

## Chapter 1

### AMAZING WORLD - MARINE LIFE AND INSECTS

Page 59–60

- |                |                         |
|----------------|-------------------------|
| 1. a. Ganga    | 5. c. Beetles           |
| 2. b. Mammals  | 6. c. Luciferin         |
| 3. c. Carapace | 7. a. Abdomen           |
| 4. a. Smallest | 8. b. Hydrogen peroxide |

#### Project Work

1. Bees are flying insects that help in pollination. There are almost twenty thousand known species of bees. Honey bees produce natural honey for their own use and store it in their hives. As they fly from flower to flower they collect nectar and convert it to delicious honey. Bees live in colonies and divide their work. They are considered to be efficient team players.

Ants are insects who work hard. They are social creatures. They are organised and build their own societies where they function as units; however, they don't provide humans with natural foods like honey.

2. The US Navy has trained dolphins (bottle nosed) to detect mine locations and recover objects. They also assist in finding lost swimmers. Dolphins also ride along the side of ships to preserve their energy.
3. Sea lions (Californian sea lion) are also used to recover objects, mine detection and recovery and ship and harbour protection.

## Chapter 2

### DISAPPEARING GREENS

Page 60–61

- |                    |                   |
|--------------------|-------------------|
| 1. b. Sakura       | 5. b. Kiwi        |
| 2. b. Kenya        | 6. b. Angiosperms |
| 3. b. Ginseng      | 7. c. Kola nut    |
| 4. d. Chhattisgarh | 8. a. Zucchini    |

#### Project Work

Many cultures and people worldwide celebrate harvest festivals. Harvest festivals are celebrated all over India. Some of the popular ones in India are

- Pongal, Tamil Nadu
- Vishu and Onam, Kerala
- Lohri, Punjab and North India
- Bihu, Assam
- Gudi Padwa, Maharashtra, Karnataka
- Vasant Panchami, Gujarat, West Bengal
- Holi, most of North and West India

## Chapter 3

### ENERGY WITHOUT HARMING THE ENVIRONMENT

Page 61–62

- |                    |                  |
|--------------------|------------------|
| 1. c. France       | 5. b. mechanical |
| 2. c. Beijing      | 6. c. Brazil     |
| 3. c. Natural gas  | 7. c. India      |
| 4. b. windless day | 8. c. Carbon     |

#### Project Work

Make a solar cooker with help from You Tube

A lot of research is being carried out around the world to efficiently and ecologically store energy. Some of the promising research as of now is

- Battery storage for residential rooftop solar panels in Germany
- Ext generation electric vehicle batteries in the United States
- Supergen Energy Storage Hub in the UK.

## Chapter 4

### WONDERS - NATURAL AND MAN-MADE

Page 62–63

- |                       |                    |
|-----------------------|--------------------|
| 1. b. Banni           | 5. b. Odisha       |
| 2. b. Elephant        | 6. b. Mohenjo-daro |
| 3. b. Mesozoic        | 7. b. Bijapur      |
| 4. c. Lal Chand Ustad | 8. b. Ellora       |

## Project Work

### Magnetic Hill, Ladakh

There is a magnetic hill in India which is located in Leh, Ladakh. This area and its surrounding slopes create an optical illusion such that vehicles on the hill appear to be moving uphill, in defiance of gravity, although they are actually moving downhill.

### Kailash Temple, Ellora

The Kailash Temple is a part of the Ellora caves complex. This huge, ancient Hindu rock cut temple is a megalith that has been carved from a single rock. It is an architectural and sculptural marvel.

It is said to have been constructed in the 8th century by King Krishna 1 of the Rashtrakuta dynasty in 756-773 CE. It is cave number 16 and is a part of the 32 cave temples and monasteries that form the Ellora Temple Complex.

### Ranakpur Jain Temple, Rajasthan

The Ranakpur Jain Temple, dedicated to Thirthankara Rishabhanatha, is in Rajasthan. It was built by Dharna Shah, a local Jain businessperson, following a vision, where he was instructed to do so. It was built under the patronage of Rana Khumba.

It is made of light coloured marble. It has 1444 pillars that are exquisitely carved and each one is different from the other. The entire complex, with its intrinsic architecture and beautiful idols, has been well maintained as renovations have been carried out from time to time.

### Marble Rocks, Jabalpur

The Marble Rocks are a natural gorge that are situated along the path of the Narmada River in Madhya Pradesh near Jabalpur.

These beautiful white marble rocks are rich in magnesium and almost as hard as soapstone. This makes it easy to carve them with just a scalpel. This area also has brown and blue coloured marble.

Marble Rocks, Jabalpur are scenic and have formed the backdrop for popular movies. There are many tourist attractions including cable cars, boat rides and small shops filled with local arts and crafts

## Chapter 5

### EXPLORING BEYOND OUR EARTH

#### Page 63–64

- |                     |                             |
|---------------------|-----------------------------|
| 1. b. Chandrayaan 1 | 5. c. European Space Agency |
| 2. a. Sputnik       | 6. c. Comets                |
| 3. b. Vikings       | 7. b. Neptune               |
| 4. b. Pluto         | 8. b. Uranus                |

#### Project Work

##### Constellations in the sky

A constellation is a group of stars that forms a specific shape made with imaginary lines. Humans have made many of these constellations in the shape of animals, mythological gods, mythological creatures and mythological figures.

Constellations in the sky vary in shape and size. In 1928, 88 modern constellations have been recognised by the International Astronomical Union (IAU). Their brightness varies and the view of the sky at night varies, depending on the earth's position around the sun.

##### Conditions needed for life to evolve

Some scientists and researchers say that the following are needed for life to evolve on our planet earth.

- Water
- Energy
- Time
- Recycling

These are the main factors necessary for life as we know it; however as research continues more factors and conditions are emerging which may add to the conditions needed for life to evolve.

##### Kuiper Belt and Oort Cloud

The Kuiper Belt is a disc shaped region beyond the orbit of Neptune. It contains many icy bodies. Some short period comets also emerge from this region. It is estimated that there are around 35,000 objects in the Kuiper Belt.

The Oort Cloud is a theoretical cloud of small icy objects and has been named after the Dutch astronomer Jan Oort. The Oort cloud is divided into two regions: an inner disc shaped inner Oort cloud and a spherical shaped outer Oort Cloud. It could be the source of long period comets.

#### The Wow Signal

On August 15, 1977 the Big Ear radio telescope, University of Chicago, United States, received a strong narrow band radio signal. It seemed to come from the Sagittarius constellation and indicated it was of extraterrestrial origin.

An astronomer Jerry R Ehman was the first to notice an anomaly in the signal and wrote Wow! on the side of the computer printout of this signal. This is how the Wow signal originated.

The Wow signal has been considered as one of the strongest indications of extraterrestrial life; however, Professor Antonio Paris, of St. Petersburg College, explained that the signals were from a pair of comets.

Although the Wow signal is not an indicator of extraterrestrial origin, SETI (Search for Extraterrestrial Intelligence Institute uses many advanced telescopes and other equipment in its quest to find intelligent life elsewhere in our vast cosmos.

## Chapter 6

### INDIAN ART AND SCULPTURE

#### Page 64–65

- |                      |               |
|----------------------|---------------|
| 1. c. Nalanda        | 5. b. Bhakti  |
| 2. b. Shankaracharya | 6. b. Hampi   |
| 3. c. Chola          | 7. c. Dilwara |
| 4. d. Gupta          | 8. b. Nalanda |

#### Project Work

The Bhakti movement is said to have originated in South India and then moved upwards encompassing the country. It pointed out the silliness of the caste system. It believes in one personal God. It believes

that both men and women are equal in God's sight. The famous personalities of the Bhakti movement are

- Alvar Saints
- Nayanar Saints
- Ramanuja
- Ramananda
- Kabir
- Nanak
- Chaitanya Maha Prabhu
- Vallabhacharya
- Dadu Dayal
- Mira Bai
- Tulsidas
- Surdas
- Maluk Das
- Sundardas
- Bhirban

The Bhakti movement by the saints and sadhus is indeed a superb blessing for Indians. It needs to spread throughout the country to bring peace, harmony and goodwill among humans.

## Chapter 7

### INDIAN DANCE TO MUSIC

#### Page 65–66

- |                 |                    |
|-----------------|--------------------|
| 1. c. Kuchipudi | 5. b. Vasudev      |
| 2. b. Bhangra   | 6. b. Vijayanagara |
| 3. b. Hasya     | 7. a. Tandav       |
| 4. b. Khayal    | 8. d. Bharatnatyam |

#### Project Work

##### The Carnatic Music Trinity

Three outstanding music composers-musicians of the 18th century are called the Carnatic Music Trinity. They are Tyagaraja, Muthuswami Dikshitar and Syama Sastri. Their compositions are distinct and they introduced innovations in the same raga. Incidentally, all three of them were born in Thiruvavur, Tamil Nadu.

Tyagaraja and Syama Sastri mainly composed in Telugu, while Muthuswami Dikshitar mainly compose in Sanskrit. The uniqueness of their compositions still

gladdens the hearts of music lovers.

Some of the famous compositions by Tyagaraja

- Ghana Raga Pancharatnam
- Thiruvotriyur Pancharatnam
- Kovur Pancharatnam
- Shriranga Pancharatnam
- Lalgudi Pancharatnam

Some of the famous compositions by Syama Sastri

- Navaratnamalika
- Ratnatrayam
- Varanam in Chintamani raga
- Varanam in Kalagada

Some of the famous compositions by Muthuswami Dikshitar

- Mahaganapati Kritis
- Guruguha Kritis
- Kamalamba Navavarma Kritis
- Navagraha Kritis

The Carnatic Trinity have composed hundreds of compositions for almost all the major temples and deities in Southern India.

## Chapter 8

### THE ENTERTAINERS

#### Page 66–67

- |               |                       |
|---------------|-----------------------|
| 1. b. Pixar   | 5. b. Mark Zuckerberg |
| 2. c. Mysore  | 6. b. Gnorm Gnat      |
| 3. c. Marathi | 7. b. Elvis Presley   |
| 4. c. Brown   | 8. a. John Denver     |

#### Project Work

Steve Jobs

Steve Jobs was born in San Francisco on February 24, 1955. He was the cofounder, CEO and chairman of Apple Inc. In 1976 he started Apple with Steve Wozniak. He was the designer and marketing of this very successful brand of computers.

He worked with Apple Inc., left the company, bought Pixar Animation Studios and some years later rejoined Apple. He has led an eventful life and

is known for the flair with which he introduced innovative and unique products from Apple like the iPod, the iPad and the iMac.

He passed away on October 5, 2011.

Satya Nadella

SatyaNadella was born on August 19, 1967 in Hyderabad, India. He studied at the Manipal Institute of Technology, Mangalore University, the University of Wisconsin, Milwaukee and the University of Chicago.

He worked with Sun Microsystems before joining Microsoft. He became the CEO of Microsoft on February 4, 2015 succeeding Steve Ballmer. He is one of the most successful engineers of Indian origin.

Mark Zuckerberg

Mark Zuckerberg was born on May 14, 1984. This American computer programmer and entrepreneur is widely recognised as the face behind Facebook, one of the most popular social networking sites worldwide.

Mark Zuckerberg is a cofounder, the current chairman and the CEO of Facebook. Facebook was first launched as a social network in the Harvard campus on February 4, 2004 by Zuckerberg from his dormitory room. Its popularity was such that it soon reached other campuses and it now popular all over the world with all age groups.

Bill Gates

William Henry Gates III or Bill Gates as he is popularly known as was born on October 28, 1955. In 1975 he, along with Paul Allen, founded Microsoft Corporation.

Bill Gates is one of the pioneers of the Personal Computers PC revolution and Windows by Microsoft is used worldwide. In 2000 he became a philanthropist by establishing the Bill & Melinda Gates Foundation which is the world's wealthiest charitable foundation.

He has written two books: The Road Ahead with Nathan Myhrvold and Peter Rinearson and Business @ the Speed of Thought.

## Chapter 9

### BOOKS OF FAME

#### Page 67–68

1. c. Kolkata
2. b. Belgian
3. d. Fox terrier
4. b. Ann Sewell
5. d. Murder at the Vicarage
6. a. Italian songstress
7. b. Pickwick Papers
8. a. Daniel Defoe

#### Project Work

Literature has changed our way of thinking. It can represent not only our world to us but can also show us how to change it or how to adapt to it.

Some books highlight the ills and wrongdoings that take place in society; thus bringing about a change for better, when governments or NGOS or people work together to right these wrongs.

Books showcase the culture, the history and the geography of various countries. By reading about their diverse cultures, we can make efforts to understand people who are different from us and coexist peacefully and happily.

Many books can affect us. Biographies, autobiographies, fiction, scientific books, whichever book we may read, they will affect us whether it is consciously or subconsciously or unconsciously.

Charles Dickens characters have had both a general and specific impact on society. All his characters focussed on the state of society and the impact of a few among the many characters he used for reform are mentioned below.

His character Joe, in the Pickwick Papers, is fat and sleepy. Dickens descriptions of this character's symptoms etc lead to the advent of a new field of study in medicine i.e. sleep disorders.

In The Life and Adventures of Nicholas Nickleby, he highlights the poor treatment of children in schools where anyone could become a headmaster and how poverty and sub standard education existed without checks and balances.

In Oliver Twist, he highlights the exploitation of children and how they are not just used as a cheap labour force but are also mistreated and made to work under abject conditions.

He was a social reformer, who not only brought about awareness but also helped develop homeless shelters for women and the first paediatric hospital in the UK. He also helped in the development of orthopaedics.

## Chapter 10

### SPORTS PLAYED BY VARIOUS NATIONS

#### Page 68–69

1. b. Hamilton
2. c. Madrid
3. c. South Africa, England, Australia
4. c. China
5. b. England
6. b. 1975
7. c. Canada
8. b. Rawalpindi Express

#### Project Work

Polo

Origin

Polo originated in Persia.

Rules

Players score goals by driving a small wooden or white plastic ball into their opponent's goal, using a long mallet, while riding on horseback.

Best players

1. Adolfo Cambiaso
2. Carlos Gracida
3. Facundo Sola

Rugby

Origin

Rugby originated in England.

Rules

Rugby is played by two teams with 15 players. You have to use the ball to score points. You can kick it, pass it, run with it to score.

Best players

1. Paul O'Connell
2. Shane Williams
3. Johnny Wilkinson

Hockey

Origin

Field hockey originated in England.

Rules

Each team plays with eleven players including the goalie. Players use sticks to hit a round plastic ball into the goal to score points. The goalie tries to prevent the ball from reaching into the goal.

Best players

1. Dhyan Chand
2. Ric Charlesworth
3. Luciana Aymar

## Chapter 11

### STORY OF EUROPE

#### Page 69–70

- |                   |                       |
|-------------------|-----------------------|
| 1. d. Bunol       | 5. b. The Last Supper |
| 2. d. Pilsen      | 6. b. Zeus            |
| 3. b. Scandinavia | 7. b. Johanna Spyri   |
| 4. b. Beethoven   | 8. d. Seine           |

#### Project Work

Louvre Museum Paris

The Louvre Museum in Paris, France is the world's largest museum. It has about 38,000 objects on display, at any given time, dating from prehistoric times to the twenty first century.

It has over 50,000 pieces from the Nile civilisation that flourished along modern day Egypt. It also has the 18th century BC mural of the Investiture of Zimrimlim. The 25th century BC Statue of Ebih II from the ancient city of Mari (Mesopotamia) is also on display at the museum.

The Louvre museum also has many famous works of art including Mona Lisa, which is perhaps the most recognised painting in the world.

## Chapter 12

### NON-GOVERNMENT ORGANISATIONS

#### Page 70–71

- |                  |                      |
|------------------|----------------------|
| 1. c. Pakistan   | 5. b. HelpAge India  |
| 2. b. Alaska     | 6. c. Wildlife India |
| 3. c. Kolkata    | 7. b. J H Dunant     |
| 4. c. Greenpeace | 8. b. Switzerland    |

#### Project Work

Some of the suggested NGOs for students

- |                  |              |
|------------------|--------------|
| 1. HelpAge India | 3. Red Cross |
| 2. Blue Cross    | 4. PETA      |

## Chapter 13

### INDIA – FUNCTIONING AT THE ROOTS

#### Page 71–72

- |                             |                     |
|-----------------------------|---------------------|
| 1. b. five                  | 5. b. five          |
| 2. a. Mayor                 | 6. b. Gram Swarajya |
| 3. b. Greek                 | 7. b. 21            |
| 4. b. Municipal Corporation | 8. b. Collector     |

#### Project Work

The city of Chennai is governed by the Greater Chennai Corporation. It was earlier called the Corporation of Madras. It is the oldest municipal body among those in the Commonwealth excluding Great Britain. The oldest corporation in the world is London and the second oldest is Chennai!

It is headed by the mayor, who is assisted by 200 councillors representing 200 wards in Chennai. It was formed in 1688. It has three regions: North Chennai, Central Chennai and South Chennai. Each region has 5 zones and there are totally 15 zones.

The Corporation maintains the road lights, the street lights and the flyovers. There is also a local park and a health centre nearby. The schools run by the corporation are a few kilometres away.