Ball Shooter

To shoot balls on a stand we have to obtain two systems, One for steering while the other is for shooting task.

Steering System

Let's talk about steering system, Sure we have to but a stepper motor to change the angle and direction of robot, So this motor should have some specifications, So assume we have a robot with a 25- 30Kg weight and a 0.85Kg arm, We have to connect them from the center of mass point, assume the distance between them is 1cm, So the first property the motor should have is the holding torque, the resolution of every step to make sure we can get the target, and of course the cost and availability

The specifications of the required motor should be:

-Holding torque more than 30Kg.cm (2.94N.m).
-Rotor step of average of 1°.

So the chosen motor for steering is STEPPER MOTOR 5718HB6401 NEMA23 3.6N.m 4A, Because of its specifications as its holding torque is 3.6N.m, and step angel is 1.8° and 0.9° for half step mode, and the first reason is its availability in Egypt (better ones are not available).

Shooting System

Now, it's shooting system turn, about it, It's related to weight it can lift (robotic arm weight), in addition to a suitable speed to control the power of the shoot, when it's related to speed here we are talking about brushless motors, also definitely we are searching for an available and suitable cost product.

The specifications of the required motor should be:

-Lifting more than 0.85Kg.
-A range of 15000 to 20000 RPM.

So the chosen motor for shooting system is A2212/10T 1400KV Brushless Outrunner Motor, as its speed is 1400RPM/V with a maximum 12V which refers to 16800 RPM. It also can lift up to 1Kg, in addition to it's good price and availability in Alexandria.

Links for steering motor:

The used motor in the link below
https://uge-one.com/stepper-motor-5718hb6401-nema23-3-6n-m-4a.html

Better one for our requirements but not available in the link below
https://www.makerlab-electronics.com/product/stepper-motor-nema-23-30kg-cm/

Links for shooting motor:

The product in the link below
https://makerselectronics.com/product/brushless-motor-1400kv

As the datasheet doesn't mention the weight it can lift here is shown in the question in the link below
https://www.flyrobo.in/a2212_1400kv_brushless_motor_for_rc_airplane

The robotic arm used and its weight shown below
https://www.alibaba.com/product-detail/Aluminium-Robot-6-DOF-Arm-Clamp_60786042677.html