


ARTIFICIAL INTELLIGENCE



INTRODUCTION

When you ask 'OK Google!  Do I need an umbrella tomorrow'

Or "Siri !  Can you tell me about photosynthesis " Or "Alexa !

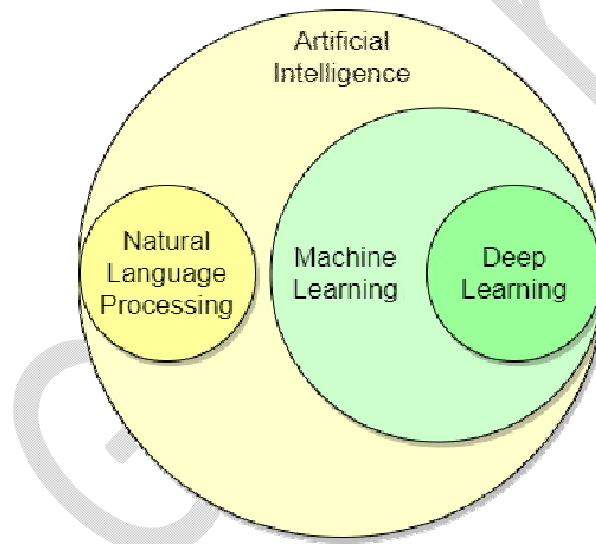
 Play a song for me " , the machine follows accordingly. Computers playing chess, self- driving cars, Netflix's popular content-on-demand services are the major technical advancement now- a- days. In all these examples, machines are capable of thinking and learning themselves by some tools comprising of some programming instruction. We are in constant touch with AI or Artificial Intelligence in our day to day life. From SIRI to self driving cars, ALEXA, AI is developing rapidly.

" Artificial means man made and Intelligence means the ability to acquire and apply knowledge and skills. " AI is a major branch of computer science programming to imitate human thought and action by analyzing data and surroundings AI is capable of solving or anticipating problems and self teaching to adapt to a variety of tasks. AI has a major contribution in the field of robotics which is the study of robots. **Sophia** is a Hong Kong based social humanoid robot that uses voice recognition and facial recognition skills.

HOW DOES AI WORK ?

Artificial intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks. Most AI examples that we hear about today –from chess-playing computers to self-driving cars – rely heavily on deep learning and natural language processing. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data.

AI is a broad field of study that includes many theories, methods and technologies



Artificial Intelligence History

The term artificial intelligence was coined in 1956, but AI has become more popular today thanks to increased data volumes, advanced algorithms, and improvements in computing power and storage.

Early AI research in the 1950s explored topics like problem solving and symbolic methods. In the 1960s, the US Department of Defense took interest in this type of work and began training computers to mimic basic human reasoning. For example, the Defense Advanced Research Projects Agency (DARPA) completed street mapping projects in the 1970s. And DARPA

produced intelligent personal assistants in 2003, long before Siri, Alexa were household names.

This early work paved the way for the automation and formal reasoning that we see in computers today, including decision support systems and smart search systems that can be designed to complement and augment human abilities.

Now we can conclude that AI is

- An intelligent entity created by humans.
- Capable of performing tasks intelligently without being explicitly instructed.
- Capable of thinking and acting rationally and humanely.

APPLICATIONS OF AI

1) Artificial intelligence supported conceptual **design of aircraft** or AIDA is popularly used to help designers in the creation of conceptual designs of aircraft. The neural network used in the software is very effective and significant in Artificial Intelligence

2) **Speech recognition** : it can transform and transcribe human speech into format useful for computer applications.

3) **Biometrics** : it simply refers to the calculations of the human body and its characteristics. It is a very common form of authentication and is also very commonly used now- a – days. Combined with the capabilities of AI, it has proven to be even more useful than it already was.

4) **Online shopping** : Flipcart, Amazon etc. recommends products for searching using artificial neural network techniques.

5) **Banking and personal use**: financial institutions such as banks create smart apps to provide better customer service without actually going to a bank machine learning techniques made it possible to reduce the losses that a bank incurs.

6) **Transportation** : AI in transportation is expected to provide safe, efficient and reliable transportation while minimizing impact on environment and transportation systems. AI is used to develop automatic gearboxes in automobiles

7) **Graphics** : Graphics Processing Unit (GPU) and appliances specifically designed and architected to efficiently run AI-oriented computational jobs.

8) **Image processing** : Image processing in AI identifies the relationship between the parts of the image.

9) **Artificial Gravity** : AI applied in the field of research and development in space travel.

10) AI has been used in **Chandrayan-2** for trajectory and optimisation of payload.

USES OF AI IN OUR DAILY LIFE.

1. **Music and Media** : Artificial Intelligence is helping users to find music and media of their choice on apps like Spotify, Netflix , or You Tube. This is done by AI algorithms, which learn about user selections done regularly over a time period and hence provide recommendations to add to one's playlist.

2. **Smart Home Devices** : Artificial Intelligence is used in smart home devices to adjust the house temperature and lighting based on one's preferences.

3. **Online services**: Industries ranging from travel to banking, shopping and entertainment rely heavily on Artificial Intelligence for using chatbots or through algorithms that enable it to track spending, suggest purchases, prevent fraud, and complete other transactions much faster.

4. **Smart phones**: AI integration in mobile technology is bringing features like face detection, virtual reality elements, photo editor, and many more to name some. A huge emphasis on AI is quite evident with the latest Android and OS updates.

5. **Smart Cars:** A huge progress is evidently seen with automatic cars on the road. Teslo cars are a prime example of how the AI is impacting our daily life. An estimated 50,000 Tesla cars are running in the US alone.

6. **Social Media Feeds:** Artificial Intelligence plays a vital role on one's actions on Social media apps. The feeds that you see in your timeline along with the notifications that you receive from these apps is curated mainly by AI. A user's pos behavior, web searches, interactions, namely one's Digital Footprint tailors the experience for that user. Such intentions only make the apps so addictive that you come back to them again and again

7. **Video Games:** Every user that plays a game such as PUBG or Fortnite essentially starts playing against a couple of AI-powered bots and then move to play against real players in consecutive levels. If you are playing racing games, you are racing against AI bots.

8. **Online Ads Network:** The online advertisement industry uses AI not only to track user statistics but also serves user ads based on those statistics The online ad industry will just fail if it were not relying heavily on the user preferences and past behaviors would show random ads for users with no connection to their preferences The user surveys aid to data collection algorithms which help set the repetition or display of such advertisements online

9. **Navigation and Travel:** Artificial intelligence is used to interpret hundreds of thousands of data points that they receive with user inputs to suggest real time traffic data. Google maps and Waze are one of the few examples along with others which are used for navigation services. While calling on Uber or Ola, both the pricing and the car that matches one's ride request is decided by AI algoritms.

10. **Security and Surveillance:** With latest developments in technologies like object recognition and facial recognition getting better every day, soon all the security camera feeds will be monitored by AI and not a human.

Answer the following Questions :

What do you think Artificial Intelligence is?

What do you want to learn about AI ?

What do you think about Smart Home ? Which devices would you like to have in your home to make it a Smart Home. Write in your own words.

Play the following games and do accordingly :

Link for Game 1 (Rock, Paper and Scissors):

<https://www.afiniti.com/corporate/rock-paper-scissors>

Activity 1 :

Write any three things you learned from the game.

1. _____
2. _____
3. _____

Write the requirements to play Rock, Paper and Scissors.

1. _____
2. _____
3. _____

Link for Game 2 (Mystery Animal):

<https://experiments.withgoogle.com/mystery-animal>

Activity 2 :

Mention three things you understood about the game.

1. _____
2. _____
3. _____

Write the requirements to play Mystery Animals.

1. _____
2. _____
3. _____

Link for Game 3 (Emoji Scavenger Hunt):

<https://emojiscavengerhunt.withgoogle.com>

Activity 3 :

Did you face any difficulty while playing this game ? How did you overcome this ?

1. _____
2. _____
3. _____

Write the requirements to play Emoji Scavenger Hunt.

1. _____
2. _____
3. _____

1. Matter is made up of small particles and there is space between particles of matter.

Activity:

AIM : To show that there is space between particles of matter.

MATERIALS REQUIRED: 100ml beaker, water, salt and glass rod.

PROCEDURE:

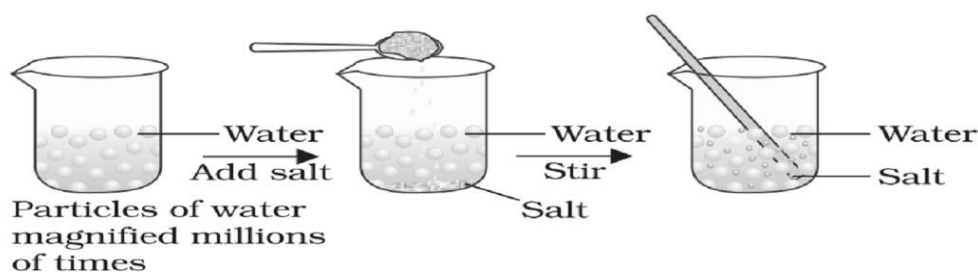
1. Take a 100 ml beaker and fill it with water.
2. Mark the level of water.
3. Dissolve the given salt with the help of glass rod.
4. Observe the change in the water level and record your observation.

OBSERVATION:

1. The salt gets dissolved in water.
2. The particles of salt have entered the space between the water molecules.
Therefore, the level of water does not change.

CONCLUSION:

The salt consists of large number of small particles which occupies the space between molecules of water.



When we dissolve salt in water, the particles of salt get into the spaces between particles of water.

2. Size of the particles of matter is very small.

Activity:

AIM : To show that matter is made up of very small particles.

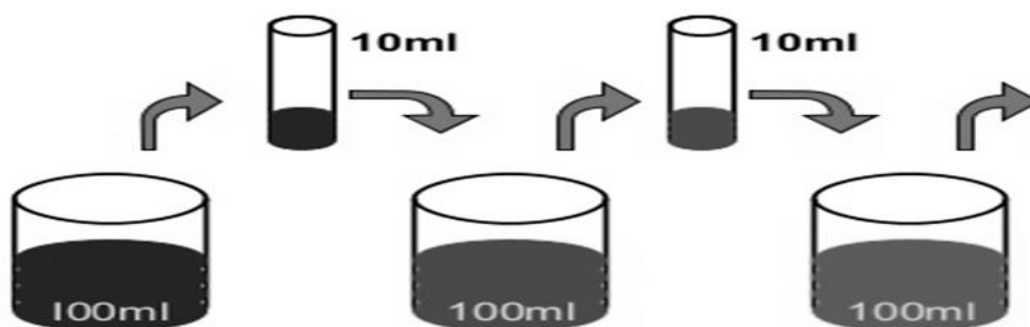
MATERIALS REQUIRED: Crystals of potassium permanganate (KMnO_4), water, three separate beakers

PROCEDURE:

1. Take 2 -3 crystals of potassium permanganate and dissolve them in 100ml of water in beaker 1.
2. Take 10 ml of solution from beaker 1 and put it in 100 ml of water in beaker 2. Observe the color change of the solution.
3. Take 10 ml of solution from beaker 2 and put it in 100 ml of water in beaker 3. Observe the color change of the solution.

OBSERVATION: The colour of the solution remains purple in all the beakers. Just the intensity of the purple colour decreases.

CONCLUSION: It shows that even 2-3 crystals of potassium permanganate consist of millions of small particles which dissolve in water giving purple color to the solution.



3. Particles of matter are continuously moving.

ACTIVITY:

AIM:

To show that particles of matter are continuously moving.

MATERIALS REQUIRED: Incense stick, candle, match stick

PROCEDURE:

1. Put an unlit incense stick in a corner of your classroom.
2. Go close to the incense stick to smell it.
3. Now lit up the incense stick and try to sense the smell of burning incense stick from a distance.

OBSERVATION:

The smell of unlit incense stick can be observed only by going close to it whereas the smell of lightened incense stick can be observed from a distance.



CONCLUSION:

The particles of matter are continuously moving but the speed of the particles is very low. The speed of the particles increases with the increase in temperature.

4) Particles of matter attract each other

ACTIVITY:

AIM: To show that particles of matter attract each other

MATERIAL REQUIRED: Iron nail, piece of chalk, rubber band, hammer, knife.

PROCEDURE:

- 1) Try to break an iron nail by using a hammer
- 2) Cut a piece of chalk using a knife
- 3) Stretch a rubber band

OBSERVATION: It is very difficult to break an iron nail, but can cut a piece of chalk using a knife and rubber band is easy to stretch

CONCLUSION: The above activity suggests that particles of matter have force acting between them which keep them together. The strength of this force of attraction varies from one kind of matter to another.



CLASS IX – CHEMISTRY

CHAPTER 1 – MATTER IN OUR SURROUNDINGS

ASSIGNMENT 2

- 1) A diver is able to cut through water in swimming pool. which property of matter does this observation show?
- 2) The mass per unit volume of a substance is called density (density =mass/volume). Arrange the following in order of increasing density- air, exhaust from chimneys, honey , water , chalk , cotton and iron .
- 3) Which of the following substances diffuse faster in a glass of water – a drop of honey or blue ink. Why?
- 4) Tabulate the differences in the characteristics of states of matter.
- 5) Comment upon the following rigidity, compressibility, fluidity , kinetic energy and density .
- 6) A gas fills completely the vessel in which it is kept. Why?
- 7) A gas exerts pressure on the walls of the container. Why?
- 8) A wooden table should be called a solid. Why?
- 9) We can easily move our hand in air but to do the same through a solid block of wood we need a karate expert. Why?
- 10) Explain why gases are highly compressible?
- 11) When a crystal of potassium permanganate is placed in a beaker containing water, its purple color spreads throughout the water. What do you conclude from this observation about the nature of potassium permanganate and water?
- 12) What happens to the sugar when it is dissolved in water?
- 13) It is easier to cut a piece of chalk than breaking an iron nail.Why?
- 14) How can you prove that particles of matter have space between them?

Session.1

UNIT.I : Chapter 1 -Number System

Real numbers: Real numbers are divided into two groups. Rational and Irrational.

Rational numbers are numbers that can be written in the form of p/q where p and q are integers. And q not equal to zero. Whole numbers, natural numbers integers all can be considered as rational numbers because they can be written as p/q .

Irrational numbers are those numbers which cannot be written in the form of p/q . where p and q are integers and q not equals to zero.(Examples with reason will be explained later in this session)

TERMINATING AND NON TERMINATING DECIMALS

Consider the fractions : $5/8$, $13/4$, $3/7$ etc

The decimal representation of $5/8$ is 0.625 (we have to divide 5 by 8 and we see that when we divide we get remainder 0 after some steps)

But when you consider the fraction $3/7$ (divide 3 by 7) we see that the division is continuous and some digits are repeating following some pattern.

$3/7 = 0.428571428571428571.....$ This is non terminating and it is recurring means some digits are repeating in some pattern

But we know that these numbers were in the form of p/q , that means they are rational numbers. So we have found that decimal form of rational numbers are sometimes terminating and some times non terminating. If non terminating they are recurring too..

HOW TO RECOGNISE WHETHER DECIMAL REPRESENTATION OF RATIONAL NUMBERS ARE TERMINATING OR NOT

Among the fractions $1/5$, $13/4$. $3/7$, $5/11$, $24/125$ etc,

$1/5, 13/4, 24/125$ are terminating because their denominators have only 2 and 5 as prime factors.

But the denominators of the rational numbers $3/7, 5/11$ etc are non terminating and recurring because the prime factors of their denominators are not 2 or 5 or both.

So conclusion is that decimal representation of rational numbers can be terminating or non terminating and recurring

You can make it more clear by seeing the following examples.

$$(i) \frac{13}{4} \qquad 4 \overline{)13} (3.25$$

$$\begin{array}{r} 12 \\ \hline 10 \\ 8 \\ \hline 20 \\ 20 \\ \hline \times \end{array}$$

$$\therefore \frac{13}{4} = 3.25 \text{ (Terminating decimal)}$$

$$(ii) \frac{145}{8} \qquad 8 \overline{)145} (18.125$$

$$\begin{array}{r} 8 \\ \hline 65 \\ 64 \\ \hline 10 \\ 8 \\ \hline 20 \\ 16 \\ \hline 40 \\ 40 \\ \hline \times \end{array}$$

$$\therefore \frac{145}{8} = 18.125 \text{ (Terminating decimal)}$$

$$(iii) \frac{874}{999} \qquad 999 \overline{)8740} (0.\overline{874}$$

$$\begin{array}{r} 7992 \\ \hline 7480 \\ 6993 \\ \hline 4870 \\ 3996 \\ \hline 874 \end{array}$$

$$\therefore \frac{874}{999} = 0.\overline{874} \text{ (Recurring decimal)}$$

Remember
Terminating decimals are rational numbers.

Remember
Recurring decimals are rational numbers.

IRRATIONAL NUMBER

A number which cannot be expressed in the form of p/q , where p and q are integers and q not equals 0 are irrational numbers

Examples: $\sqrt{2}, \sqrt{3}, \sqrt{5}, \sqrt{6}, \sqrt{21}$, are irrational numbers.

A non terminating and non repeating decimal is known as irrational numbers

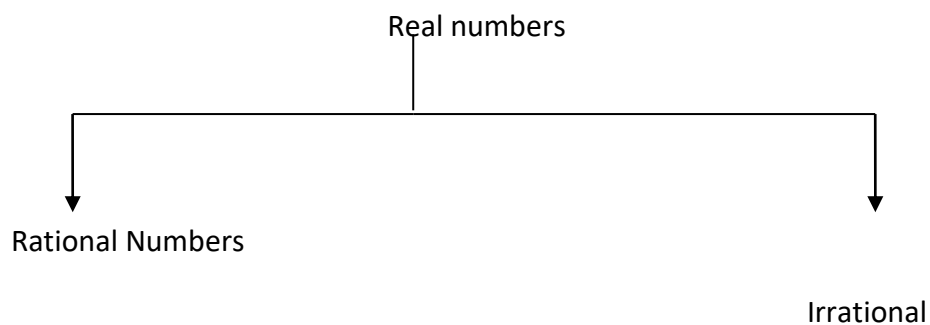
Examples: 1.4123567....

2.1070070007....

0.121221222....

All the above decimal numbers are non-terminating and non-repeating decimal and therefore they are irrational numbers. π is also an irrational number.

Content analysis



Numbers

(decimal form is non terminating and recurring)
terminating and

(decimal form is non

Non-recurring)

NOTE: Notes of all sessions should be written in register or separate A4 size sheets (file) whatever is available to you.

That means you should maintain two separate file/ registers. One for all assignments and one for all notes

These two files/registers will be assessed separately and marks will awarded.

CHAPTER 1 EXTRA QUESTIONS

THE FUN THEY HAD

- ISAAC ASIMOV

Q1. Describe the book that Tommy found?

A1. Tommy found in the attic of the house, an old book, which belonged to his grandfather's grandfather. It had crinkly yellow pages.

Q2. How does the mechanical teacher give more effective individual attention to the student than a traditional teacher in a classroom?

A2. Each boy or girl is given a mechanical teacher. The mechanical teacher can be adjusted to fit the mental level of each boy or girl. Thus, it can give individual attention more effectively than a traditional teacher in a classroom.

Q3. What was the county inspector sent for? What did he give to Margie when he met her?

A3. Margie's mother found that she was not performing well in geography. So she decided to call the county inspector to check the problem. The county inspector gave Margie an apple when he met her.

Q4. What was the slot Margie hated most about the mechanical teacher?

A4. The part Margie hated was the slot where she had to put homework and test papers. She always had to write them in punch code. They made her learn when she was just six years and the mechanical teacher calculated the marks instantly.

Q5. Mention any two differences between old real books and telebooks.

A5. In the telebook the words moved but in the old real books the words stood still. The old real books could not be used like a television or a screen. It had to be thrown or kept away like a waste after one finished reading it.

Q6. Collect information about the author in about 50-80 words. (to be done by the student themselves)

PARAGRAPH WRITING

TOPIC- THE IMPORTANCE OF A TEACHER

A teacher has to play the role of a guide, friend and parent. She plays a great role in shaping the character of a student. She takes care of the students, guards them, treats them with compassion and becomes strict when needed. The overall development of a child is majorly dependent on a teacher. A teacher not only gives her students the knowledge, but also gives them a direction in life.

Class IX
ECONOMICS
Chapter-1
THE STORY OF VILLAGE PALAMPUR

INTRODUCTION:

The village described in this chapter is big in size, is well connected by all-weather roads to the nearby towns and cities, has primary health centers, has schools, modern irrigation facilities and has electricity supply.

The percentage of such villages is minuscule in India. Health facilities, infrastructure, schools and power supply is still developing in most of the villages in India.

In a typical village like Palampur, people of different castes and communities live and most of the land is owned by upper class farmers, also called large farmers. Rest of the land is owned by other backward classes or minorities who usually comprise landless labour and work as daily wage workers.

ORGANISATION OF PRODUCTION:

Production is an activity that involves production of goods and services that a person needs.

FACTORS OF PRODUCTION:

The Factors which affect production are Land, Labour, Physical capital and Human Capital.

- LAND is the basic natural resource required as an input in any production activity. It is fixed in nature and limited in quantity.
- LABOUR refers to the physical and mental effort put in by humans during the process of production.
- PHYSICAL CAPITAL refers to the variety of inputs required at every stage of production. This is of two types- FIXED CAPITAL and WORKING CAPITAL.

Fixed Capital is that which is durable in nature and can be used a number of times, over a long period of time.eg. tools and machines etc.

Working Capital is that which is used up every now and then in the process of production. Eg. raw material, money etc.

- HUMAN CAPITAL refers to the knowledge and enterprise required to put together land, labour and physical capital to produce an output.

FARMING IN PALAMPUR:

- Land is fixed--Farming is the main activity in Palampur and a lot of the wasteland has been converted to cultivate land.
- There are two cropping seasons in Palampur—Kharif Season and Rabi Season.

Kharif Season – identified with rain, crops grown in this season are Jowar and bajra—used as cattle feed.

Rabi Season—identified with winter or dry season, wheat is an important rabi crop, sugarcane grown on a large scale.

- As land is fixed and a good crop yield is required so three cropping patterns are practiced.

Single Cropping—is a system where one single crop is grown during a year on a given piece of land.

Double Cropping—is where two crops are raised during a year on a given piece of land with a well-developed irrigation system, regular electricity supply, government and private tube wells for irrigation, use of modern farming methods and surplus wheat production.

Multiple Cropping—is when three or more crops are raised during a year on a given piece of land.

(increases farmers income and helps in the farmers prosperity)

- There are two kinds of farming methods practiced in Village Palampur—Traditional Farming Methods and Modern farming Methods.

Traditional Farming Methods:

Include practices which Indian farmers have been using from many generations—use of a pair of bullocks for ploughing the land, drawing water from the wells, transporting produce to the market through bullock carts, farmers work with traditional wooden tools and equipment, organic manure provides nutrition to the soil. (Low Productivity)

Modern Farming Methods:

Include use of electricity, machinery, other sources of energy and irrigation facilities, high yielding variety of seeds, chemical fertilizers, pesticides, insecticides, tubewells and canals as a source of irrigation, modern implements (Productivity of land increases manifold)

- Yield-is measured as crop produced on a given piece of land during a single season. Adopting Multiple farming and Modern farming methods are two very effective ways to increase crop yield.

ADVANTAGES OF ELECTRICITY IN PALAMPUR:

- Helps in transformation of irrigation system from the old traditional Persian wheel system of irrigation to electricity run tube wells.
- Electric-run tube-wells water large stretches of land in lesser time than Persian Wheel irrigation would.
- It lead the entire village from darkness to light .
- It helped set up small scale industries and develop small businesses.

WILL THE LAND SUSTAIN:

- Overuse of natural resources—land.
- Less soil fertility-excessive use of fertilizers, pesticides and over use of land for cultivation.
- Reduced ground water table due to modern method of irrigation.

GREEN REVOLUTION:

- MEANING: Revolution brought about in the field of agriculture by using high yielding variety of seeds, fertilizers, pesticides, insecticides etc in the late 1960s in the states of Punjab, Haryana and Western Uttar Pradesh.
- ADVANTAGES: High yield of crops due to the use of HYVs, Use of machines like tractors and threshers made ploughing and harvesting easy and fast, High yield made the farmers sell the surplus in the market to earn higher profits, Pesticides and insecticides protect the crops from pests and insects and a good irrigation system enhances crop production to three four times .
- DISADVANTAGES: Loss of soil fertility due to increased use of fertilizers, continuous use of ground water for tube-well irrigation has reduced the water table, Environmental resources such as soil fertility and ground water are built over a long period of time and once destroyed are very difficult to restore, chemical fertilizers dissolve in the ground water and pollute it, kill bacteria and micro-organisms helpful for the soil and increased use of fertilizers can make the soil alkaline.

LAND DISTRIBUTION:

Land in Palampur is unevenly distributed. Not all people of Palampur had sufficient land for cultivation.

- Out of 450 families in Palampur, only 250 families cultivate plots less than 2 hectare in size. Cultivation from such plots does not bring adequate income to the farmers family.
- 150 Dalit families are landless.
- Remaining 60 families of medium and large farmers more than 2 hectares of land.
- A few large farmers have land extending upto over 10 hectares of land.

WHO PROVIDES THE LABOUR AND CAPITAL:

- Labour in villages is usually provided by landless labourers or those who have small plots of land as the output from such plots does not bring adequate income for the farmer's family.
- All farmers require capital during production, fixed as well as working. The medium and large farmers have their own savings from farming and are able to arrange their own capital. The produce from their large plots suffices the needs of their families and they are able to sell the surplus in the markets. A part of their income is saved and the rest is used to buy machinery and other raw materials or lend it to the small farmers at high rates of interest and are able to make more profit.
- Some of the small farmers own very small plots of land and the produce from these plots is not sufficient to support the farmers family. Most of them are landless and work as daily wage workers on the plots owned by large and medium farmer. So small farmers have to borrow money from large and medium farmers, moneylenders and traders who supply them various inputs for cultivation to arrange capital. They are charged very high rates of interest by these lenders which keeps them in the vicious circle of debts as they are unable to clear the debts because of the less amount of capital they earn.

NON-FARM PRODUCTION ACTIVITIES OF VILLAGE PALAMPUR:

- DAIRY FARMING: People in Palampur rear buffaloes, feed them different types of grass-jowar, bajra. Milk is sold in nearby villages. Some people have also set up collection and chilling centers from where milk is sent to nearby towns and cities.
- SMALL-SCALE MANUFACTURING: This involves simple production methods carried out on a small scale , at home , with the help of the family only. No outside labour is hired.

- **SHOPKEEPING:** Shopkeepers in the villages buy goods from wholesale market in the towns and cities nearby and sell them in the village. These small stores sell a wide range of products like rice, wheat, sugar, oil, clothes, and other miscellaneous things. Some people who have shops near bus stops use them to sell eatables.
- **TRANSPORT:** Different means of transport like – rickshaws, tongas, trucks, jeeps and tractors are used in villages to transport goods and people from village to cities and the people get paid for this.
- **SELF-EMPLOYED:** Some people have opened computer training centers, stitching centers etc to obtain more profits and to train more people for better opportunities in life.

ANSWER THE FOLLOWING:

Q1. What is the main economic activity in village Palampur?

Q2. Define production. What are the main requirements for production of goods and services?

Q3. Highlight the basic constraints in raising production from a farm.

Q4. Give three reasons why small farmers have to arrange capital by borrowing.

Q5. State the importance of growing more than one crop on a piece of land.

Q6. What can be done to increase non-farm activities in Indian villages?

Q7. Explain the reason for increase in 'food grain output' in India in five points.

Q8. Explain the features of 'Green Revolution'. Write down its merits and demerits.

Q9. Why are wages for farm labourers in Palampur less the minimum wages? How can this exploitation of small farmers by large farmers be put an end to?

Q10. What is human capital? What is its importance in production?

NOTE: ANSWERS WILL BE UPLOADED IN 6.....7 days.

CLASS IX
POLITICAL SCIENCE
Chapter -2
WHAT IS DEMOCRACY? WHY DEMOCRACY?

MEANING OF DEMOCRACY:

- Democracy has its origin in the Greek word 'Demokratia' where 'Demos' means people and 'Kratia' means rule, hence meaning 'Rule of the People'.
- Democracy is a form of government where rulers are elected by the people on the basis of Universal Adult Franchise, for a fixed period of time.
- Abraham Lincoln defined democracy as a government of the people, for the people and by the people.

WHY DEMOCRACY:

Arguments in favour of democracy:

- A democratic government is a more accountable form of government and is more responsive to the needs of the people as it has been formed by the people itself.
- It improves quality of decision-making and reduces the chances of rash and irresponsible decisions.
- It provides methods to deal with differences and conflicts which are particularly sharp in India because of its social diversity.
- It enhances the dignity of citizens as it is based on the principle of political equality, stating that the poorest and the least educated have the same status as the rich and the educated.
- It allows us to correct our mistakes because in a democracy there is room for public discussion on government's rules or mistakes. Mistakes cannot be hidden for long. Either the rulers have to change their decisions in the best interests of the people or the rulers change.

(Thus we see that Democracy cannot give us everything and it is not a solution for all our problems but still, it is a better form of government as compared to all other forms of government)

Arguments against democracy:

- Leaders keep changing every five years (India) and this leads to political instability.
- It is all about competition and power play because every political party wants to work in the best interests of the citizens and this leaves no scope for morality.
- Many people have to be consulted to take decisions and this delays the decision-making process.
- Sometimes, when the elected leaders are not aware of the best interests of the people, this to bad decisions.
- Democracy, in the quest to win elections and be in power leads to corruption, based on electoral corruption.

(Being Democratic since Independence, The Indian Government has not been able to eradicate poverty and corruption)

BROADER MEANING OF DEMOCRACY:

- The most common form of democracy is Representative Democracy, a form of government where majority of the people rule through their Representatives as a large number of people cannot sit together and take decisions collectively as all the citizens do not have the time, the desire or the skills to take part in all the decisions.
- Elections are held to choose the representatives and native people or citizens are allowed to participate in the elections.
- Democracy, as a principle can be applied to any sphere of life. In a true democracy, no one goes to bed hungry, or denied equal information, opportunities, basic education and equal resources.

ESSENTIAL FEATURES OF A DEMOCRACY:

- In a democracy, the final decision-making power must be with those elected by the citizens of that country.

- A Democracy must be based on free and fair elections where those currently in power have a fair chance of losing and vice versa
- In a democracy each adult citizen must have one vote and each vote have one value.
- A democratic government rules within the limits set by the constitutional law and citizen's rights.
- In a democratic government citizens enjoy various freedoms like freedom of expression, freedom to form unions and associations etc.

ESSENTIAL FEATURES OF A NON-DEMOCRATIC GOVERNMENT:

- People cannot choose their rulers or change them. They are either military dictators or hereditary rulers. (Myanmar, Saudi Arabia)
- People do not have any freedom to criticize the government and its policies and cannot form associations.
- People do not have any elected representatives (Pakistan) and even if they elect, they cannot take final decisions. The decisions are taken by their dictators or monarchs.
- There are no free and fair elections (China). Only a group of people are allowed to contest elections and form the government.
- There are many instances of denial of political equality (Saudi Arabia) where not all the adult citizens have the right to vote.
- A non-democratic government is powerful by itself and less accountable to its citizens as it is under an Autocratic Leader. They even change the constitution in their favour, without the consent of the people.

DUTIES OF THE OFFICE-BEARERS IN A DEMOCRACY:

- A democratically elected government cannot do whatever it likes and has to respect some basic rules.
- It has to ensure some guarantees to the minorities.
- Every decision that it takes needs consultations.

- Every office-bearer has certain rights and responsibilities assigned by the constitution and the law.
- Each of the elected official is accountable not only to the citizens but also to other independent officials.

ROLE OF CITIZENS IN A DEMOCRACY:

No democracy can function in the absence of socially responsible and informed citizens.

- Citizens must maintain social harmony by mutually respecting and tolerating differences and views of all others who may disagree with them.
- As citizens have the right to express their dissent, they are to act as a director to the government where they express their grievances through channels provided by the democratic system.
- Citizens need to play a decisive role in the establishment of a welfare government by participation and seeking to influence public opinion.
- When the citizens exercise their right to vote, they provide directions to the whole democratic process.

ANSWER THE FOLLOWING:

Q1. Explain with examples how democracy can be used in organisations other than the government.

Q2. Give examples of countries where real powers are not exercised by the people's elected representatives.

Q3. Name countries where women, even today do not have the right to vote and also where find it difficult to get the right to vote.

Q4. What basic rights are granted to a democratic state to its citizens to ensure democracy before elections?

Q5. Which organ of the government protects the basic rights of the citizens of a democratic state? What limits the power of a democratic government when framing policies and laws?

Q6. Which is the most preferred form of government in the world? Give Four reasons to support your answer.

Q7. In which condition does a democracy lead to bad decisions? What can be done to prevent this situation?

Q8. How does democracy improve the quality of decision making?

Q9. Explain in three points how a democracy provides a method to deal with differences and conflicts?

NOTE: Answers will be uploaded in 3...4 days.

Answers of Assignment -1

1)

a) Natural numbers-All counting numbers are called natural numbers. The Smallest Natural numbers is 1.

b) whole numbers-The natural numbers along with 0 form collection of whole numbers- e.g. 0,1,2,3,4,5,6,..... Are all whole numbers.

c) Integers -Collections of Natural numbers, zero and negative of all natural numbers form the collection of integers.

d) Rational numbers - the numbers which can be expressed in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$ are called rational numbers.

2)

a) We can consider another form 1 i.e., $\frac{10}{10}$
and $2 = \frac{20}{10}$

So four rational numbers between 1 and 2 are $\frac{12}{10}, \frac{13}{10}, \frac{15}{10}, \frac{17}{10}$, (answer is not unique as these are countless numbers of rational numbers between any two rational numbers.

b) $\frac{2}{3}$ and $\frac{5}{3}$

$$\frac{2}{3} = \frac{2}{3} \times \frac{10}{10} = \frac{20}{30}$$

$$\frac{5}{3} = \frac{5}{3} \times \frac{10}{10} = \frac{50}{30}$$

So the answer is any four rational numbers between $\frac{20}{30}$ and $\frac{50}{30}$

3)

a) $\frac{3}{5}$ and $\frac{2}{3}$

First make the denominator same by finding the L.C.M

L.C.M is 15

Then equivalent fractions of $\frac{3}{5}$ with denominator is $\frac{9}{15}$ equivalent fraction of $\frac{2}{3}$ with 15 as denominator

b) 4 rational numbers between 1 and $\frac{2}{3}$

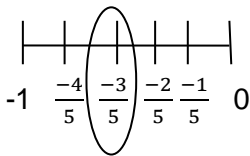
$$\text{Here } 1 = \frac{15}{15}$$

$$\frac{2}{3} = \frac{2 \times 5}{3 \times 5} = \frac{10}{15}$$

So four rational numbers between 1 and $\frac{2}{3}$

$$\frac{11}{15}, \frac{12}{15}, \frac{13}{15} \text{ and } \frac{14}{15}$$

5)



$$P = \frac{-3}{5}$$

6)

a) $6^{\frac{2}{5}} \times 6^{\frac{3}{5}}$ using the law $a^n \times a^m = a^{n+m}$

We get $6^{\frac{2}{5} + \frac{3}{5}} = 6^{\frac{6}{5}} = 6^1$

b) $6^{\frac{1}{2}} \times 7^{\frac{1}{2}}$ $a^m \times b^m = (ab)^m$

$$(6 \times 7)^{\frac{1}{2}} = 42^{\frac{1}{2}}$$

c) $5^{\frac{6}{7}} / 5^{\frac{2}{3}} = 5^{\frac{6}{7} - \frac{2}{3}}$ (using the identities $a^m / a^n = a^{m-n}$)

7)

$$(0.2)^n = 0.00032$$

$$(0.2)^n = (0.2)^5$$

By comparing base is same , so powers also same

$$n = 5$$

$$8) 9^{\frac{3}{2}} - 3 \times 5^0 - \left(\frac{1}{81}\right)^{-\frac{1}{2}} = 15$$

$$\begin{aligned} \text{L.H.S.} &= 9^{3/2} - 3 \times 5^0 - \left(\frac{1}{81}\right)^{-\frac{1}{2}} \\ &= 3^{2 \times \frac{3}{2}} - 3 \times 1 - (81)^{1/2} \\ &= 3^3 - 3 - 9^{2 \times \frac{1}{2}} = 27 - 3 - 9 = 15 \quad \text{Proved} \end{aligned}$$

$$9) \text{ If } (343)^{\frac{1}{2}} = 49 \text{ find 'n'}$$

$$(343)^{\frac{2}{n}} = 49$$

$$7^{3 \times \frac{2}{n}} = 7^2$$

$$7^{\frac{6}{n}} = 7^2$$

$$\frac{6}{n} = 2$$

$$\frac{6}{2} = n$$

$$n = 3$$

CBSE Class 9 (Beehive)
Chapter 1 - The Fun They
Had

Introduction

This is a very light story. It is set in the future. It will make all of you love school. This story is regarding school life and how those children who do not get to school, miss school. The setting of the story is in the future when perhaps, there will be no school, no books. Now how those students will miss going to school and will feel that their ancestors that is the present generation- you all, had fun going to school, meeting and helping each other. In the end we come to know that this is an imagination of a young girl named Margie who comes to know that their ancestors used to go to school, all the children used to study together. She feels that they all had a lot of fun when they went to school. So, when we read the story we feel that school life is very good, and we are fortunate that we have real schools where we go, meet friends and get a chance to study together.

Summary

The story opens with Margie writing in her diary about an old book that Tommy had found. Margie was reminded of her grandfather who had once talked about his grandfather who went to an actual school where the students were taught by human teachers.

However, Margie and Tommy lived in the future world, in the year 2157 where education was completely computerized. They did not go to schools. Instead, they had a special study room where a computer taught them. The computer teacher was programmed and adjusted according to the needs of each child. Now and then the computer teacher developed faults which were fixed by a County Inspector.

Both Tommy and Margie wondered at the book found by Tommy in his attic. They wondered at it as they read books on the screen of their computer teacher. Margie felt that the computer teacher was boring; she disliked the mechanical teaching and learning. She also wondered how much fun it would be studying in a school. Studying in a fun way, with other children and that too from a human teacher.

Question and Answers

Answer these questions in a few words or a couple of sentences each.

1. How old are Margie and Tommy?

A. Margie and Tommy live in the future, in the year 2157. They are neighbours and spend time together. Margie is a girl of eleven years of age while Tommy is a boy of thirteen.

2. What did Margie write in her diary?

A. On 17 May 2157, Margie wrote that that day Tommy had found a real book in the attic of his house. It was an old book with yellow, crinkly pages.

3. Had Margie ever seen a book before?

A. No, Margie had not seen a book before the one found by Tommy in his house. She had only heard from her grandfather that his grandfather went to school as a boy and that they read books that were printed on paper.

4. What things about the book did she find strange?

A. As Margie lived in an era where students studied from a mechanical teacher and all the books appeared on the screen, she found it strange that the words on the printed book did not move. It was strange to see the same words appear on the pages as she flipped them over.

5. What do you think a telebook is?

A. A telebook is an electronic book also known as an e-book. It is stored in a computer and can be read by scrolling up or down the screen.

6. Where was Margie's school? Did she have any classmates?

A. Margie's school was in her house. It was a room next to her bedroom. It was a personal classroom where the computer was adjusted to her level of learning. She studied by herself and had no classmates.

7. What subjects did Margie and Tommy learn?

A. Margie and Tommy learnt a lot of subjects like Geography, History and Mathematics.



(i) Who does 'they' refer to?

A. 'They' refers to the ancestors of the children who went to school and studied from a human teacher.

(ii) What does 'regular' mean here?

A. 'Regular' means the mechanical teacher which teaches Margie and Tommy.

(iii) What is it contrasted with?

A. The mechanical teacher is contrasted with a human teacher.

Answer each of these questions in a short paragraph (about 30 words).

1. What kind of teachers did Margie and Tommy have?

A. Margie and Tommy had mechanical teachers. They were computers which had preloaded lessons on different subjects according to the learner's level. Whenever they malfunctioned, they were opened and repaired.



Answer the following with reference to the story.

1. "I wouldn't throw *it* away."

(i) Who says these words?

A. Tommy says these words.

(ii) What does 'it' refer to?


A. 'It' refers to the Computer screen on which Tommy reads various books.

(iii) What is it being compared with by the speaker?

A. 'It' is being compared to the paper book that Tommy found in his house.

2. "Sure *they* had a teacher, but it wasn't a *regular* teacher. It was a man."

(i) Who does 'they' refer to?

A. 'They' refers to the ancestors of the children who went to school and studied from a  teacher.



5. What had once happened to Tommy's teacher?

A. Once Tommy's teacher had developed a fault as the entire section on History had been deleted. His teacher had been taken for repairs and it took them a month to set it right.

6. Did Margie have regular days and hours for school? If so, why?

A. Margie studied at the same time everyday, except Saturdays and Sunday. Her mother was very particular and had told Margie that she would learn better if she studied at the same time every day.

7. How does Tommy describe the old kind of school?

A. Tommy said that in the old kind of schools, there was a man teacher who told a few things to the students, gave them home work and then asked them questions. The man teacher was as knowledgeable as the machine teacher.



2. Why did Margie's mother send for the County Inspector?

A. Margie's mother called the County Inspector to check Margie's teacher. She thought that probably, Margie's teacher had a malfunction. Margie was failing the Geography tests repeatedly which could be due to a fault in the teacher.

3. What did he do?

A. The County Inspector was trained to repair the computer teacher. He opened the machine and checked it. The Geography sector was set on a higher level. He reset it to Margie's level and closed the teacher.

4. Why was Margie doing badly in geography?
What did the County Inspector Do to help her

A. Margie was failing in the Geography tests as the teacher had developed a fault. The County Inspector told Margie's mother that Margie was not at fault. Her progress was good. He reset the teacher to Margie's level.

2. Why did Margie hate school? Why did she think the old kind of school must have been fun

A. Margie hated school because it was not fun. There was a mechanical teacher and the learning process lacked life. It was like a machine carrying out the usual working, there was nothing new, no fun or laughter. Margie's mechanical teacher was giving her tests in Geography and she was performing bad at them. Later it was discovered that the teacher had developed a fault due to which it was giving her tests of a higher level. Margie's mother called the County Inspector. He opened the teacher, found the fault and rectified it. Margie disliked the teacher and hoped that he would not be able to repair it. She hated inserting the homework and test papers into the slot provided.

She thought that the children in the past must have had a lot of fun when they went to school with fellow children. She found it amazing that all the children studied together, the same things and could discuss studies and help each other with the homework too. As the teachers were people they would not behave like machines. The



1. What are the main features of the mechanical teachers and the schoolrooms that Margie and Tommy have in the story?

A. Margie and Tommy were taught by mechanical teachers. They had large black screens on which the lessons appeared. The lessons were followed by questions. The students had to insert homework and test papers in the slots provided. They had to write down the work in a punch code which was a computing language. The mechanical teacher checked the papers and gave them marks within a few seconds. These classrooms were in the student's home itself. Every student studied from his respective mechanical teacher. Each teacher was adjusted according to the level of the learner. They did not have classmates. They studied various subjects like Geography, History and Mathematics. Margie studied everyday at the same time except Saturdays and Sundays. Her mother said that she would learn better if she studied that way. The learning process was mechanical, dull and boring for them.

