

## Unit - 6

### From Zero to Infinity

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#### Text Questions and Answers

**Question 1.**

What was the reaction of the classmates to Ramanujan's question?

**Answer:**

The classmates laughed at Ramanujan's question.

**Question 2.**

What did the Indian mathematician Bhaskara prove?

**Answer:**

The Indian mathematician Bhaskara proved that zero divided by zero is infinity.

**Question 3.**

Where did Ramanujan get "Loney's Trigonometry" book from?

**Answer:**

Ramanujan got Loney's "Trigonometry" book from a college library.

**Question 4.**

Where did Ramanujan do his mathematical problems?

**Answer:**

Ramanujan did his mathematical problems on loose sheets of paper or on a slate and jot the results down in notebooks.

**Question 5.**

What were the subjects neglected by Ramanujan in college?

**Answer:**

History, English, Physiology were the subjects neglected by Ramanujan in college.

**Question 6.**

Which university granted him a fellowship of 75 a month?

**Answer:**

The University of Madras granted him a fellowship 75 of a month.

**Question 7.**

What did Ramanujan sent to G.H. Hardy?

**Answer:**

Ramanujan sent a letter in which he set out 120 theorems and formulae to G.H Hardy.

**Question 8.**

Who discovered a rare mathematical genius in Ramanujan?

**Answer:**

G.H. Hardy and his colleague, J.E. Little wood discovered a rare mathematical genius in Ramanujan.

**TextBook Questions****A. Answer the following questions in a sentence or two Why did the students laugh at Ramanujan?****Question 1.**

Why did the students laugh at Ramanujan?

**Answer:**

Ramanujan asked a silly question in the class. So the children laughed at him.

**Question 2.**

Why did the teacher compliment Ramanujan?

**Answer:**

The students laughed at Ramanujan because he asked if no banana was distributed among no one, would everyone get one banana.

**Question 3.**

What did Ramanujan do after reading the book on Trigonometry?

**Answer:**

After reading the book on Trigonometry, Ramanujan began his own research. He came forth with many mathematical theorems and formulae not given in the book

**Question 4.**

What disappointed Ramanujan's father?

**Answer:**

Ramanujan failed twice in his first-year arts examination in college. This disappointed his father.

**Question 5.**

How did Ramanujan manage his paper crisis?

**Answer:**

Ramanujan needed about 2,000 sheets of paper every month. He started using even scraps of paper he found lying on the streets. Sometimes he used a red pen to write over what was written in blue ink.

**Question 6.**

Why was Ramanujan's application for jobs rejected?

**Answer:**

Ramanujan showed his notebooks and told everyone that he knew mathematics and he could do the clerical job. But no one understood what was written in the notebooks. So his applications for jobs were rejected.

**Question 7.**

Why was Ramanujan sent back to India?

**Answer:**

While Ramanujan continued his research work, Tuberculosis, then an incurable disease, was devouring him. So, he was sent back to India.

**B. Answer the following questions in about 80 – 100 words.**

**Question 1.**

Describe the life of Srinivasa Ramanujan in India.

**Answer:**

Title: From zero to Infinity

Author: Anonymous (Biography of Ramanujan)

Characters: Ramanujan, Classmates, Teachers and Ramanujan's Father

Theme: Inborn intelligence with diligence leads to excellence

Srinivasa Ramanujan was born in Erode in Tamil Nadu on December 22, 1887. His father was a petty clerk in a cloth shop. From his early childhood, Ramanujan was evidently a prodigy. A question that he had asked as a boy had taken mathematicians several centuries to answer. Throughout his life in his native Kumbakonam he was always ahead of his mathematics teachers.

Senior students went to his dingy house to get their difficulties in Mathematics solved. At the age of 13, Ramanujan got Loney's Trigonometry from a college library. He mastered the book and began his own research. Ramanujan secured a first class in Mathematics in the Matriculation examination. He was awarded the Subramanyan Scholarship. His father was disappointed when he failed twice in his first year arts examination.

Ramanujan was always scribbling numbers and his father thought that he had gone mad. He began to look for a job. He needed money for food and papers to do his calculations. He started using even scraps of paper lying on the streets. Luckily the Director of Madras Port Trust, Francis Spring was impressed by his note books.

He gave him a clerical job on a monthly salary of ₹25. Later some teachers and educationists interested in Mathematics helped him get a research fellowship. The University of Madras granted him a fellowship of ₹75 even though he had no qualifying degree.

"Genius does what it must, and talent does what it can"

**(OR)**

Srinivasa Ramanujan was born on December 22, 1887, in Erode in Tamil Nadu. His father was a petty clerk in a cloth shop. From early childhood, he was a prodigy. Even Mathematicians had taken several centuries to answer his question. He was always ahead of his mathematics teachers.

Senior students went to his house to get their difficulties in Mathematics solved. When he was 13, he got Loney's Trigonometry from a college library. He began his own research, having mastered the book. He secured a first class in Mathematics in the matriculation examination. He was awarded the Sub-Ramayan Scholarship. But he failed twice in his first year arts examination. His father was upset.

As he was always scribbling numbers his father thought that he had gone mad. Ramanujan needed money for food and papers. He started using scraps of paper lying on the streets.

Luckily his note books impressed the Director of Madras Port Trust, Francis Spring. He gave him a clerical job on a salary of ₹25 a month. Later he got a research fellowship. The University of Madras granted him a fellowship of ₹75, though he had no qualifying degree. "There is no great genius without some touch of madness.

### **Question 2.**

Narrate the association of Ramanujan with G.H. Hardy.

### **Answer:**

Title: From zero to Infinity.

Author: Anonymous (Biography of Ramanujan).

Characters: Ramanujan and G.H. Hardy.

Theme: "Fellowship happens when mercy wins over justice"

Earlier:

Ramanujan had sent a letter to the great mathematician G.H. Hardy of Cambridge University. He had set out 120 theorems and formulae in it. Very soon Hardy and Littlewood realised that they had discovered a rare mathematical genius. They made arrangements for Ramanujan's passage and stay at Cambridge university.

Ramanujan found himself a stranger at Cambridge. In the company of Hardy and Littlewood he could forget much of the hardship he had to endure. In Ramanujan, Hardy found an unsystematic mathematician similar to one who knows the Pythagorus theorem without knowing what a congruent triangle means. It was due to his lack of formal education. It was sheer genius that led him to mathematical 'Truths' Ramanujan was elected, Fellow of the Royal Society on February 28, 1918.

He was the youngest Indian who received this distinguished fellowship. In October that year he became the first Indian to be elected fellow of Trinity College, Cambridge. His achievements.

At Cambridge include the Hardy Ramanujan – Littlewood circle method in number theory. Besides being a mathematician, Ramanujan was an astrologer of repute and a good speaker. He used to give lectures on subjects like “God, zero and infinity”.

“Attitude is greatly shaped by influence and association”.

**(OR)**

Earlier Ramanujan had sent a letter to G.H. Hardy with 120 theorems and formulae. Soon Hardy and Littlewood discovered a rare mathematical genius. They arranged for Ramanujan’s passage and stay at Cambridge university. He found himself a stranger at Cambridge. In their company he could forget the hardship he endured.

In him, Hardy found an unsystematic mathematician lacking formal education. Only sheer genius led him to mathematical ‘truths’. He was elected Fellow of the Royal – Society on February 28, 1918. He was the youngest Indian to receive this distinguished fellowship.

In October that year he became the first Indian to be elected Fellow of Trinity College, Cambridge. His achievements include the Hardy Ramanujan Littlewood circle method in number theory. Due to an incurable disease then, Tuberculosis, he was sent back to India. To forget the agonising pain he continued to play with numbers even on his death bed.

“A good communication is the best medicine for healthy association”.

**C. Match the words with correct Synonym and Antonym from the table.**

S.No	Word	Synonym	Antonym
1	distribute	boundless	trivial
2	infinite	commence	sorrow
3	significant	joy	collect
4	delight	guess	clean
5	unkempt	circulate	conclude
6	initiate	messy	fact
7	conjecture	important	measurable

**Answer:**

S.No.	Word	Synonym	Antonym
1.	distribute	circulate	collect
2.	infinite	boundless	measurable
3.	significant	important	trivial
4.	delight	joy	sorrow
5.	unkempt	messy	clean
6.	initiate	commence	conclude
7.	conjecture	guess	fact

## **D. Listening:**

Listen to the anecdote 'Two Geniuses' and narrate it in your own words.

**'Two Geniuses'**

The story tells about Einstein's great sense of humour. There was a young man, by name Einstein, with a growing reputation. He was invited by universities to explain his theories. A man called Hans was always his driver on these trips. Hans often told Einstein that it was a pleasure to drive a genius like him.

One evening, on their way to a remote university, Einstein told Hans that he wished he had not to give his lecture that night. He said that he was very tired. But he did not want to let his audience down.

Hans said that he didn't need to do so. Hans said that they would change places and we would give the lecture for him. Hans had listened to it a dozen times. He didn't understand it but knew it by heart. Moreover no one knew

him at the university. Hans was sure that no one would find it. Eventually, Einstein agreed with Hans. But Einstein told Hans not to try to answer any questions, whatever he did.

They changed places, and at the university, Hans was greeted and led to the platform in a great hall crowded with professors and students. Einstein joined the audience and listened to Hans give his lecture perfectly and joined in the applause at the end.

Hans was about to get off the platform. Before that, a professor shouted from the audience. He wanted to ask a question. He said that it was very difficult but he requested him to answer it. Then he asked the very hard question for which Hans had no answer. He didn't understand what he was talking about.

Einstein thought that they were in trouble. But Hans just laughed and said that, wasn't a difficult question. Hans said that it was so easy and even his driver knew how to answer it. Hans asked Einstein to stand up. Einstein stood up and answered the question perfectly. They left the university, with Einstein driving the car. A little later, Hans offered to take over him. Einstein laughed and told no to his friend. He said that it was his pleasure to drive a genius like him (Hans).

### **E. Speaking:**

Divide the students into a group of five and conduct a group discussion on the topic. "Importance of mathematics in our everyday life". The teacher will act as a moderator.

**Topic:** Importance of mathematics in our everyday life.

**Moderator:** Today we have assembled here in five groups to discuss on the topic "Importance of Mathematics in our Everyday life. We shall begin with group A.

**Group A:** Mathematics is a methodical application of matter. It makes a man systematic. Mathematics makes our life orderly and prevents chaos. Certain qualities that are nurtured by mathematics are power of reasoning, creativity, abstract thinking, problem solving ability and effective communication skills.

**Group B:** Mathematics is the cradle of all creations, without which the world cannot move an inch. Even insects use mathematics in their everyday life for existence. There are countless examples of mathematical patterns in nature's fabric. A good curriculum of mathematics is helpful in effective teaching and learning of the subject.

**Group C:** Experience says learning mathematics can be made easier and enjoyable if our curriculum includes mathematical activities and games. Mathematics puzzles and riddles encourage and attract an alert and open minded attitude among youngsters and help them develop clarity in their thinking.

Emphasis must be laid in development of clear concept in mathematics in a child, right from the primary classes itself. The child must be appreciated for every correct attempt. And the mistakes must be corrected then and there without any criticism.

**Group D:** The greatest hurdle in the process of learning mathematics is lack of practice. Students must work out some problems from different areas to master the basic concept and develop speed and accuracy in solving a problem.

Another very effective means of spreading the knowledge of mathematics among children is through peer teaching. In the process their doubts on the topic are cleared through discussions in a group.

**Group E:** The present age is one of skill development and innovations. We are more mathematical in our approach the more successful we will be. Mathematics offers rationality to our thoughts. It is a tool in our hands to make our life easier. We must appreciate the beauty of the subject and embrace it with all our heart.

**Moderator:** From the discussions, it is clear that maths has become an inseparable part of our lives and whether we work in an office or spend most of our time at home, each one of us uses mathematics as a part of our everyday life. No matter where we are as well as whatever we are doing mathematics is always there whether we notice it or not. Let us have a deep look at this universal subject how we use it in our everyday life.

## **F. Reading:**

**Answer the following questions based on the given passage.**

### **Question 1.**

What made John Shepherd Barron come up with the idea of ATM?

#### **Answer:**

When Shepherd Barron had arrived one minute late, he found the bank doors locked against him. This incident made him come up with the idea of an ATM.

### **Question 2.**

When and where was the first ATM installed?

#### **Answer:**

The first ATM was installed on June 27, 1967, in the North London suburb of Enfield.

### **Question 3.**

Who was the first person to withdraw cash from the ATM?

#### **Answer:**

Actor Reg Vamey, a celebrity resident of Enfield was the first person to withdraw cash from the ATM.

### **Question 4.**

Why did Shepherd Barron reduce the PIN number from six digits to four?

#### **Answer:**

Shepherd Barron reduced the PIN number from six digits to four when his wife, Caroline complained that six was too many.

### **Question 5.**

Which theory of Ramanujan helps the ATMs to dispense cash?

#### **Answer:**

Partition theory of Ramanujan helps the ATMs to dispense cash.

## G. Writing

### Paragraph Writing:

#### Question 1.

Write a paragraph of 100 – 120 words about a memorable anecdote/incident of your life. “A memorable incident in my life”

#### Answer:

It was my epic moment of my life. When I remember that moment it makes me laugh easily. It was an incident when I was in class 8.1 was not very much interested in studies. It was November when our school had provided us with teacher trainees for various subjects and we all were playing rather than studying.

The third period began and a teacher entered our class. We all decided to play a game called ‘Pen fighting game’. It was my turn to make a shot. When I was on the verge to make a shot, the trainee teacher came from behind all on a sudden. She asked me, ‘Where do you live?’ At that moment knocking the other pen down I told the teacher, ‘I live in my house’.

My voice was so loud and there was a roar of laughter in the class. When the game was over, I realized that I misbehaved in the class. I was very much embarrassed at that moment. Then I decided to apologize to her for my wrongdoing. I went to her room and asked for her pardon. She smiled at me gently. That gave me great relief in my heart. Now I am very attentive in my class and never mischievous any more.

#### Question 2.

Write a paragraph of 100 -120 words about your favourite personality. “My favourite personality”

#### Answer:

Everyone has his or her own favourite personality and so I do. My favourite personality is William Henru Bill Gates III. He is popularly called Bill Gates. He was born on October 28, 1955. He was a local resident of Seattle, Washington, United States. In his early ages, he began to show interest in computer programming.

Gates excelled in Mathematics and Science. Because of his excellence, he enrolled in Lakeside, an exclusive preparatory school. Most of his professions involved computer software. He held the position of Technology advisor of Microsoft Corporation. Besides, he is the co-chairperson of Bill and Melinda Gates foundation, an organisation which named after him and his sister, he is the CEO of Cascade Investment. He holds the highest position as the Chairman of Corbis.

He and his partner, Paul Allen built the world's largest software business. Due to his excellent software invention and his contribution to the world, Gates has received many big awards and achievements. He was the most powerful person in the world in 2012. He and his wife were awarded. The order of the Extec Eagle for their philanthropic works around the world in the areas of health and education.

### Grammar:

#### A. Complete the following sentences using appropriate connectors from the box.

moreover	although	meanwhile	therefore	because
as long as	thus	above all	for instance	except

#### Question 1.

She felt cold ..... she was wearing a winter coat.

#### Answer:

although

#### Question 2.

This restaurant has some of the best chefs in the town ..... their service is excellent.

#### Answer:

above all

#### Question 3.

I'm not going to the party tonight ..... I didn't get an invitation.

**Answer:**  
because

**Question 4.**  
You can set the table ..... I'll start making dinner.

**Answer:**  
mean while

**Question 5.**  
I can play quite a few instruments ....., the flute, the guitar and piano.

**Answer:**  
for instance

**Question 6.**  
The store was out of chocolate chips; ..... they would need to make different type of cookies.

**Answer:**  
more over

**Question 7.**  
The stores are open daily ..... Sundays.

**Answer:**  
except

**Question 8.**  
I'll stay ..... you need me.

**Answer:**  
as long as

**Question 9.**  
This detergent is highly concentrated and ..... you will need to dilute.

**Answer:**  
therefore

**Question 10.**

It was the thing he prized .....

**Answer:**

thus

**Active voice and Passive Voice**

**Active Voice:** The subject is the doer of the action.

**Passive Voice:** The subject is not the doer of the action.

**B. Convert the following active sentences into passive sentences by supplying an appropriate passive verb form.**

**Question 1.**

She will not recognise us. / We ..... by her.

- (a) will not recognise
- (b) will not being recognised
- (c) will not be recognised

**Answer:**

- (c) will not be recognised

**Question 2.**

They didn't invite me. but I went that way. / I ..... but I went that way.

- (a) wasn't invited
- (b) wasn't being invited
- (c) wasn't inviting

**Answer:**

- (b) wasn't being invited

**Question 3.**

They broke up the table for firewood. / The table ..... up for firewood.

- (a) broke
- (b) had broken
- (c) was broken

**Answer:**

- (c) was broken

**Question 4.**

She has won the first prize. / The first prize ..... by her.

- (a) has won
- (b) has been won
- (c) had been won

**Answer:**

- (b) has been won

**Question 5.**

A friend of mine is repairing the car. / The car ..... by a friend of mine.

- (a) is repairing
- (b) is repaired
- (c) is being repaired

**Answer:**

- (c) is being repaired

**Question 6.**

Begin the work tomorrow. / Let the work ..... tomorrow.

- (a) be begun
- (b) begin
- (c) is beginning

**Answer:**

- (a) be begun

**Question 7.**

They speak English in New Zealand. / English ..... in New Zealand.

- (a) is speaking
- (b) is spoken
- (c) is being spoken

**Answer:**

- (b) is spoken

**Question 8.**

His attitude shocked me. / I ..... by his attitude.

- (a) had shocked

- (b) had been shocked
- (c) was shocked

**Answer:**

- (c) was shocked

**Question 9.**

She had already sent the parcel. / The parcel ..... by her.

- (a) has already been sent
- (b) had already been sent
- (c) was already sent

**Answer:**

- (b) had already been sent

**Question 10.**

Her silence worries me. / I ..... her silence.

- (a) am worrying by
- (b) am worried by
- (c) have worried by

**Answer:**

- (b) am worried by

**C. Match the following Active Voice sentences with Passive Voice.**

	Active Voice	Passive Voice
1.	I will never forget this experience	A novel has been written by her.
2.	Mother made a cake yesterday.	The deer was being chased by the tiger.
3.	Have you finished the report?	A cake was made by mother yesterday.
4.	The tiger was chasing the deer.	Has the report been finished by you?
5.	She has written a novel.	This experience will never be forgotten by me.

**Answer:**

S.No.	Active Voice	Passive Voice
1	I will never forget this experience.	This experience will never be forgotten by me.
2	Mother made a cake yesterday.	A cake was made by mother yesterday.
3	Have you finished the report?	Has the report been finished by you?
4	The tiger was chasing the deer.	The deer was being chased by the tiger.
5	She has written a novel.	A novel has been written by her.

**D. Change the following into passive voice.**

**Question 1.**

Stanley will inform you later.

**Answer:**

You will be informed by Stanley later.

**Question 2.**

People speak Portuguese in Brazil.

**Answer:**

Portuguese is spoken by people in Brazil.

**Question 3.**

My grandfather built this house in 1943.

**Answer:**

This house was built in 1943 by my grandfather.

**Question 4.**

Do not hurt the animals.

**Answer:**

Let the animals not be hurt.

**Question 5.**

You must not drop litter in the streets.

**Answer:**

Litter must not be dropped in the streets.

**Question 6.**

Carry it home.

**Answer:**

You are asked to carry it home.

**Question 7.**

They are decorating the wall.

**Answer:**

The wall is being decorated by them.

**Question 8.**

He has already mended the TV set.

**Answer:**

The TV set has already been mended by him.

## **E. Project**

Make a scrapbook of 'Famous Biographies' by collecting at least five biographies of famous scientists, mathematicians, inventors, artists etc., of your choice. You may also collect the pictures related to their achievements, inventions etc.



Marie Curie



Jonas Salk



M.S. Subbalakshmi



Stephen Hawking

## Poem – 6

### The Comet

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**B. Read the following lines and answer the questions.**

**1. Rampaging through the heavens  
Never stopping day or night.**

**Question (a).**

How does the comet travel?

**Answer:**

The comet travels through the sky, making a lot of noise and causing damage.

**Question (b).**

Which word could you replace 'rampaging' with?

**Answer:**

Speeding

**2. Faster than a cheetah  
with a tail that's miles long.**

**Question (a).**

Why is the comet compared to a cheetah?

**Answer:**

Comet is compared with the cheetah due to its speed.

**Question (b).**

Whose tail is compared here?

**Answer:**

The tail of the comet is compared here.

**3. With shockwave reaching to the ground  
causing the land to quake.**

**Question (a).**

What is reaching the ground?

**Answer:**

The shockwave produced by the comet reaches the ground.

**Question (b).**

What is causing the land to quake?

**Answer:**

The shockwave is causing the land to quake.

**4. In the dust they leave behind could have started life  
on the earth which resulted in mankind**

**Question (a).**

What does the word 'they' refer to?

**Answer:**

The word 'They' refers to the comets.

**Question (b).**

According to scientists how did life start on earth?

**Answer:**

According to scientists, life started on the earth by the dust left behind by these comets.

**5. But I know no better spectacle  
Then a comet in full flight**

**Question (a).**

Who does 'T' refer to?

**Answer:**

T refers to the poet.

**Question (b).**

What is the best spectacle mentioned in the above lines?

**Answer:**

The flight of the comet is the best spectacle mentioned in the above lines.

**C. Complete the summary by filling in the given space with suitable words phrases given below.**

The poet describes a moving comet which speeds through the heavens and never takes a break by (1)..... or night. When a comet is in full flight, it gives a (2)..... which can never be compared to anything else for a lifetime. The comet is compared to (5)..... for its speed and a mountain as it is (3)..... The (4)..... melts which cause a vapour from the force and leaves behind (6)..... as it travels on its way. If it comes very close to the atmosphere, it causes a shake which in turn produces (7)..... that reach the Earth's surface. According to the (8)..... the comets leave behind chemicals in the form of dust which resulted in the (9)..... and mankind came into existence. But the poet is not sure whether this principle is true or not but he knows for sure that whatever the truth may be, the sight of the comet in full flight is the best (10).....

**Answer:**

1. day
2. spectacular scene
3. a cheetah
4. powerful and strong
5. outer ice
6. a trail
7. a shock wave
8. Scientist
9. emerging of life on earth
10. spectacular

**D. Poem Appreciation**

If one should come too close to the earth  
The atmosphere will shake,  
With shock wave reaching to the ground Causing the land to quake

**Question 1.**

Pick out the rhyming words.

**Answer:**

Shake and quake are rhyming words.

**Question 2.**

Mention the rhyme scheme of the stanza.

**Answer:**

The rhyme scheme is a b c b.

**Question 3.**

When you read the poem aloud, you can feel/hear a rhythm. What according to you gives rhythm to the poem- the rhymes or the words in a line. Support your answer with examples from the poem?

**Answer:**

When I read the poem aloud, I feel a musical rhythm and feel a regular pattern of sound. This is due to the number of syllables in lines 1 and 3 which is similar to the number of syllables in lines 2 and 4.

The consistency of the verses in each stanza is well managed and controlled. The first and third lines do not rhyme at all. If we consider the poem stanza wise, the lines are metered uniformly. The rhyme scheme of each stanza is abcb. The poet has used simple language to make the readers to enjoy the poem meaningfully.

**D. Answer the following questions in about 80 -100 words.**

**Question 1.**

Narrate how the poet describes the comet.

**Answer:**

Title: The Comet (Poem)

Author: Norman Littleford (Poet)

Characters: Poet and Comet.

Theme: Comets are like libraries storing the record of our formation in tiny particles.

The poet Norman Littleford wonders at the beautiful spectacle of the comet in the sky. The comet is moving through the heavens at a great speed. It has never stopped day or night. When a comet is a complete flight, it gives a

spectacular scene. The poet says that it can never be compared with anything else for a lifetime. He says that a comet runs faster than a cheetah.

To him, a comet is more powerful and stronger than a mountain. The outer ice melts causing a vapour from its force. As it travels on its way, it leaves behind a trail. If the comet comes very close to the atmosphere, it can cause a shake which in turn produces a shockwave that reaches the Earth's surface.

The scientists are of the opinion that the comets leave behind chemicals in the form of dust that has resulted in the emerging of life on earth and thus the mankind has come into existence. But it is not very sure whether this concept is true or not. However, he knows for certain that whatever the truth may be, the appearance of the comet in full flight is the best spectacular in the sky. "A comet is an incredible and incomparable spectacle".

**(OR)**

Norman Littleford describes a moving comet in his poem. It speeds through, the heavens never stopping day or night. In its full flight, the comet gives a spectacle and it has no comparison to anything else. It is compared to a cheetah for its speed. It is stronger and more powerful than a mountain.

The outer ice melts causing a vapour and leaving a trail as it travels. Coming close to the atmosphere it causes a shake with shock waves resulting from an earthquake. The scientists say that the comets leave behind chemicals as dust and it produced life on earth. But the poet is doubtful if it is true or not. However, he is certain that the comet in full flight is the best spectacular scene.

"A Comet is an incomparable spectacle.

### **Question 2.**

Give a detailed account of various effects caused by the comet to the earth.

### **Answer:**

Comets are cosmic snowballs of frozen gases, rock and dust that orbit the sun. The dust and gases form a tail that stretches away from the sun for millions of miles. The poet describes the comet that travels at a great speed. He says that it is faster than a cheetah and stronger as a mountain. He imagines that the comet is very large in size and it can shake the earth if it comes very close to it.

He thinks that the shake can cause shockwaves and it can result in an earthquake. The comets leave behind the chemicals in the form of dust. The poet says that life could have started then on the earth. He also affirms that it might have resulted in mankind. However, the poet is not very sure whether this is true or not. But he admires that there can be no better spectacle than a comet in full flight.

“Amidst all dangers, a comet is spectacular”.

**(OR)**

A comet is a ball of mostly ice that moves around in outer space. It travels at great speed on its way. The comet is big in size and very powerful and strong. If the comet comes very close to the earth, the atmosphere will shake. The shockwave reaches the ground.

It certainly causes the land to quake. The comet leaves behind the chemicals in the form of dust. Then life started on the earth. And it resulted in mankind. The poet is not sure if this is true or not. But he is confident that there is no better spectacular scene than a comet in full flight.

## **F. Listening**

**Listen to the passage on ‘Comet’ and fill in the blanks with the correct answer.**

### **Question 1.**

Comets are believed to be remnants of the materials created by the

- (a) Moon
- (b) Sun
- (c) Star
- (d) Asteroids

**Answer:**

- (b) Sun

### **Question 2.**

Comets are mostly made of

- (a) dust
- (b) ice
- (c) sand
- (d) snow

**Answer:**

(b) ice

**Question 3.**

The can be seen in the night sky as bright, quickly-moving light.

(a) head

(b) star

(c) tail

(d) wings

**Answer:**

(c) tail

**Question 4.**

Comets orbit at the very edge of the galaxy, past the

(a) Earth

(b) Neptune

(c) Pluto

(d) Saturn

**Answer:**

(c) pluto

**Question 5.**

State whether the statement is true or false.

The melting process causes bits of dust and debris to trail behind the comet.

**Answer:**

True

## **G. Speaking**

Imagine you are interviewing an astronaut about his/her experiences in space. Select a partner to be an astronaut and present the interview as a role-play in front of the class.

“Interviewing an astronaut”

You: We are lucky to welcome you, sir. I would like to ask you a few questions.

Astronaut: Thank you. It'll be my pleasure to answer your questions.

You: What is the view like from space?

Astronaut: The first time you look out the window once you're in space, I think the reaction of every astronaut is the same; first there's a huge gap. It goes 'AW, Vow!' You just can't believe what you're looking at. I was amazed at the blackness of space. It was a darker, richer colour than I had ever seen before.

You: What are the best views of Earth from space?

Astronaut: I always loved passing over Egypt. To see the Nile River the bright green pathway cutting through the centre of Egypt was just spectacular. You see the blue water of the Mediterranean and the brown desert areas. This contrast between, green and bright blue was just breathtaking and, because I had been there on Earth, it was extra special for me to see from space.

You: What's the in-flight food and entertainment like on a spacecraft?

Astronaut: The food is not good, but it is not horrible. I think the most popular entertainment for astronauts is looking out the window. I love sitting near the window and just watching the Earth go by.

You: Do you think space is the future of travel?

Astronaut: Space tourism is definitely coming and we're very close to it. I think there's going to be a long line of people who want to get in on that. The more people that can get up to space to look back at planet Earth, I think the better off we're all going to be. I wanted everybody to see the perspective that I just had.

## Writing

**H. Imagine that you and your friend get a chance to visit another planet there you befriend an alien who takes you around the planet. After reaching the earth, write a letter thanking him for all the help he did.**

**Answer:**

Dear alien,

We landed on the earth safely. It was an amazing experience to travel in space. My friend and I were very fortunate to be a friend of yours on the strange planet. We felt at home after meeting on the new planet. But for your help, we could not have made our visit a success. We are very thankful to you for your friendship and entertainment.

We have enough confidence to make another visit there as you are there to host us. We are heartened to feel that we are not alone in the universe. We are sure that you are friendly beings, as we have observed you all. We invite you to visit us. Please come and live among us and share your wisdom with us. We do really need it. If you come to earth, I am sure that you would like it. On behalf of all humanity, I welcome you to Earth. Looking forward to your early arrival.

Yours Sincerely,  
Jegan Kumar

## Chapter – 6 (Supplementary)

### Mother's Voice

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#### A. Choose the best answer.

##### Question 1.

Mother was excited because .....

- (a) her son would be home in the spring
- (b) he son was coming back to earth
- (c) it was her first visit to the moon
- (d) her son was going to another galaxy

##### Answer:

- (c) it was her first visit to the moon

**Question 2.**

On weekdays, as Mother went about the chores .....

- (a) she constantly thought of her son
- (b) she was always tired
- (c) her singing would be soft and almost inaudible
- (d) her singing was muted and a little sad

**Answer:**

- (d) her singing was muted and a little sad

**Question 3.**

..... occupies more than a hundred square kilometers on the moon.

- (a) Selenopolis
- (b) Metropolis
- (c) Astrodrome
- (d) Orchards

**Answer:**

- (a) Selenopolis

**Question 4.**

The Community of Nations Square is where people .....

- (a) live on the moon
- (b) work on the moon
- (c) walk on the moon
- (d) of different nationalities come after work

**Answer:**

- (d) of different nationalities come after work

**Question 5.**

They are planning an expedition to a neighbouring .....

- (a) galaxy
- (b) country
- (c) planet
- (d) star

**Answer:**

- (a) galaxy

**Question 6.**

The mother was not able to understand why people wanted to leave the moon because .....

- (a) it was better to remain as a part of solar-system
- (b) it was better to remain on the earth
- (c) it was not possible to come back
- (d) it was a place to enjoy life

**Answer:**

- (d) it was a place to enjoy life

**B. Identify the characters or speaker of the following lines.**

- 1. It's so easy to walk here, son!
- 2. They're planning an expedition to a neighboring galaxy.
- 3. Why should people go off into the unknown?
- 4. I don't know when we'll see each other again.
- 5. Operator on duty, ..... report to the office.

**Answers:**

- 1. Mother
- 2. Son
- 3. Mother
- 4. Son
- 5. A voice from the loud Speaker

**C. Answer the following question in about 100 – 120 words.****Question 1.**

Write a paragraph listing all the sentimental and the scientific reasons given by the mother against the expedition to the neighbouring galaxy?

**Answer:**

The mother's sentimental and scientific reasons against the expedition to the neighboring galaxies are that a moon is a beautiful place, easy to walk on. There are lots of fruits on earth. The river Dnieper is better to swim. She asked her son why people should go off into the unknown and ask for trouble. She also suggested that it is advisable for people to settle on the moon first and then on the planets in the solar system.

She philosophized that the moon has the same gravitational field as their native earth, under the native sun. She sentimentally invited her son to come in the autumn for the apples, pears, and watermelons. She persuaded him to come to their deepened pond to fish and indicated that the pond was now full of fish.

**(OR)**

The astronauts' mother admired the moonscape. She wondered that the moon was a beautiful place. But she thought of her orchards to bloom and yield fruits. She was excited to see the enormous lily – shaped tent over a crater. Though it might be an exotic experience to swim on the moon she prefers the river Deeper on the Earth. She was against the expedition to a neighbouring galaxy.

She asked why people should go off into unknown places. She did not want them to invite trouble. The astronauts were interested in more expeditions. Mother wanted the people to settle properly on the moon first, and then on the planets in the solar system before going further.

According to her life on Earth was a miracle. She wanted him to return to the Earth atleast in Autumn. But he had made all arrangements to go to another planet. The astronaut could not help it even though he would not hear his mother's voice.

'There's something cool about being involved in new missions to other planets'.

**D. Think and answer.**

**"The explorer in this story is travelling to another galaxy. The final destination is an unknown planet in another galaxy. The travel will take many years'. What qualities and life skills do you think an explorer-like him must possess? Why? Do you have any of these skills and qualities? Explain.**

**Answer:**

The qualities and life skills an explorer-like him need to possess:  
Regardless of one's position, an astronaut needs certain qualities for the selection process and space travel.

**Intelligence:**

Astronauts need above-average intelligence.

**Adaptability:**

Astronauts have many responsibilities in space.

**Education:**

The basic requirement is a bachelor's degree in engineering, biological science,

physical science or mathematics followed by three years of professional experience (or 100 hours of pilot – in – command time in jet aircraft) candidate also must pass NASA's astronaut physical examination.

**Physical requirements:**

- Distant visual acuity: 20/100 or better uncorrected, correctable to 20/20 each eye.
- Blood Pressure: 140/90 measure in a sitting position.
- Height between 62 and 75 inches. (5' 2" and 6' 3")

**Mental Endurance:**

An astronaut has to undergo a psychological evaluation to determine the fitness to fly on a mission of NASA or ISRO.

**About myself:**

Regarding intelligence, I am an average student at present. I shall maintain it in my higher studies too to prove to be a candidate with a high IQ. I am good at maths and physical requirements science, subjects including computer science my blood pressure is normal.

- I have a 20/20 normal eye. sight in both eyes.
- I may have a normal height of 5 feet 5 inches when turn out to be a youth.

**Mental Endurance:**

I possess mental endurance. I have never been short-tempered. I have the adaptability and the responsibilities to perform the allotted duties.

**E. Based on the understanding of the story, discuss in groups, and make a note of the following settings.**

**Setting:**

The story of a young astronaut who wants to hear his mother's voice which is still young and ringing. The astronaut and his mother are on the moon. She has gone there for the first time. She admires the moonscape. However, she wants to live on the earth. She is also against people who are interested in the exploration of neighbouring planets.

The astronaut is ready to leave for another planet. It may take many years to reach the destination. The mother is worried that her son will lose his friends and relatives. Characters A young astronaut The mother of the astronaut People who are on the moon.

**Plot:**

The moon is the plot. The astronaut and his mother are on the moon. She is astonished to see strange space ships and people planning to go on an expedition to the neighbouring galaxy. The long tunnels and enormous lily-shaped tent over a center with a diameter of one kilometer surprise the mother. She admires the moonscape. She also praises the wonderful life on the earth.

**Conclusion:**

The mother is excited to see the strange things as the moon. She is also surprised to see the people. who are busy to leave for another planet. The mother wonders why the people are planning to other planets ever before setting on the moon.

She pleads with her son to visit the earth during Autumn. But the astronaut is quite sure that he cannot see his mother again. He has got the command to leave for another planet. The mother who longs to see her son will have only a disappointment. It will take a long number of years for the mother and her son to meet again.