Solar Robot Spider Competition

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Introduction

30 School Teams from Hong Kong are to participate in a solar powered robot competition,

Task:

a) Each team are to solder together the electronic circuits according to instructions given.

b) Modify the robot spider given to take up the electronic circuit and a small solar panel.

c) Compete in a competition which involve going through a maze to reach the finish line in the shortest time.
Objective

- Encourage and promote the use of solar energy.
- Promote interest in the area of electronics and Robotics to school children.
- Encourage creativity and project learning.
- Have fun.
What will be given

• One remote control Hexbug Spider.

• A pocket of electronics. (see also part list given)
Part list and instruction to modify the spider robot.
• Electric circuit and photos
• Out line of the maze and equipments provided.
Photo of lift
Out Line of Competition

• 2 team members for each school needs to be involve.
  1) One to control the robot using the remote control.
  2) Second person to control the lift.
• On competition day 2 teams are to start on the starting line and than race through the maze in the shortest time to get to the finish line.
• Winner of each heat are to compete a second round and third round and so on until 4 faster team are selected for final competition on a large track.
Outline of Competition

• The maze will include partitions, a electronic lift (which a second team member will need to control) with more obstacles on the second level.

• A 25W desk lamp will be provided for each team to recharge during the race. (see video below)
How to build it

• Check the Part List.
• Follow Step 1-5 to dismantle the robot.
How to build it

• Solder the electronics according to instructions Step 7 and Step 8.

**STEP 7**

- Connect the wires:
  a.) 3, 4, 5, 6, 29, 7, 8, 9, 14
  b.) 10 to 11, 12, and 13
  c.) 12 to 26, 25, and 20
  d.) 28 to 27 and 26
  e.) 1 and 2
  f.) 15 and 14
  g.) 16, 17, 18, and 19
  h.) 23, 22, 21, and 24

**STEP 8**

* Can use glue gun, make sure the red and black wires are secured with glue.
How to build it

Connect the wires:

a.) 3, 4, 5, 6, 29, 7, 8, 9, 14
b.) 10 to 11, 12 and 13
c.) 12 to 26, 25, and 20
d.) 28 to 27 and 26

Soldering together:
e.) 1 and 2
f.) 15 and 14
g.) 16, 17, 18, and 19
h.) 23, 22, 21 and 24
What not to do:

• Do not over charge the capacitor to more than 5.5V.
• Do not design your robot more than 125mm high.
• Do not cheat.
What you can do to improve your chances

• Because the energy from the systems is Limited you can minimize work done by
  \[ WD = F \times D \]

• Reduce Weight.

• Reduce friction.

• Improve the balance.

• Learn to control your robot better.

• Investigate the performance of your robot.

• You can reduce the member of capacitors used.
Good Luck
&
Thank you