

PRELIMINARY ROUND

DESIGN DOCUMENT AND VIDEO SUBMISSION

Robotics for Good Youth Challenge India 2026-27

Prepared by: I-Hub Foundation for Cobotics (IHFC), TIH of IIT Delhi, New Delhi

Date: 03/09/2026

⚠ Disclaimer

This document is provided only as a reference to help teams prepare the Design Document and Video Submission for the Preliminary Round of the Robotics for Good Youth Challenge India 2026. Teams are advised to refer to the official Rulebook and AI for Good website for complete and updated guidelines.

Guidelines

A. Team Details

As a part of Design and Video Document Submission, all teams need to submit the following online (Google Form) by the deadline as specified on the IHFC website:

[Form Link](#)

1. Kindly choose the appropriate field

a. Participation Type (Check the appropriate box):

<input style="width: 50px; height: 20px;" type="checkbox"/> Individual Participation	<input style="width: 50px; height: 20px;" type="checkbox"/> Team Participation
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b. Select the Category of the Team (Assigned according to year of birth) (Check the appropriate box):

<input style="width: 50px; height: 20px;" type="checkbox"/> Junior (1st January 2013 to 31st December 2017)	<input style="width: 50px; height: 20px;" type="checkbox"/> Senior (1st January 2009 to 31st December 2012)
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2. Team Details in the following format.

Sl. No.	Details	Write Your Information
1	School Name	
2	Team Name	
3	Team ID	
4	Number of Team Members	
7	Coach/ Mentor's Name	
8	Coach/ Mentor's Mobile Number	
9	Coach/ Mentor's E-mail ID	

A. Design Details of Robot (100 Points)

1. Points to be consider

The below-mentioned points need to be considered before developing the robot.

- a. *Robot starting zone fit: the robot, or set of robots, must fit completely within the 480 × 280 mm starting zone marked on the field (Rulebook, sections “d. Game field” and “e. Robots”).*
- b. *Robots can be built with any kind of material and can be programmed with any desired platform.*
- c. *All robots must be decorated in relation to the theme of public health and well-being (SDG 3), within the health-emergency scenario. This is checked through a prior visual inspection; robots that fail will not be allowed to participate.*
- d. *Robots must operate completely autonomously and comply with the safety and integrity requirements of the Rulebook.*
- e. *Refer to the Rulebook heading “e. Robots” for full detail on robot design, autonomy and safety requirements.*

2. Design Document

The Design Document should detail the ideas proposed by the team for the 2026–2027 Health Emergencies challenge. It must be a comprehensive document describing the proposed robot design, mechanisms, sensing, control, software, calculations and technical justification., together with a clear, task-wise justification explaining HOW the team plans to approach each individual task of Mission 1 and Mission 2.

The document should demonstrate not only what the robot is designed to do, but also why the proposed approach was selected, how it will work during the match / competition phases, and how it addresses the precision and reliability demands of the relevant task.

- *File Format: PDF file*
- *File name: RFGYC26_PRE_[Team ID]*
- *Maximum Length: 5 pages*
- *Font: Times New Roman, size 12.*

The PDF should include the sections mentioned in Table 1 and a design drawing of the autonomous robot. Drawings can be created by hand or using computer software. Each section is assigned specific points, as detailed in Table 1.

Table 1: Headings and Points for Design Document.

S. No.	Headings	Points
1	Task-wise Mission Understanding & Proposed Strategies	35
2	Robot Design & Proposed Mechanisms	45
3	Technical Justification, Feasibility & Validation	20
Total		100

1. Task-wise Mission Understanding & Proposed Strategies (35 Points)

Teams must address each task separately. For every task, explain what the robot will do, how it will do it, what sensing/control will be used, the sequence of actions, expected challenges, and how the approach satisfies the Rulebook. Providing a supporting diagram/flowchart were useful.

Table 2: Points Breakup for Task-wise Mission Understanding & Proposed Strategy (35 Points). Each point carries equal marks (7 marks).

For each Question write at max 5-7 lines.

S No	Task / Section
1	Mission 1 – Task 1: Sample extraction and delivery to the laboratory. Explain how the robot will locate/collect the three samples from the quarantine area and place them completely inside the laboratory slots — note fixed sample positions for Junior and random positions for Senior. State the proposed pickup, navigation and placement approach.
2	Mission 1 – Task 2: Construction of the quarantine zone. Explain how the robot will transport and place the two containment beams so each stand upright, stable and self-supporting, completely closing the quarantine perimeter with the two fixed walls, as per the Rulebook.
3	Mission 2 – Task 1: Medical kit distribution. Explain how the robot will transport the ten medical kits and achieve the required distribution: six in the Hospital, two in one Primary Care Centre (PCC) and two in the other PCC.
4	Mission 2 – Task 2: Medical triage. Explain how the robot will identify/classify red, yellow and green triaged-patient cylinders and transport them to the corresponding destination zones (Hospital / PCC / Recovery Zone (Start Zone)). Explain the Junior (fixed layout) vs Senior (random layout, mirrored on both fields) approach, and the even-split bonus for yellow cylinders.
5	Overall mission sequence and competition strategies. Explain the order in which tasks will be attempted, prioritization, expected time allocation within the 2-minute match, parallel operation if multiple robots are used, and the strategy for maximizing score while reducing risk.

2. Robot Design & Proposed Mechanisms (45 Points)

Table 3: Points breakup for robot design & Proposed mechanism while designing the robot (45 Points). Each point carries equal marks (5 points).

For each question write at max 2-3 lines.

S No	Design Aspect	What to Provide
1	Overall dimensions and estimated weight	Provide overall length, width, height where relevant, estimated weight, and show how the robot satisfies the 480×280 mm Starting Zone requirement.
2	Drive and motion system	Type of drive, wheel arrangement, movement and turning method.
3	Actuators and mechanisms	Motors/servos and mechanisms for collecting, carrying, placing and releasing game elements.
4	Sensors Integrated	Sensors used for navigation, distance, color/object recognition, positioning or other required functions.
5	Power system	Power source, voltage/current considerations and expected operating duration.
6	Autonomous control system	How the robot operates autonomously after activation, including decision-making and control architecture.
7	Software and algorithms	Programming platforms, control logic, navigation, sensing, state machine/sequence or other algorithms.
8	Material selection and safety	Materials chosen and why; structural integrity, safe construction and protection of field/game elements.
9	Robot design drawing	Clear 3D/2D drawing showing major dimensions, mechanisms, sensors and important components.

3. Technical Justification, Feasibility & Validation (20 Points)

This section supports — it does not replace — Sections 1 and 2. Calculations should back up a design decision rather than appear as standalone numbers.

Table 4: Points Breakup for Technical Justification, Feasibility & Validation (20 Points). Each point carries equal marks (5 marks).

For each Question write at max 5-7 lines.

S No	Aspect	What to Provide
1	Relevant calculations	Motor torque, speed, payload, grip/holding force, battery/power, dimensions, travel time, or other calculations relevant to the proposed design — each tied to a specific design decision.
2	Design justification	Explain why the selected mechanism, sensor, drive, material and algorithm are suitable for the specific mission tasks.
3	Feasibility and trade-offs	Identify limitations, failure modes and design compromises, and explain how they are addressed.
4	Validation plan & consistency	Describe how the team will test navigation, pickup/placement, recognition, reliability and complete mission execution before competition. The proposed mechanism, dimensions and software strategy must be consistent with the task-wise approach in Section 1.

Important: Do not provide only generic descriptions. The document should demonstrate a clear connection between each mission task and the proposed robot solution. Calculations should support a design decision rather than appear as standalone calculations

B. Video Submission (100 points)

Submit a video (90 Seconds) of the working Robot by the deadline specified on the website (Google Form link for submitting the video will be sent to the registered email of team leader and Mentor). The video will be evaluated based on the marking criteria included in Table 5.

Table 5: Marking criteria for video submission

S. No.	Evaluation Criteria	Time in Sec.	Total Points
1	Complete 360° view of the Robot	10	20
2	Indicate the measurement of Robot Length and Width in mm(using inch tape or ruler)	15	10
3	Demonstrate the Robot forward, backward or any other direction	35	30

4	Demonstrate Mechanism used to make the Robot autonomous(explain in the video which component is used to make robot autonomous & show it's working).	30	40
Total		90	100

Note:1 Measurement of distances should be clearly shown in the videos.

Note:2 The robot design should be as per the design document. If there are any deviations, please justify the same in a separate PDF, which can be uploaded in the Google form.

1. Additional instructions for video submission

Additional instructions are given below for all the videos that should be kept in mind while preparing the videos:

- i. The file should be uploaded to a single Google Drive folder which will be accessible by the judges. Only the link should be submitted via a Google Form (to be released soon).
- ii. The size of the file should not exceed **100 MB**.
- iii. You may use multiple cameras for better visualization with one camera showing the complete view.
- iv. Ensure proper lighting conditions while shooting the videos.
- v. Compliance with competition rules will be considered during evaluation.
- vi. All videos should be named as “**Team ID**” to ensure proper evaluation and be in the .mp4 or .avi format only.



“The submission of above documents is compulsory for evaluation and shortlisting your seat for Robotics for Good Youth Challenge India 2026.”