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IRAN
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AUTCUP
International Robotics Competitions



Gymnastics

● Explanatory Guide

In the name of Allah

HUMANOID ROBOTS GYMNASTICS LEAGUE RULE BOOK AND SETUP

FOR THE 2016 AMIRKABIR INTERNATIONAL ROBOTIC COMPETITIONS

LEAGUE TECHNICAL COMMITTEE

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Preamble

The word gymnastics is a Greek word meaning 'naked art'. About 4000 years ago, a type of gymnastics was used to prepare young people for warfare and also was used in training to keep fit. Greeks were doing the exercises on equipment. When Roman government has been weakened, ordinary people weren't interested to do gymnastics any more. Only soldiers did gymnastics and also some people performed gymnastics in circuses to earn a living.

Johann Basedow was the first European person who taught gymnastics organize exercises. Johann Crutsmuth was the first person who published a book about modern gymnastics in 1792. He is considered the 'grandfather' of gymnastics. After Germany's defeat in France, Johann decided to make Germans mentally and physically strong. He believed that Germans must be united in order to defence themselves, therefore he invited young people to wars in outskirts of Berlin. He invented parallel bars, rings, horizontal bar, pommel horse and vaulting horse. In 1842, before death of Johann, gymnastics was introduced in German schools. Sport mattress was first used in Copenhagen, Denmark when military school opened. In 1850 Germans introduce this sport to United States. Gymnastics was on the schedule of the first modern Olympic Games held in Athens, in 1896.

Procedure of this league is to approach regulations of gymnastics in future years.

Article 1: plans

Two types of plans are presented in gymnastics:

1. Compulsory plan

Compulsory plans will be announced in the humanoid robots gymnastic rules section at the website of competition, subsequently.

2. Optional plans

Optional plan is a program arranged by gymnast personally or with assistant of a coach, and it is presented in the competition days.

Article 2: Way of holding competition

Generally, all challenges are held in the two following types:

1. Drop-In challenges

In this part, participants first perform their compulsory and then optional plans.

2. Individual challenges

Result of individual competitions are added to half of assigned scores for first level of competitions, for team's final mark.

Article 3: Competition Area

1. Descriptions

The competitions take place on square field as shown in figure 1.

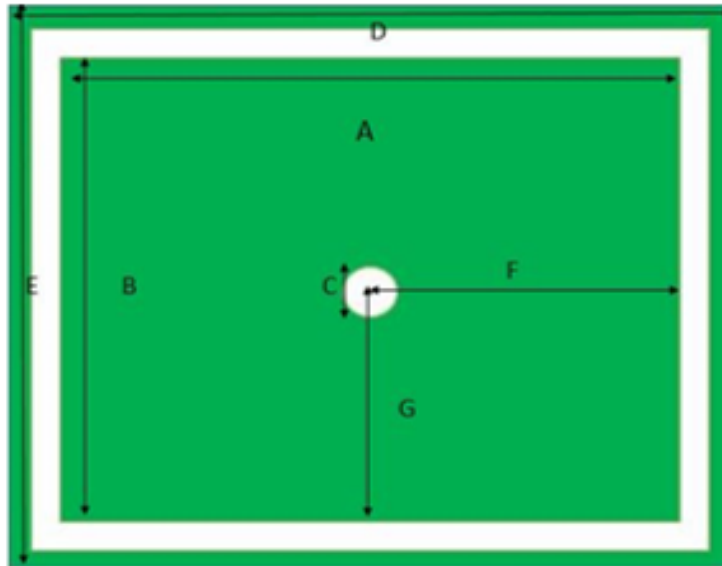


Figure 1 competition arena

A	2M
B	2M
C	10CM
D	230CM
E	230CM
F	1M
G	1M

Figure 2 competition arena's table

2. Floor

- I. The field consists of a flat and even ground which is covered with green carpet.
- II. The white lines are 5cm wide.
- III. The field is surrounded by a border strip which is also covered with green carpet. The world outside the border is undefined.

Article 4: Robots

1. Robot Controlling Method

- I. Robots must be controlled manually in junior leagues.
- II. Robots must be controlled tele-operate or autonomously in major leagues.
- III. Robots must be started manually by the team handler.
- IV. A robot must not damage any part of the arena in any way.
- V. Robots should include an emergency stop/pause button so they may be easily stopped/paused by humans to avoid any potentially damaging or illegal robot actions.

Article 5: play

1. Pre-round Practice

Participants will have an access to the competition fields for the robot's calibration, testing and tuning, throughout the competition in the proper time, based on the referee's and technical committee decisions.

2. How to play

- a) The competitions will be held in two sections, Drop-in and Individual challenges.
- b) In drop-in challenge, robots of each team must do same optional movements.
- c) In individual challenge, robots must compete in two sections, optional movements and mandatory movements.
- d) In optional section, the way of scoring is based on the decisions of the referees.
- e) All the movements should be done on the ground; also competition will have two different kinds of instrument for organizing the challenges (Figure 3 and Figure 4.)



Figure 3: Horse



Figure 4 still rings

f) Horse: Dimensions are as follows:

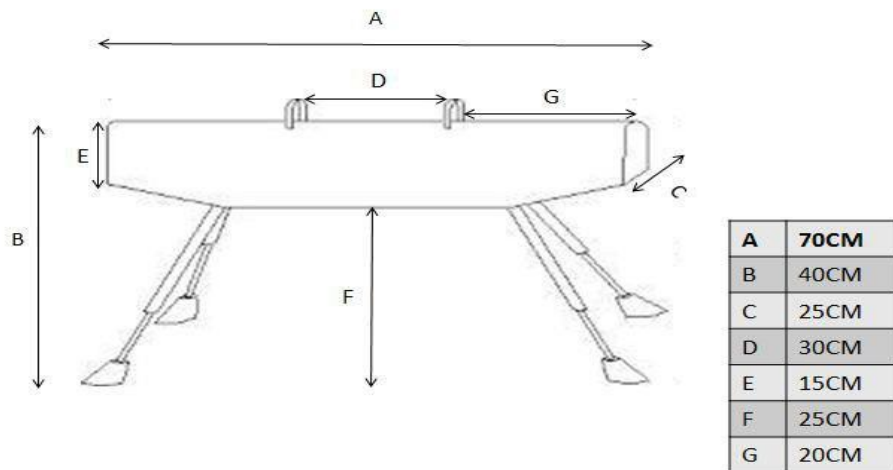


Figure 5 Horse

g) Still rings: Dimensions are as follows:

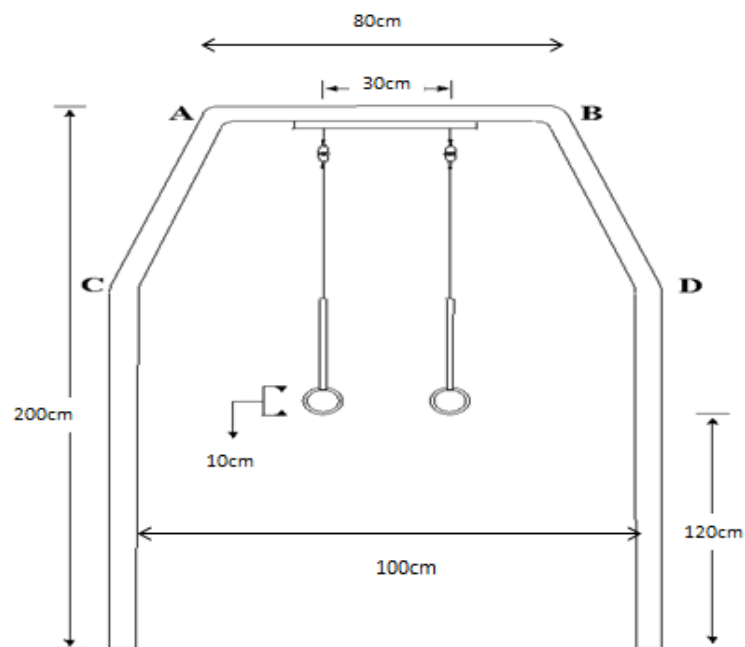


Figure 6 still rings

Article 6: Jury & Scoring

1. Jury

All formal gymnastics competitions are evaluated by two groups of judges (A) & (B).

Group of judges (A) includes two judges evaluating difficulty movements, composition requirement and connection of movements.

Group of judges (B) includes two judges evaluating performances based on technical plan.

2. Evaluating plans by judging group (A)

- I. Group of judges (A) are responsible for evaluating contents of the plans of each movement.
- II. Factors considered in evaluating a plan are:
 - Difficulty of the movements.
 - Composition requirements.
 - Connection movements.
- III. Scores assigned by group (A) is equal to summation of ten apparatus of composition requirements minus the deduction.
- IV. Score assigned by judging group (A) ranges from 0 to 5.

3. Evaluating plans by judging group (B).

- I. Judges of group (B) are responsible for evaluating Execution of plans by depending on technical principles and artistry of it. Scores assigned by group (B) ranges from 0 to 10.
- II. To calculate a gymnastics' final execution score, the highest and lowest score assigned by two judges thrown out and the remaining four scores are averaged together.

$$\text{Gymnast's score} = (2 \times \text{score B}) + (\text{score A})$$

4. Classification of technical and executive deductions in plan

- I. This deduction includes all events and floor exercises.
- II. Small error: 0.1 deduction (moving one hand very little on the handstand).
- III. Medium error: 0.2 deduction (moving one hand two or three times on handstand)
- IV. Large errors: 0.3 deduction.
- V. Falling: 0.5.
- VI. Gymnasts must be familiar with scoring system and regulation of competitions.
- VII. If gymnasts takes more than 3 steps before acrobatic elements or takes extra steps after acrobatic elements, 0. 1 point will be deducted.
- VIII. If duration of plan is more or less than allowed time, 0.2 to 0.5 point will be deducted.

Article 7: Rights and Duties of Team Members

1. Team members must be familiar with scoring system and regulation of competitions.