- (7) 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.
- (8) All competitors should be present for the opening ceremony along with their instructors/coaches.
- (9) Rehearsal for the opening ceremony will be held on the evening of March 28, 2005 in the Indoor Sports Centre.

## Rules

1. Use the appropriate meter for each measurement.  
  
The designations and symbols located on the scales of the instrument indicate which measurements the meter was designed for.
2. Avoid any bumping or shaking of the instrument  
  
The meter movement could become damaged and the errors due to friction greater.
3. Before connecting the measurement instrument, set the measurement range switch for the desired measurement type (voltage, current, resistance).
4. When measuring DC voltages and currents make sure that the polarity is always correct.
5. If unknown voltages or current are being measured, always set to the highest measurement range first.
6. Connect the test cable first to the measurement instrument and then to the measurement object.
7. Make sure that the instrument is in the correct position when working with analogy measurement instruments.  
  
Only then is the display accuracy the best.
8. Measurement should be carried out in the last third of the scale whenever possible.
9. When measuring resistance, the component must be voltage free.
10. The following applies to resistance measurement with the analogy meter with every change of the measurement range in the resistance measurement range; a new zero offset must be carried out.  
  
For the both measurement cables must be connected and the scale calibrated to zero using the adjustment screw.
11. Before putting the measurement away, make sure that the measurement instrument away, makes sure that the measurement range switch has been set to the highest AC voltage range.

This ensures that the instrument is not destroyed through careless use of the meter.

## **1. TIRE DISMOUNTUNG AND MOUNTING:**

### **PROCEDURES FOR DISMOUNTING A TIRE.**

(Note: Dismounting or Mounting tires should only be done with tire machine.

Using tires irons or pry bars to mount or dismount tires can damage tire beads.)

- Deflate the tire by removing the valve core with a valve core tool.
- Using wheel weight pliers, remove all weights.
- Mount the tire and wheel assembly securely on the changer according to the instructions provided by the manufacturers specification of the tire changer.
- Break the beads loose from the rim according to the instructions provide by the manufacturer of the tire changer.
- Lubricate both beads with a tire rubber lubricant or mild soapy water solution to prevent bead damage. This should ease tire removal

(Note: Do not use petroleum – bases oil or silicone as a lubricant.)

- Remove the tire beads according to the instructions provided by the manufacturer of the tire changer.

(Caution: Failure to follow the tire machine instructions carefully could results in serious personal injury.)

(Note: Do not force or allow the dismounting tool to hang upon the tire beads. Bead damage may results.)

## 2. WHEEL BALANCING:

1. Check for correct tire pressure.
2. Remove the counterweight using a weight pliers
3. Clean the wheel of grease using a piece of fabric and suitable solvent.
4. Ensure that there are not any stones or foreign objects lodged in the tread of the tire/wheel.
5. Select the flange of the machine that corresponds with the wheel.
6. Mount the flange onto the axle of the machine.
7. Fix the wheel to the flange.
8. Set the control knobs according to manufacturer's specification
9. Start the machine, take the reading of the counterweight and locate the position where it is going to be fitted
10. Select the weight indicated by the machine and fit it on.
11. Check the dynamic balancing by repeating #7.
12. After wheel is balanced remove it from the machine.

## 3. BEAM SETTING

1. Aim beam setter parallel to headlights. (10 inches)
2. Focus beam setter-using mirror.
3. Set scale to distance from light.
4. Adjust lights.
5. Clean up area.

## 4. DISTRIBUTOR TIMING

1. Fit distributor to engine.
2. Connect (HT) plug leads.
3. Start engine.
4. Adjust distributor using timing lights.

5. VEHICLE ELECTRICAL

1. Select electrical pressure max 20V.
2. Check voltage in the circuit.
3. Select electrical resistance
4. Check ohms in the circuit.
5. Select electrical current.
6. Ensure test leads are changed to appropriate position.
7. Check electrical flow in ampere.

**SKILLS COMPETITION – 2005**

**LIST OF TOOLS REQUIRED**

**COMPETITORS MINIMUM TOOL REQUIREMENT**

- ❖ 1 set of flat-bladed screwdrivers (4 pieces min.)
- ❖ 1 set of Phillips screwdriver (4 pieces min.)
- ❖ 1 set allen (hex, inbus) key 1.5 – 10mm
- ❖ 1 set torx drivers internal ranging from size 8 to 40
- ❖ 1 set torx drivers external, ranging from 8 to 40
- ❖ 1 set open ended spanners ranging from size 6 to 22mm
- ❖ 1 set ring spanners ranging from size 6 to 22mm
- ❖ 1 water pump pliers
- ❖ 1 side cutter pliers
- ❖ 1 long-nose pliers
- ❖ 1 combination pliers
- ❖ 1 vice grip
- ❖ 1 multimeter, high impedance V,A (10), Ohms
- ❖ 1 feeler gauge set
- ❖ 1 test lamp 12V (LED type)
- ❖ 1 socket set 6 to 22mm (3/8-DR)

- ❖ 1 socket set 4 to 13mm ( $\frac{1}{4}$ -DR)
- ❖ 1 socket set 10 to 28mm ( $\frac{1}{2}$ - DR)
- ❖ 1 300g hammer
- ❖ 1 soft headed mallet
- ❖ 1 drift punch set 2 to 8mm
- ❖ 1 flash light
- ❖ 1 metal ruler (300mm)
- ❖ 1 tap-on weights pliers
- ❖ 1 strobe light
- 1 4-way lug tool