

THE REGULATIONS OF THE INTERNATIONAL YOUNG PHYSICISTS' TOURNAMENT

I. The Young Physicists' Tournament (YPT)

is a competition among teams of high school students in their ability to solve complicated scientific problems, to present solutions to these problems in a convincing form and to defend them in scientific discussions - "Physics Fights".

II. The problems of the YPT.

The problems are formulated by the International Organizing Committee (IOC) and sent to the national committees of the YPT not later than in October. These problems may be used for the regional and national Tournaments. For composing the problems the meeting of the IOC is held in the host country.

III. The participants of the YPT.

1. The national teams.

Any invited country may present one team. The host country and Russia as the originator of the Tournament equally may present two teams.

2. The teams of regions, towns, clubs, colleges.

The decision about participation of such a team may be taken by the Organizing Committee of the host country - the Local Organizing Committee (LOC) in consent with IOC.

3. The membership of the teams.

The YPT team is composed of five high school students. The high school graduates participate in the YPT in the year of their graduation. The participation of university students is not allowed. The Organizing Committee may allow participation of teams of four or three students. The composition of the team is not changed during the Tournament. The team is headed by the captain who is an official representative of the team during the Physics Fight (PF).

4. The team leader.

The team is accompanied by two team leaders.

IV. The membership of the Jury.

The Jury is formed by the LOC. Scientists and professors of different countries are drawn in the Jury. Team leaders are also included in the Jury. Members of the Jury are distributed among the groups of teams in accordance with the Tables # 8 and # 9 in Section A IV (see Appendix). The distribution of the team leaders among the groups assures that they do not judge their own team.

V. The agenda of the YPT.

The International YPT is carried out in time determined by the LOC (in May - July) during eight to ten days.

The teams participate in scientific discussions - Physics Fights:

- a) 3 Selective PF; b) Semifinal; c) Final.

The host country provides a cultural program for the participants.

VI. Computer program «YPT-Reg»

Computer program «YPT-Reg» (CP) makes all calculations and protocol actions necessary to hold the Tournament and to determine the Winners (e.g. the distribution of the teams among the groups, calculations of the results of all Physics Fights and so

on). It functions on the base of the algorithm, confirmed by IOC and is integral part of the present Regulations.

VII. The Physics Fight Regulations.

Three or four teams participate in a PF (depending on the total number of teams). In the course of a Fight the members of a team communicate only with each other. Before the beginning of a PF, the introduction of the Jury and the teams takes place. The Fight is carried out in three (or four) Stages. In each Stage, a team plays one of the three (four) roles: the Reporter, the Opponent, the Reviewer (the Observer). In the following Stages of the PF, the teams change their roles according to the Table # 1 (A IV in Appendix).

VIII. The Stage regulations.

The performance order in the Stage of a Selective or Semifinal PF:

| | |
|--|--------|
| The Opponent challenges the Reporter for the problem | 1 min |
| The Reporter accepts or rejects the challenge | 1 min |
| Preparation of the Reporter | 5 min |
| Presentation of the report | 12 min |
| Questions of the Opponent to the Reporter and answers of the Reporter | 2 min |
| Preparation of the Opponent | 3 min |
| The Opponent takes the floor | 6 min |
| Discussion between the Reporter and the Opponent | 8 min |
| Questions of the Reviewer to the Reporter and the Opponent and answers to the questions | 2 min |
| Preparation of the Reviewer | 2 min |
| The Reviewer takes the floor | 4 min |
| Concluding remarks of the Reporter | 2 min |
| Questions of the Jury and Grading | 2 min |

In the Final the procedure of challenge is omitted.

The official language of the IYPT is English. If the team uses other language, it has to provide translation, but the time of presentation is not increased.

IX. The teams performance in the Stage.

The Reporter

presents the essence of the solution to the problem, attracting the attention of the audience to the main physical ideas and conclusions. It is desirable to show the pictures, diagrams, slides, photos prepared in advance, and to demonstrate some experiments if the problem is an experimental one.

The Opponent

puts questions to the Reporter and criticizes the report, pointing to the inaccuracy and errors in the understanding of the problem and in the solution. The Opponent analyzes the advantages and drawbacks of both the solution and the presentation of the Reporter. The discussion of the Opponent should not become the presentation of his own solution. The Opponent can mention his own solution as a argument. In the polemics, the solution presented by the Reporter is discussed.

The Reviewer

presents a short estimation of the presentations of the Reporter and the Opponent.

The Observer

participates in common discussion.

Limitation of the number of presentations:

during one PF no member of the team may take the floor more than twice (brief remarks are not taken in account).

X. The rules of challenge to the problem and of the rejection.

1. Problems

All problems presented in the same PF should be different. A number of problems presented for each PF can be restricted by decision of LOC.

2. Selective PF.

The Opponent may challenge the Reporter on any problem with the exception for the problem that:

- a) was presented in this PF;
- b) was presented by the Reporter earlier;
- c) was opposed by the Opponent earlier;
- d) was presented by the Opponent earlier.

If such a challenge cannot be made, the bans d), c), b) are successively removed in the given order.

During all Selective PFs the Reporter may reject the challenge three times in total without penalty. For every subsequent rejection the coefficient of the Reporter (see Sections XI and A II) is diminished by 0.2. All the problems rejected by the Reporter are included in the Rejection List of the team and can be rejected without penalty in all selective PF. The coefficient of the Opponent challenging for problem "Think up a problem yourself" in Selective and Semifinal PFs is 2.2, since he takes the risk to face the unknown problem.

3. Semifinal

In every semifinal group 10 problems are used, which are determined by the LOC according to the Rating List prepared by the participants. The Opponent may challenge the Reporter for any of the 10 problems. During the Semifinal PFs a Reporter may reject the challenge twice without penalty. For any subsequent rejection the coefficient of the Reporter diminishes by 0.2.

4. Final.

The teams choose any problem from the whole List of the problems for presentation. They should declare chosen problems in two hours after results of Semifinal PFs are announced. The order of priority in this choice is established in accordance with sequence of presentations in Final. If any team takes for the report the problem # 1 the Reporter has to formulate own version of this problem for the Opponent and the Reviewer in one hour after the procedure of the choice. The coefficient of the Opponent is 2 for any problem.

XI. The grading.

After each Stage, the Jury rates the teams, taking into account all presentations of the members of the team, questions and answers to the questions, and participation in the discussion. Marks are: 5+, 5, 5-, 4+, 4, 4-, 3+, 3, 3-. The marks are transformed into grades and then into points with various coefficients for the Reporter, Opponent and Reviewer according to the Table # 2 (A II).

XII. The resulting parameters.

1. For a team in the PF

R - (the rating), characterizes the success of the team in the PF.

SP - the sum of points.

2. For a team in the Tournament

TR - the total rating.

TSP - the total sum of points.

3. For members of a team.

IR - the individual rating.

The speech of the member of a team as a Reporter, an Opponent or a Reviewer is considered successful if all the marks for it taken into account are higher than 3+. In the successful speeches the member of a team gathers points according to the Table # 4 (A III).

The rules for evaluation of all resulting parameters are in the Section A III.

XIII. Participation of teams in PF.

1. Selective PF.

In the course of the Selective Fights any one team meets with another team only once in accordance with the Tables # 5 - # 7 in Section A IV (numbers of teams in the schemes are determined by lot).

2. The Semifinal.

Nine teams having the highest TR in the Selective Fights participate in the Semifinal. There can be only one winner of the Semifinal in each group. The winner is determined by the highest R; in case of equality by the highest TR; in case of equality by the highest TSP (see A III); in case of equality by lot.

3. The Final.

The winners of the Semifinal participate in the Final. If the team which got the highest TR after the Semifinal is not among these teams, it participates in the Final as fourth team. The order of presentation in the Final is determined by the TR, in case of equality by the TSP; in case of equality by lot.

XIV. The winners of the Tournament.

1. Team competition.

The participants of the Final assure for themselves place II and compete for place I (the winner of the Final gets place I).

The participants of the Semifinal assure for themselves place III, if their TSP is no less than 0,8TSP of the best team which is not participant of the Final. The fourth and following places in the Tournament are determined by the value of TR.

2. Individual competition.

The individual winner of the Tournament is determined by the value of IRS. The highest IRS, denoted as HIRS, serves as a reference. All participants (team members) that have got IRS higher than 0.8HIRS are "winners" and those having IRS higher than 0.5HIRS become a honourable mention (for successful participation).

The participant having the highest IRT is the Absolute winner of the Tournament.

3. Concluding Protocol of the Tournament.

The results of the Tournament are presented in the Concluding Protocol.

XV. Changes in the Regulations.

The present Regulations of the International Young Physicists Tournament are established by the International Organizing Committee and can be changed only by International Organizing Committee of YPT.

Moscow - Groningen - Warsaw - Tbilisi - Ertingeen

1988 - 1997

APPENDIX

Computer Program «YPT-Reg»

CP «YPT-Reg» makes all calculations and protocol actions necessary to hold the Tournament and to determine the Winners (e.g. the distribution of the teams among the groups, calculations of the results of all Physics Fights and so on). It functions on the base of the algorithm, confirmed by IOC, and is integral part of the present Regulations.

As initial parameters one puts into the CP :

list of the teams and their numbers determined by a lot;

lists of the team leaders and members of the Jury.

CP includes:

A I. The role scheme in PF

Three teams PF

Table # 1

| | Stage I | Stage II | Stage III |
|--------|---------|----------|-----------|
| Team 1 | Rep | Rev | Opp |
| Team 2 | Opp | Rep | Rev |
| Team 3 | Rev | Opp | Rep |

Four teams PF

| | Stage I | Stage II | Stage III | Stage IV |
|--------|---------|----------|-----------|----------|
| Team 1 | Rep | Obs | Rev | Opp |
| Team 2 | Opp | Rep | Obs | Rev |
| Team 3 | Rev | Opp | Rep | Obs |
| Team 4 | Obs | Rev | Opp | Rep |

A II. Calculation of the points

Table # 2

| | | | | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Mark | 5 + | 5 | 5 - | 4 + | 4 | 4 - | 3 + | 3 | 3 - |
| Grade | 5,3 | 5,0 | 4,7 | 4,3 | 4,0 | 3,7 | 3,3 | 3,0 | 2,7 |

If the Jury consists of 5 or 6 persons, then in the evaluation of the mean grade the lowest grade is withdrawn. If the Jury consists of more than 6 persons, then the highest and the lowest grades are withdrawn.

| | Reporter | Opponent | Reviewer | Observer |
|-------------|-----------|----------|----------|----------|
| Coefficient | 3 or less | 2 or 2,2 | 1,0 | 0 |

For every subsequent rejection the coefficient of the Reporter is diminished by 0.2. The coefficient of the Opponent challenging for problem "Think up a problem yourself" in Selective and Semifinal PFs is 2.2.

A III. Calculation of the resulting parameters

1. For a team in the PF

SP - (the sum of points) is the sum of mean grades multiplied by the corresponding coefficients in all Stages and rounded to 1.

SP_n - is the sum of points of the team taking place N in a given PF.

N - (place in PF), is determined according to the following table: Table # 3

| Condition | Team 1 | Team 2 | Team 3 | Team 4 |
|---|--------|--------|--------|--------|
| SP ₁ = SP ₂ = SP ₃ = SP ₄ | I | I | I | I |
| SP ₁ = SP ₂ = SP ₃ > SP ₄ | I | I | I | III |
| SP ₁ = SP ₂ > SP ₃ = SP ₄ | I | I | III | III |
| SP ₁ = SP ₂ > SP ₃ > SP ₄ | I | I | III | III |
| SP ₁ > SP ₂ = SP ₃ = SP ₄ | I | II | II | II |
| SP ₁ > SP ₂ = SP ₃ > SP ₄ | I | II | II | III |
| SP ₁ > SP ₂ > SP ₃ = SP ₄ | I | II | III | III |
| SP ₁ > SP ₂ > SP ₃ > SP ₄ | I | II | III | III |

R - (the rating), characterizes the success of the team in the PF.

R_n - is the rating of the team taking place N, it depends upon N and SP_n.

The rating of the team taking place N is determined according to the following table:

Table # 4

| Condition | Place I | Place II | Place III |
|---------------|---------|----------|-----------|
| SPn > 28 | 5 | 4 | 3 |
| 29 > SPn > 23 | 4 | 3 | 2 |
| 24 > SPn > 18 | 3 | 2 | 1 |
| 19 > SPn | 2 | 1 | 0 |

This rule of evaluation of R holds for all PFs.

2. For a team in the Tournament

TSP - (the total sum of points) equals the sum SP of the team in all PFs.

TR - (the total rating) is the sum of ratings of the team in all PFs.

3. For members of a team.

The speech of the member of a team as a Reporter, an Opponent or a Reviewer is considered successful if all the grades for it taken into account are higher than 3+. In the successful speeches the member of a team gathers points:

Table # 5

| Grade | 5 + | 5 | 5 - |
|--------|-----|---|-----|
| Points | 3 | 2 | 1 |

IR - (the individual rating) equals the sum of points gathered by the member of the team in all successful speeches, divided by the number of the marks taken into account.

IRS - the total individual rating in Selective PFs

IRT - the total individual rating in all PFs.

A IV. Participation of teams in PF.

1. Selective Fights

Table # 6

| Group | 15 - 17 team Fights | | | | | 18 - 20 team Fights | | | | | |
|----------|---------------------|----|-----|----|----|---------------------|----|-----|----|----|----|
| | I | II | III | IV | V | I | II | III | IV | V | VI |
| Reporter | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 |
| Opponent | 6 | 7 | 8 | 9 | 10 | 7 | 8 | 9 | 10 | 11 | 12 |
| Reviewer | 11 | 12 | 13 | 14 | 15 | 13 | 14 | 15 | 16 | 17 | 18 |
| Observer | 16 | 17 | | | | 19 | 20 | | | | |

2nd Selective Fight

Table # 6

| Group | 15 - 17 team Fights | | | | | 18 - 20 team Fights | | | | | |
|----------|---------------------|----|-----|----|----|---------------------|----|-----|----|----|----|
| | I | II | III | IV | V | I | II | III | IV | V | VI |
| Reporter | 7 | 8 | 9 | 10 | 6 | 8 | 9 | 10 | 11 | 12 | 7 |
| Opponent | 14 | 15 | 11 | 12 | 13 | 17 | 18 | 13 | 14 | 15 | 16 |
| Reviewer | 5 | 1 | 2 | 16 | 17 | 6 | 1 | 2 | 3 | 19 | 20 |
| Observer | | | | 3 | 4 | | | | | 4 | 5 |

3rd Selective Fight

Table # 7

| Group | 15 - 17 team Fights | | | | | 18 - 20 team Fights | | | | | |
|----------|---------------------|----|-----|----|----|---------------------|----|-----|----|----|----|
| | I | II | III | IV | V | I | II | III | IV | V | VI |
| Reporter | 12 | 13 | 14 | 15 | 11 | 14 | 15 | 16 | 17 | 18 | 11 |
| Opponent | 3 | 4 | 16 | 17 | 2 | 3 | 4 | 19 | 20 | 1 | 2 |
| Reviewer | 10 | 6 | 5 | 1 | 9 | 12 | 7 | 5 | 6 | 10 | 11 |
| Observer | | | 7 | 8 | | | | 8 | 9 | | |

Distribution of the team leaders among the groups

Table # 8

| Group | 15 - 17 team Fights | | | | | 18 - 20 team Fights | | | | | |
|-------|---------------------|----|-----|----|---|---------------------|----|-----|----|---|----|
| | I | II | III | IV | V | I | II | III | IV | V | VI |

| | | | | | | | | | | | |
|---------|----|----|----|----|----|----|----|----|----|----|----|
| Leaders | 4 | 5 | 1 | 2 | 3 | 5 | 6 | 1 | 2 | 3 | 4 |
| Leaders | 8 | 9 | 10 | 6 | 7 | 9 | 10 | 11 | 12 | 7 | 8 |
| Leaders | 15 | 11 | 12 | 13 | 14 | 18 | 13 | 14 | 15 | 16 | 17 |
| Leaders | 17 | | | | 16 | 20 | | | | | 19 |

The schemes for the Selective PF with more than 20 or less than 15 teams, should be composed by using the same principles.

2. The Semifinal.

Nine teams having the highest TR (if equality - TSP, if equality - by lot) in the Selective Fights participate in the Semifinal.

Table #

9

| Distribution of teams among the groups | | | | Distribution of team leaders among the groups | | | |
|--|---|----|-----|---|---|----|-----|
| Group | I | II | III | Group | I | II | III |
| Reporter | 1 | 2 | 3 | Leaders | 2 | 3 | 1 |
| Opponent | 6 | 5 | 4 | Leaders | 5 | 4 | 6 |
| Reviewer | 7 | 8 | 9 | Leaders | 8 | 9 | 7 |

The End.