NZYPT ENTRY FORM

School: .....

School address: .....

.....

.....

Name of teacher: .....

Contact phone numbers: .....(school)

.....(home)

.....(mobile)

Contact email: .....

Name of second Physics teacher: .....
(If available to act as a Jury member)

Team Members:

1. ..... (Captain)
2. .....
3. .....

Regional Tournament: (please select)

- Auckland ☐
- Wellington ☐
- Christchurch ☐

Closing date for entries 19 February 2010
Entry fee of $100 per team. Payment must accompany this form, which should be posted to:

IYPT New Zealand
c/- Physics Department
King's College
PO Box 22 012
Manukau
Auckland, 1640

IMPORTANT DATES

Closing date for entries:
Friday 19 February 2010

Regional Tournaments:
Saturday 13 March 2010

National Final:
Saturday 27 March 2010

New Zealand Team Selection:
Friday 23 April 2010

Team Training Dates:
To be advised

International Tournament Austria:
9 -16 July 2010

SPONSORS

NEW ZEALAND INSTITUTE OF PHYSICS
ROYAL SOCIETY OF NEW ZEALAND
UNIVERSITY OF AUCKLAND
UNIVERSITY OF CANTERBURY
VICTORIA UNIVERSITY

FOR MORE INFORMATION

visit: www.iypt.org.nz

To register interest or to request an information pack please email:
p.haines@kingscollege.school.nz

NZYPT

NEW ZEALAND YOUNG PHYSICISTS' TOURNAMENT

What is the NZYPT?

NZYPT offers the challenge and intrigue that can motivate students to reach for their full potential and find out just what they are capable of. New Zealand has a strong reputation at the international level, making the IYPT final (the top 3 countries in the world) in 2007, 2008 and 2009.

If you have not participated in this competition before the best way to get an idea of what it's all about is to go along to one of the regional tournaments, usually held early in March (or the national final if it is in your region) and have a look for yourself. It can be difficult to explain, it doesn't make total sense until you see it in action for yourself. Of course you could always just jump in and have a go! Whatever happens you and your team are guaranteed to have a lot of fun and learn a LOT!

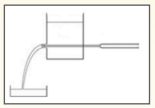
To compete in the NZYPT a school team comprises three members. Solutions to 7 problems have to be prepared in the form of 12 minute PowerPoint presentations. The Regulations that govern the conduct of the tournament can be found on our website (www.iypt.org.nz). In 2010 there will be one-day regional tournaments in Auckland, Wellington and Christchurch followed two weeks later by the National Final in Wellington. The team that wins the National Final and the best 5 other students will form the squad, from which the New Zealand team to compete at the International Young Physicists' Tournament in Austria, will be selected.

Problems for the New Zealand YPT 2010

1. *Electromagnetic cannon*
A solenoid can be used to fire a small ball. A capacitor is used to energize the solenoid coil. Build a device with a capacitor charged to a maximum 50V. Investigate the relevant parameters and maximize the speed of the ball.

2. *Grid*
A plastic grid covers the open end of a cylindrical vessel containing water. The grid is covered and the vessel is turned upside down. What is the maximal size of holes in the grid so that water does not flow out when the cover is removed?

3. *Liquid light guide*
A transparent vessel is filled with a liquid (e.g. water). A jet flows out of the vessel. A light source is placed so that a horizontal beam enters the liquid jet. Under what conditions does the jet operate like a light guide?



4. *Sand*
Dry sand is rather 'soft' to walk on when compared to damp sand. However sand containing a significant amount of water becomes soft again. Investigate the parameters that affect the softness of sand.

5. *Shrieking rod*
A metal rod is held between two fingers and hit. Investigate how the sound produced depends on the position of holding and hitting the rod?

6. *Rotating spring*
A helical spring is rotated about one of its ends around a vertical axis. Investigate the expansion of the spring with and without an additional mass attached to its free end.

7. *Kelvin's dropper*
Construct Kelvin's dropper. Measure the highest voltage it can produce. Investigate its dependence on relevant parameters.

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