

# Scientists Of Utopia

Earthquakes, tsunamis, and volcanoes ravage the entire planet. Chaos runs over Utopia. And Utopians run amok for help. Sigh, a futile exercise. No one can run from their own planet, can one? The planet they called home for several generations, the place where they evolved to be what they are today, would no longer exist in some time – Utopia is dying! It is a ticking time bomb, with only a small window to devise a life saving tactic.

With no time to waste, a hunt for a heavenly body with similar survival characteristics starts. The Utopian astrophysicists' deep space study worth several decades could potentially save the lives of millions on their planet now. They narrow down 3 regions in space, where life could be present.

1. The Milky Way galaxy (specifically pointing towards the Sol system containing Earth)
2. UGC 3982, a spiral galaxy
3. N 87, an irregular galaxy

As soon as they procure this list, the Utopian SPD (Space Patrol Division) roars its spaceship engines, ready for departure. Thus, the SPD leaves with the hopes and prayers of every Utopian in search of a new home.

They start with the first region on their list, the closest to them – the Milky Way galaxy. En route the center of the galaxy, SPD finds a probe floating in space. They capture it – a sure indication of life in the vicinity of this location. The crew went bananas after this discovery!

Meanwhile on Earth, discussions among the scientists regarding abnormal readings from one of their space probes emerges. It was no longer going at cosmic speeds, and eventually, the rate of increase in distance had dropped to a meagre value. This probe, due to being on an outdated mission, none batted an eye. However, the mission was a very significant one – Voyager I.

Back at the Utopian spaceship, they start investigating the captured probe, finding that the probe's tech was much older than their own technology. A certain artifact's retrieval provided them valuable information about Earth dwellers. Thus, since they had a good chance of finding a living species at a communicable distance, their chief orders them to halt the ship and maintain an orbit. Having no further knowledge about Earth, risking to approach Earth unannounced might prove dangerous.

## PROBLEMS

Q1. The artifact that Utopians retrieve from Voyager 1 looks like a shimmering-yellow disk with inscriptions and encodings on it.

- i. Describe this artifact and the information it contains.
- ii. How can this information help the Utopians in understanding the Earth dwellers?

Q2. The Utopian Spaceship, having picked a fixed orbit in deep space, wants to communicate with Earth, to procure information about any planet or moon in their solar system, similar to the living conditions of Utopia, to start a new civilization there.

Describe the type of communication needed to be established between the two of them in detail. Also, tell us about the different factors taken into consideration while doing so.

In your best detailed solution, especially include information regarding the following things:

- i. Provide the architecture of the communication system which needs to be built.
- ii. The frequency channels preferable for this communication.
- iii. The detailed working of the communication system.

Q3. Scientists aboard SPD choose to research Earth through their long-range communication technology and learn that the Earth dwellers had also faced extinction risking disasters on their planet, albeit on a lower scale.

- i. Name and describe at least three of the most devastating natural disasters on Earth that the scientists could have found during their research.
- ii. What helpful information regarding the safety precautions undertaken during these disasters can humans might have that may help fellow Utopians?

Remember, the SPD values the detail, accuracy and creative lucidness of the report that you produce. The question of a species' life and death apparently hangs on it...



## Instructions for Submission

1. Maximum three members can participate in a team.
2. Intercollege teams are allowed.
3. First Round deadline for submission– Sunday, 19th January 2020. No submissions after this shall be entertained.
4. The solutions should be MAILED in the format mentioned below to info.astronomyclub@gmail.com.
5. The subject of the mail should be "UTOPIA#1\_<TEAM\_NAME>" where TEAM\_NAME is the one you have registered with.
6. The solution should be mailed in PDF format only. The name of the file should be "UTOPIA#1\_<TEAM\_NAME>\_SOLUTION" Language should be ENGLISH only.
7. The format is as follows:
  - a. Team name, Details of Team Members (Name, Contact number) and College Name should be clearly mentioned in the first page.
  - b. Solutions should be brief and to the point. The challenges encountered should be mentioned. Any figures, diagrams (well labeled) and charts mentioned should be properly referenced in the text.
  - c. If you feel the figures, diagrams and/or charts are losing detail while scaling down in PDF, feel free to attach a .ZIP or .RAR file with the solution. The file should be named "UTOPIA#1\_<TEAM\_NAME>\_ATTACHMENTS".
  - d. Highlight the innovation in your solution.
  - e. Solution should not exceed 10 pages .
  - f. At most three submissions shall be entertained. In case of more than one solutions, the latest one would be considered.
8. The Decision of the judges shall be final and binding. No queries shall be entertained in this regard.

### Contacts:

Kushagra Sachan (9871965824)  
Vaibhav Krishna (9309582025)