GST105 - HISTORY AND PHILOSOPHY OF SCIENCE SUMMARY

The word 'science' is derived from the Latin word_____

Scientia

The word science is derived from _____ word

Latin

The word science is derived from how many Latin words?

One

The word 'science' is derived from the Latin word, 'scientia' which means _____

Knowledge

According to The New Encyclopaedia Britannica, _____ has been defined as the knowledge of the world of nature

Science

Science generally is regarded in three main ways as follows

- A body of knowledge
- A method for acquiring knowledge or studying and understanding the world
- An institution

The bodies of knowledge generally regarded as science include, chemistry, biology, physics, mathematics, microbiology, pharmacy and _____

Medicine

The _____ of knowledge generally regarded as science include, chemistry, biology, physics, mathematics, microbiology, pharmacy and medicine.

Bodies

The two branches of science are empirical and _____ sciences

Formal

There are _____ branches of science

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Two

The two branches of science, empirical and formal sciences use what is called the_____
Scientific method

The scientific method include the following

- Observation
- Problem definition
- Hypothesis formulation
- Experimentation
- Conclusion
- Theory formulation

_____ can be viewed as an institution which comprises millions of experts.
Science

Science can be viewed as an institution which comprises millions of_____.
Experts

_____ experts engage in the study and development of human knowledge.
Science

Scientific experts engage in the study and development of _____
human knowledge

_____ sciences include mathematics (which comprise geometry, algebra, trigonometry, arithmetic), logic, theoretical physics, and statistics.
Formal

Formal sciences have a formal and _____character.
Deductive

_____ sciences have a formal and deductive character.
Formal

Science is said to be _____ if its contents, arguments and procedures obey certain rules.
Formal

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For example, in mathematics there are rules of addition, subtraction, multiplication and division. There are also rules for solving certain equations and problems, theorems, etc. Let's take for instance that you are given the following problems to solve:

3/4 of (5/6 + 1/4) | 7/3 x 4 + 1/2 – 3

How would you go about it? The rule says that 'bracket' is solved first, followed by 'of ', then division, multiplication, addition and subtraction in that order. The mnemonic device for remembering this rule is BODMAS where:

B stands for bracket. The symbol is ( )
O stands for of. The symbol is still 'of '
D stands for division. The symbol is /
M stands for multiplication. The symbol is 'x'
A stands for addition. The symbol is +
S stands for subtraction. The symbol is –

BODMAS stand for _____
Bracket, of, division, multiplication, addition and subtraction

Physics, chemistry, biology, psychology, botany, zoology, biochemistry, microbiology, geology, medical sciences are examples of _____ sciences
Empirical

Scientists who observe and experiment in order to find out how things originate, develop, function and relate to each other are called_____
Empirical scientists

The knowledge derived in empirical sciences includes inductive generalisations, laws and _____
Theories

_____ sciences deal with all natural objects.
Natural

Physical sciences, biological sciences, medical sciences and pharmaceutical sciences are examples of _____ science
Natural

Natural sciences include the following

- Physical sciences
- Biological sciences
- Medical sciences
- Pharmaceutical sciences

Physical sciences include_____
disciplines like physics, chemistry, geology, applied mathematics, astronomy

Disciplines under Biological sciences include_____
biology, zoology, botany, microbiology

Pharmaceutical sciences include_____
pharmaceutics, pharmaceutical chemistry, pharmacognosy and pharmacology

_____ deal with physical and inanimate objects such as rocks, rivers, and mountains.
Physical sciences

_____ deal with living bodies such as human beings, animals, insects and plants
Biological sciences

_____ disciplines deal with objects and problems that affect human and animal health.
Medical sciences

_____ disciplines are concerned with drugs and drug contents of plants and other objects.
Pharmaceutical sciences

The social sciences include the following

- Economics
- Social psychology
- Geography
- Sociology and anthropology
- Social philosophy

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_____ sciences deal with society and social institutions.
Social sciences

Religion, art, metaphysics (a branch of philosophy), mysticism, common sense and imagination are called_____
Nonscience

_____ is concerned with worship of the supernatural
Religion

_____ is concerned with nature and natural phenomena and objects
Science

In particular, religion is speculative and based on faith or _____
Dogma

All the following features below describes religion

- it is based on dogma
- it is speculation
- it deals with the worship of supernatural

The aim of _____ is to make religious beliefs reasonable without rejecting them.
Theology

Rational religion is also called_____
Theology

According to (Nwala: 1997), _____ tries to confirm religious beliefs
Theology

_____ relies on the principle that the universe is governed by spiritual laws.
Religion

Religion relies on the principle that the universe is governed by _____
Spiritual laws

Science is dogmatic.
False

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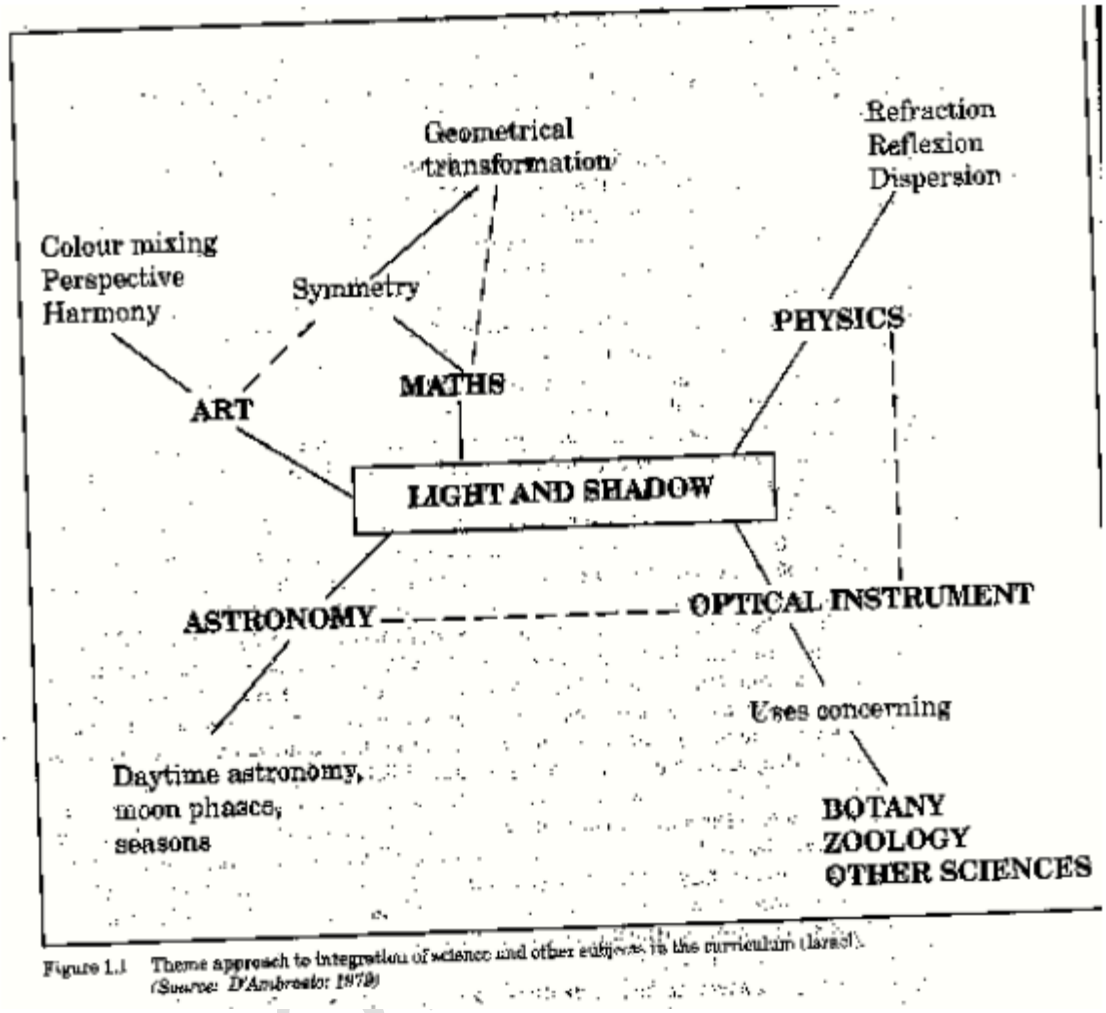


Figure 1.1 Theme approach to integration of science and other subjects in the curriculum (Israel). (Source: D'Ambrosio: 1979)

The figure above illustrates a theme approach to integration of science and other subjects in the Israeli curriculum (D'Ambrosio: 1979). The theme or phenomenon under study is 'light and shadow'. The figure shows how the theme 'light and shadow' is viewed or studied by disciplines such as art, physics and botany.

Science is based on reason and does not accept any idea or belief on faith.
True

The following statements are true about science

- It is not dogmatic
- It is based on reason and does not accept any idea or belief on faith.
- It subjects everything under its study to critical examination.
- It does not accept anything as sacred and unquestionable.
- It relies on the principle that the universe is governed by material law which may be mechanical, electrical, chemical and biological

- Science seeks knowledge that is objective, certain, systematic, provable and supported by evidence
- In general, science is said to be objective, systematic and reliable

All organs are made up of_____.
Cells

The method of acquiring scientific knowledge is called the _____
Scientific method

Superficially, science is a collection of _____ that describe and explain the workings of nature.
Facts

According to _____ Knowledge comes from noticing resemblances and recurrences in the events that happen around us.
Wilfred Trotter

The first step of the scientific method is _____
Observation

Scientific observation can be both direct and _____
Indirect

Direct observations are made with the aid of the_____
Senses

_____ observations are performed with the aid of instruments.
Indirect

Observations can be classified into Spontaneous or _____
Induced

_____ is a most difficult art acquired only after long experience and many errors.
Correct observation

_____ concluded that benzene has six carbon atoms
Kekulé

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Benzene has _____ carbon atoms
Six

The hardest part of the scientific method is known as_____
Experimentation

The German chemist called _____discovered the structure of benzene
Kekulé

_____ are open to tests, revisions, and tentative acceptance or rejection.
Theories

_____ may be defined as the formation of possible solutions to a problem or possible explanations of a phenomenon.
Creative thinking

_____ is the testing and evaluation of these proposed solutions.
Critical thinking

A _____ explains how things are related or their common properties.
Theory

When a hypothesis is confirmed through experimentation it becomes a _____
Theory

_____ take various forms which may be as diagrams, equations, statistical and propositional formulations.
Theories

The ancient _____ believed that rats came from garbage.
Egyptians

The ancient Egyptians believed that rats came from_____
Garbage

Bacteria microorganisms was discovered in _____
1676

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Louis Pasteur disproved the theory of spontaneous generation in_____

1862

_____ disproved the theory of spontaneous generation

Louis Pasteur

The idea of evolution was not originated by _____

Darwin

The idea of evolution was not originated by Darwin in the _____ century

nineteenth

During Darwin's time, biology was dominated by_____.

natural theology

The natural _____ believed that the variations and adaptations of organisms proved that each species was fashioned by God for a particular purpose.

Theologians

In_____, a geologist, James Hutton argued that the earth was older than a few thousand years

1795

_____ argued that the earth was older than a few thousand years

James Hutton

James Hutton hypothesis was based on the fact that he believed that sedimentary rocks that encased fossils were formed by the gradual accumulation of sediments in lakes, rivers and oceans known as _____

Gradualism

Charles Darwin was born in _____

1809

Jean Baptiste de Lamarck proposed that all species, including human beings were descended from other species in the year_____

1809

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Charles Robert Darwin was an English_____.
naturalist

Charles Robert Darwin (1809–18882) was an _____ naturalist.
English

At what age was Charles Robert Darwin a collector of shells?
22 years

Who arranged for him to be a naturalist aboard H.M.S. Beagle?
John Henslow

The ship Charles Robert Darwin boarded was called _____
H.M.S. Beagle

The title of Thomas Malthus book was 'Essay on the Armadillo Glyptodont principles of population'.

Darwin published his work in _____
1859

In_____ , Darwin received an essay from a young English naturalist named Alfred Russel Wallace
1858

In 1858, Darwin received an essay from a young English naturalist named _____
Alfred Russel Wallace

Darwin's died in the year_____
1882

_____ before his death predicted that the fossil record should yield intermediate links between the great groups of organisms.
Darwin

An early bird-reptile called _____ was discovered in 1861
archaeopteryx

In_____, an early bird-reptile called archaeopteryx was discovered.
1861

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In 1861, an early bird-reptile called _____ was discovered.
archaeopteryx

Discoveries of microscopic fossils by paleontologists have extended back the known history of life on earth to more than _____ billion years.
3.5

Microscopic fossils were discovered by _____
Palaeontologists

Every good theory has a _____ value.
Predictive

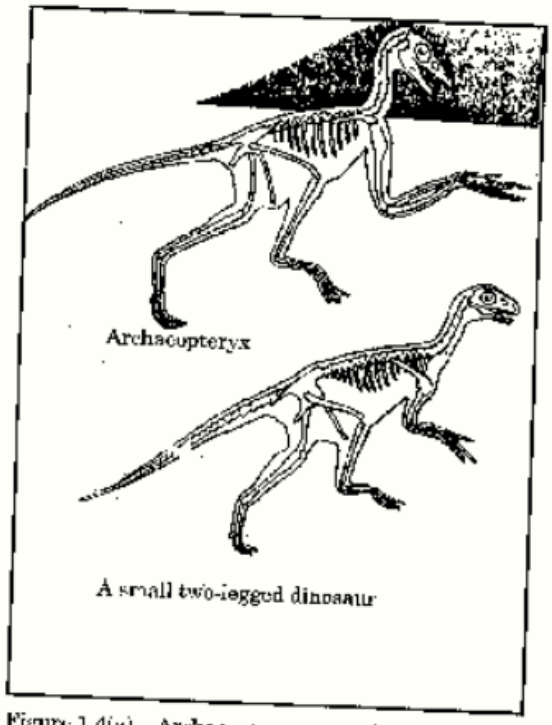


Figure 1.4(a) Archaeopteryx; a small two-legged dinosaur
(*Source:* Starr & Taggart: 1992)



Figure 1.4(b) A reconstructed archaeopteryx
(*Source:* Raven and Johnson: 1989)

A _____ is an explanation about the cause or causes of a broad range of related phenomena.
scientific theory

J.S. Mill defined _____ as 'nothing but the uniformities, which exist among natural phenomena'.

laws of nature

The entire universe is said to show uniform patterns and to form a united system. This view is called _____
The law of the uniformity of nature

_____ is the force which pulls every object in the universe toward every other object in the universe
Gravitation

The force that makes a body fall through space towards the earth is called_____
Gravitational force

The law of gravitation first started as a theory of _____
universal gravitation

The theory of universal gravitation was first postulated by_____
Sir Isaac Newton

Sir Isaac Newton was an English mathematician and _____
Physicist

Albert Einstein's theory of relativity was formulated in _____
1905

_____ law of universal gravitation states that 'any two bodies attract each other with a force directly proportional to the product of their masses and inversely proportional to the square of the distance between them'.
Newton's

The force which pulls every object in the universe towards every other object in the universe is called_____
Gravitational force

The first scientific explanation (theory) of the behaviour of falling objects was given by _____
Sir Isaac Newton
Albert Einstein's theory of relativity was formulated in _____
1905

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_____ explains the behaviour of falling objects and the motions of the moon and the planets and other motions we observe on earth.
Gravitational attraction

The origin of science is often traced to the Egyptians and _____
Babylonians

The origin of science is often traced to the _____
Egyptians and the Babylonians

The Egyptians and the Babylonians originated science during the _____ when they settled down to an organized agricultural life and activity.
Neolithic age

The word 'philosophy' was derived from two Greek words, namely: 'philos' (which means love) and 'sophia' (which means wisdom)

The word 'philosophy' was derived from _____ Greek words
Two

The Greek word 'philos' means_____
Love

The Greek word sophia' means _____
Wisdom

Philosophy literally means _____
love of wisdom

The kingdom of Egypt was divided into _____religious centres
Three

The kingdom of Egypt was divided into three religious centres which were Memphis, Heliopolis _____
Hermopolis

The Egyptian priest—scholars established a kind of school system known as the _____
Egyptian Mystery System schools

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Astronomy originated with the Egyptians through their study of the heavens, the stars and the weather.

The _____ are credited for the origination of mathematics.
Egyptians

The Rind Mathematical Papyrus was written during the reign of King A–User–Re in_____
1650 B.C

The first physician of the ancient world and the most famous was the Black Egyptian called _____
Imhotep

_____ lived about 2980 BC and was called 'the god of medicine'
Imhotep

Imhotep was called _____
the god of medicine

The sciences of mathematics, astronomy and engineering developed in Babylonia about 1800–1600 BC.

The sciences of mathematics, astronomy and engineering developed in _____
Babylonia

_____ was the world's first social philosopher.
Ipuwar

The world's first philosopher in history Ptah-Hotep (c 2800 BC) was an _____
African

_____ was the great mathematician who laid the foundation for the science of mechanics.
Archimedes

The great mathematician _____ synthesised geometry as a science in his book Elements of Geometry
Euclid

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_____ was the librarian at Alexandria who was called 'the most learned man of antiquity' advanced the knowledge of prime numbers.
Eratosthenes

Ptolemy of Alexandria was a geographer and an _____
Astronomer

Thales of Miletus, Anaximander, Pythagoras, Heraclitus and Democritus were popularly called_____
Ionian philosophers

_____ is usually referred to as the father of Western philosophy.
Thales of Miletus

_____ taught that water was the source of all things in the universe.
Thales of Miletus

Thales got this idea from seeing that the nutriment of all things is moisture and that water is the origin of the nature of moist things.

_____ forecasted the eclipse of 585BC
Thales

Anaximander was a pupil of Thales in the Milesian school.

_____ was the first among the Greeks to represent the earth on a map though the science of map making (cartography) was known in Egypt and Babylonia.
Anaximander

_____ called the 'world-stuff' the 'infinite something'.
Anaximander

The mathematical theory y called Pythagorean theory is named after_____
Pythagoras

Pythagoreans believed that the unit 'one' is the source of all numbers and they divided it into odd and even numbers.

Heraclitus (535 – 475 BC) claimed the 'world-stuff' is divine _____
Fire

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The first Greek to advance the principle of change as a universal law is _____

Heraclitus

_____ was a disciple of Leucippus who is credited with the founding of the atomic theory or the doctrine of matter.

Democritus

The Socratics included Socrates, Plato and _____

Aristotle

_____ was the teacher of Plato and was born in Athens.

Socrates (469–399 BC)

Plato's studies in Egypt and returned to Athens and opened a school called the _____

Academy

_____ was the most accomplished of Plato's pupils.

Aristotle (384–322 BC)

Aristotle was born at Stagira in _____

Macedonia

_____ was a tutor of Alexander the Great.

Aristotle

_____ was one of the emperors who gave the world its present calendar called the Julian calendar in 46 BC.

Julius Caesar

The revised calendar is called the _____

Gregorian calendar

_____ promoted the development of natural history.

Pliny (AD 23-79)

The Middle Ages are also known as the _____

medieval period

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There are two phases within medieval period
1. The Dark Ages (450 to 800 AD)
2. The Renaissance (9th to 15th century AD)

The most eminent Muslim physicist was _____
Ibn-al Haitham (965 – 1020 AD)

_____ was the greatest of the Arabic alchemist whose works were based on experience and experiment.
Rhazes (865 –925)

The second half of the Middle Ages of Western Europe is called_____
Renaissance Period

_____ was an English philosopher of science who determined the main direction of the physical science in the 13th and 14th centuries.
Robert Grosseteste (1175 –1253)

_____ was an Italian and he could stand as the incarnation of the true spirit of scientific thought of the renaissance
Leonardo da Vinci (1452 – 1519)

The _____period was characterised by an increasing desire for knowledge such that critical power resurfaced.
Renaissance

The Renaissance in science was started by two theologians: Albert the Great (1193 -1280 AD) and Thomas Aquinas (1225 – 1274 AD).

The scientific revolution started in the late _____ century
15th

True experimental science, free from philosophy and religion emerged in the 16th and 17th centuries.

_____ invented a telescope and used it to view the heavens
Galileo (1564 – 1642)

Who emphasised the roleof scientific discoveries and inventions in giving man mastery over the forces of nature?

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Francis Bacon

_____ discovery became known as the law of the conservation of mass (or matter).

Laurent L avoisier

The statement that 'cells are the building blocks of living things' is called the_____.

Cell theory

Atoms and molecules are the basic building blocks of matter.

_____ are the basic building blocks of living things.

Cells

In human beings, the cells which aid reproduction are called _____

Gametes

The gametes from fathers are called_____

sperms

The gametes from mothers are called _____

eggs or ova

The statement that 'cells are the building blocks of living things' is called the _____

cell theory

In 1839, two scientists, Theodor Schwann and Matthias Schleiden made this general statement or proposed a theory that 'cells are of universal occurrence and are the basic building blocks of an organism and that cells come from pre-existing cells'

Theodor Schwann and Matthias Schleiden proposed the cell theory in_____

1839

The theory of Evolution was proposed in the _____ century

19th

The theory of evolution by natural selection was proposed by Charles Darwin in_____

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1859

The theory of evolution by natural selection was proposed by _____
Charles Darwin

_____ is also called the 'Newton of Biology'.
Charles Darwin

_____ discovered the laws that govern movements of the heavenly bodies.
Johannes Kepler

_____ was the first person to apply mathematics as an empirical instrument to discover these laws.
Johannes Kepler

_____ was the first person who attempted to arrange the steps of the scientific method in a logical manner.
Francis Bacon (1561 – 1626)

In December _____ the German Physicist, Wilhelm Röntgen discovered the xrays
1895

In December 1895, the German Physicist, _____discovered the xrays
Wilhelm Röntgen

The Theory of Relativity was formulated by Albert Einstein in_____
1905

The Theory of Relativity was formulated by_____
Albert Einstein

In_____, men walked on the moon and unmanned landings have been made on the planets – Mars and Venus
1969

The first men to walk on the moon were American Astronauts called _____
Neil Armstrong and Edwin Aldrin

The first woman in space is _____ and that was in 1963.
Velentina Tereshkova

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_____ defined as the techniques that make use of living organisms or parts of organisms such as cells, to make or modify products, to improve plants and animals, or to develop microorganisms for specific applications
Biotechnology

The techniques of biotechnology are as follows

- cell and tissue culture technique
- fermentation technology
- cell fusion
- embryo transfer
- recombinant DNA (r DNA) technology (or genetic engineering)

The hard core of biotechnology is_____
Genetic engineering

Genetic engineering was born in the _____
1980's

The first supersonic passenger airliner called the Concorde began flight services between Europe and the United States in _____
1976

The first supersonic passenger airliner is called the _____
Concorde

A 27-year- old Russian called _____ was the first person to be in space.
Yuri Gagarin

Yuri Gagarin orbited the earth for the first time on _____
12th April 1961

_____ stayed in orbit for 108 minutes and was called the Columbus of the interplanetary age.
Yuri Gagarin

The first American in space is called_____.
Allan Shepard

_____ was an advocate of the heliocentric theory.
Johannes Kepler

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_____ was credited with the invention of the scientific instrument of observation called the telescope.
Galileo

Galileo was credited with the invention of the scientific instrument of observation called the_____.
telescope

The cellular telephones were introduced in_____
1979

Picture phone or videophone is where the callers pictures are transmitted along with their voices. It was first introduced in _____
1964

A _____ is a transportation vehicle launched into space to transport existing forms of communication devices, such as camer as, radios and television
communication satellite

The first electronic digital computer was built in _____
1946

ENIAC was built by two US engineers called J. Presper Eckert, Jr. and John William Mauchly.

ENIAC Stands for_____
Electronic Numerical Integrator and Computer

Some of the facilities and services which the Internet can provide include

- E-mail
- File Transfer Protocol (ftp)
- Telnet

The discoverer of the artifact is called_____
Dr Jean de Heinzelin

The Yoruba people are one of the tribes in Nigeria and can be found in the _____ part of the country.
Western

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The early investigations concluded that the origin of the complex system for large numbers were to **cowrie counting**

_____ are shells (shells are hard outer case covering eggs, seeds or animals) obtained from small snail – like animals found in Indian Ocean.
Cowries

_____ is regarded as the Father of Chemistry.
Robert Boyle

_____ has been referred to as the 'Father of Microscopy'.
Marcello Malppghian

_____ was a reputed mathematician and an astronomer and built the first accurate pendulum clock.
Christian Huygens

_____ is most remembered for his microscopic discovery of the cells of plants.
Robert Hooke

_____ was a brilliant mathematician and physicist and is remembered mainly for his laws of motion, and the discovery of the composite nature of white light using a sunbeam and a prism.
Isaac Newton

_____ is remembered for his discovery of electricity in 1813 during a series of deliberate researches with very simple apparatus.
Michael Faraday

Fleming, Florey and Chain were awarded the Nobel Prize for hysiology and Medicine in _____
1945

The global population in 1974 was approximately _____billion.
4.0

The global population in _____ was approximately 4.0 billion.
1974

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The continent of _____ has the lowest Gross National Product (GNP) per capital in the world.
Africa

_____ is a measure of national wealth.
GNP

GNP stands for_____
Gross National Product (GNP)

_____ is a measure of national wealth.
Gross National Product (GNP)

The period of uneasy peace was called the _____
Cold war

BSSRS stands for_____
British Society for Social Responsibility in Science

SESPA is the acronym for_____
Scientists and Engineers for Social and Political Action

Scientists and Engineers for Social and Political Action (SESPA) was formed in _____ by a group of US scientists and engineers
1969

The knowledge about the world in general was called _____
Philosophy

According to_____, the laws of nature are not the same in the planets, yet the scientists use the same law of gravitation for them because of the scientific faith in the uniformity of nature.
Philosophers

_____ means the science of the meaning of words.
Semantics

Semantics as a department of semiotics is the study of the relation of signs to the objects to which the signs refer to or designate or are applicable.

_____ is concerned with the validity or soundness of the inferences and conclusions, which we make in our arguments.

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Logic

According to evolution man evolved from_____
Apes

The Homo habilis evolved the Homo erectus discovered first in Java in 1893 and later in Perking in 1970.

The Homo habilis evolved the _____
Homo erectus

_____ evolved the Homo sapiens sapien (modern man)
Homo sapiens

The genus Australopithecus aferensis was found in _____ at Hader in Ethiopia by Johanson
1978

_____ a Dutch naturalist made 'a detailed study of the spermatozoa
Anton Van Leeuwenhoek

There is a group of _____ chromosomes within the nucleus of each reproductive cell.
46

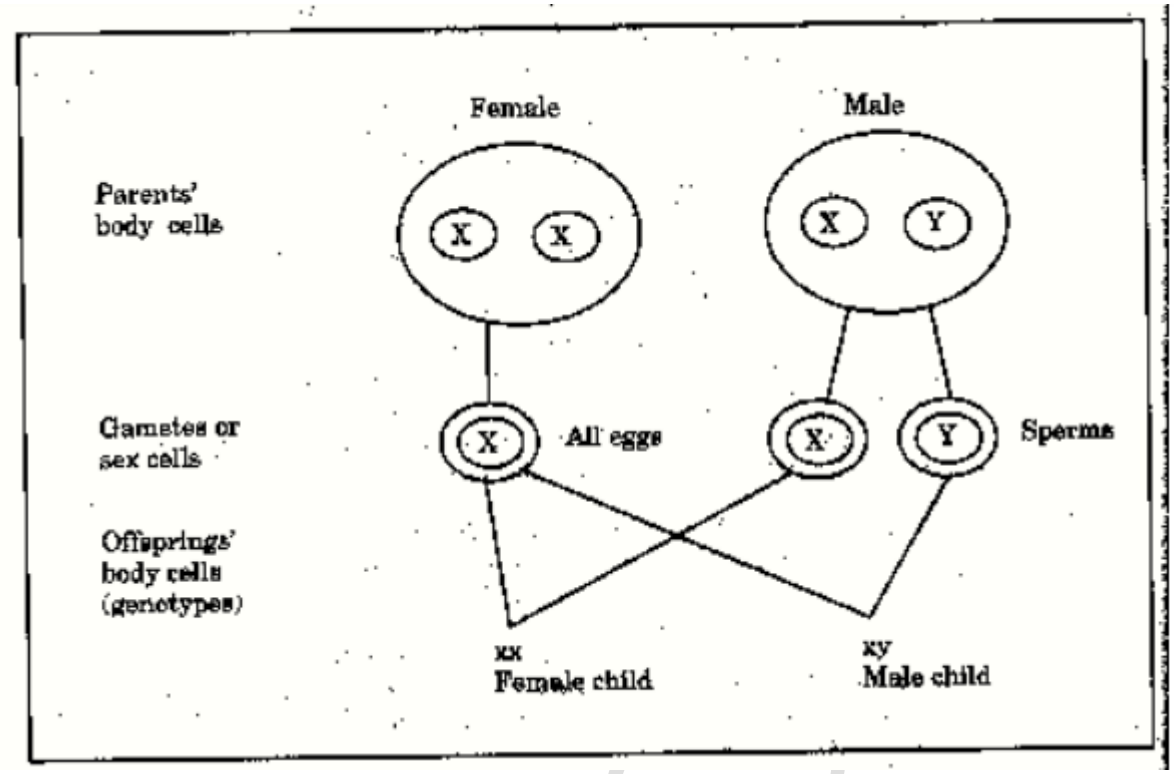
The genes are composed of what is called_____.
deoxyribonucleic acid or DNA

_____is the protein substance which controls the form and function of the cells and tissues of each particular individual so that they harmonize with his hereditary pattern
DNA

_____ is thus responsible for transmitting hereditary character istics and for the building of proteins.
DNA

The 46 chromosomes are arranged in pairs of_____.
23

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Fraternal twins make up 75% of all twin pregnancies while identical ones constitute 25%.

The branch of philosophy, which studies the structure of the universe is called_____

The cosmos

_____ is the area of study (in both disciplines) concerned with the structure of the universe.

Cosmology

The branch of philosophy which deals with the evolution and origin of the universe is called_____.

Cosmogony

The earth on which man lives is a planet or satellite of the sun.

It takes the earth approximately _____ hours (around the equator) to rotate or turn on its axis.

24

It takes the earth about _____days (i.e. one year) to complete one revolution around the sun.
365

The earth is _____ million miles away from the sun.
93

The earth is _____ miles in radius.
4,000

The earth has a surface area of _____ square miles.
196,550,000

The greatest known height is_____, which is 29,028 feet high
Mount Everest

Mount Everest is in South Asia between Nepal and Tibet.

The _____ is the layer from the sea level to about 5 miles high at the North Pole and 11 miles at the equator.
Troposphere

Within the stratosphere is the region of gas called _____
Ozone

A powerful oxidising agent used in water purification is _____
Ozone

The _____ in the upper atmosphere absorbs the most energetic ultra-violet radiation from the sun.
Ozone

1. Mercur y (no satellite) — smallest planet.
2. Venus (no satellite) — most brilliant planet in the solar system.
3. Earth (one satellite or moon)
4. Mars (2 satellites)
5. Jupiter (12 satellites) — largest planet in the solar system.
6. Saturn (10 satellites) — second largest planet
7. Uranus (5 satellites)
8. Neptune (2 satellites)
9. Pluto — the outermost planet in the entire solar system.

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There are _____ minor planets called asteroids.
2,000

There are 2,000 minor planets called_____.
asteroids

Mars has two moons known as phobos and_____
deimos

The earth has _____ moon
One

The planets with large numbers of satellites are Saturn and Jupiter. Saturn has 10 while Jupiter has 12. Uranus has 5.

The powerful energy from the sun, called solar energy is responsible for all the energy and the light in the whole solar system.

The sun, plus its _____planets and their satellites form the solar system.
nine

The sun, plus its nine planets and their satellites form the_____.
solar system

_____ are a large system of stars held together by mutual gravitation and isolated by similar systems by vast regions of space.
Galaxies

The Galaxy is called the _____
Milky Way Galaxy

A _____ is the distance traversed by light in one mean solar year.
light year

One light year is about _____ miles
5,880,000,000,000

The energy from the sun is called_____
Solar energy

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The unit of measurement which is used to measure astronomical distances is called _____

light year

The earth takes approximately _____ hours to rotate on its axis and 365 days

24

The basic foods needed by man include:

- Carbohydrates
- Fats and oil
- Proteins
- Mineral and vitamins
- Vitamins

_____ means the plant life of a region. It influences the type of farming done in an area.

Vegetation

Natural resources can be classified into _____

two

Natural resources can be classified into two:_____ and_____

living and non-living resources and renewable and non-renewable resources

Non living resources are managed by:

- Beneficiation
- Maximisation
- Substitution
- Allocation
- Recycling

_____ is the science that explores the relationship between life and the environment in which it occurs.

Ecology

_____ science is concerned with knowledge which can be observed with the senses

Empirical

Anatomy is an example of_____ science

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medical

Religion believes that the universe is governed by_____ laws
spiritual

_____is the character of science which guarantees that all who adopts the same method or procedure can prove or verify the claims or statements, which the body of scientific knowledge contains.
Objectivity

Theories that have proved to be universally valid and have a high degree of probability are called _____
Natural Laws

The ancient Egyptians believed that rats came from _____
Garbage

Another name for doctrine of fixed species is _____
Creationism

The theory of spontaneous generation was disproved by _____
Louis Pasteur

The carriers of hereditary materials in living organisms are called_____
Chromosomes

_____is the third step of scientific method
Hypothesis formulation

_____ is the name given to the procedures of doing science
Scientific Methods

Another name for basic science is_____
Pure science

Among ancient Africans the _____of Mali were reputed for their vast knowledge of astronomy
Intergovernmental organizations

_____ is the author of "Elements of Geometry"?
Euclid

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Democritus believed that everything is achieved by combination of_____
Atoms

_____introduced inductive reasoning to scientific and philosophical discourses
Socrates

The Babylonian unit of length was_____
Finger

The Greek father of modern medicine is_____
Hippocrates

Love of wisdom is said to be the etymological meaning of_____
Philosophy

In scientific method hypothesis is tested during _____
Experimentation

The Latin word for knowledge is _____
Scientia

Subtraction, addiction, multiplication, etc. are rules of _____
Mathematics

The doctrine that each species of living things was created by God is called_____
Creationism

The explanation that individuals with superior physical or behavioural attributes might have an edge in survival battle is known as_____
Natural selection

Induction is rested on a scientific law known as the_____
Law of uniformity of nature

The force which pulls every object in the universe toward every other object in the universe is called_____
Gravitation

_____ is the name which the ancient Greeks gave the Egyptian greatest physician of the ancient time

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God of medicine

The Babylonian gods lived in_____
Heaven

The type of writing invented by ancient Egyptians is called _____
Hieroglyphics

_____is often referred as the father of western philosophy
Thales

The Pythagorean theory is named after _____
Pythagoras

The atomic theory was invented by_____
Leucipus

Aquinas regarded _____as the source of all knowledge
God

Einstein held that the only absolute unchanging quantity in the universe was _____
Speed of light

The only single surviving species of hominids is the_____
Homo sapiens

Which of the following is not a discipline in the social science?
Biology

In resolving mathematical problems involving BODMAS what do you resolve first?
Bracket

Which of these is not a branch of mathematics?
Addition

Which among the following is not an example of empirical science?
Ethics

Which of the following is an appropriate concern of empirical science?
Material Things

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Which of the following is not a tool of the empirical science?
History

Which of these is not an example of physical science?
Mathematics

Which of these is an example of non-science?
Religion

The fact that scientific claims can be verified by others adopting the same method is proof of what in science?
Objectivity

Which of these is not a characteristic of non science?
Objectivity

"Which of these is not a definition of science?
Absolute truth about the world

Which step of the scientific method is concerned with guessing?
Hypothesis formulation

What is the mark of a good theory?
Its predictive value

Science does not enables us to do which of the following?
Worship nature

_____science has deductive character
Formal

What is the name given to unexpected scientific observation?
Spontaneous observation

Scientists undertake experimentation because they are in search of what?
Evidence

Which of these is not a manifestation of man's creative capacity?
Procreation

What are the types of thinking required by the scientific method?

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Creative thinking and critical thinking

Falsifiability as a scientific attitude is credited to _____
Karl Popper

Hypothesis is basically about what?
Guessing answers to questions raised

Which of the following is not a form which a theory can take?
Prophetic pronouncement

Which of these is not an example of a theory?
Theory of assumptive veneration

From who did the Islamic scholars borrow the idea of Zero?
Hindu Mathematicians

Modern science arose in what centuries AD?
15th and 16th

The traditional explanation of reality does not involve which of these?
Causality

Who first propounded the theory of universal gravitation?
Isaac Newton

Which of these is not among the great groups of organisms?
Insects

Which of these is the naturalist who independently arrived at theory of evolution at the same time with Darwin?
Alfred Wallace

Which of the following is not a rule of Mathematics?
Triangulation

_____branch of science studies objects and phenomena which can be observed through any of the senses
Empirical science

The religious centres of Kingdom of Egypt were administered by who?
Priest-scholars

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In which country was the lunar calendar invented?
Egypt

Who pioneered the division of day into hour?
Babylonians

To whom do we attribute the critical tradition of medicine?
Anaximander

The simple meaning of Australopithecus is _____
Southern Ape

Which stage of evolution did the HOMO looked very much like modern man?
Homo Sapien

At what stage of evolution did man began to control fire and fashion advanced tools?
Homo Erectus

According to the evolutionist, man originated from _____
Africa

The principle of Gravitational attraction which answers the questions of earlier scientists was formulated by _____
Issac Newton

The honour of inventing a scientific instrument called the telescope goes to _____
Galileo

According to history, the first great change in scientific outlook after the renaissance was made by a Polish mathematician and astronomers called _____
Nicolaus Copernicus

The Nigerian scientist whose name appear in the history book of internet was _____
Philip Emeagwali

The geologist who propounded the idea of gradualism in evolution is called _____

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James Hutton

_____ is the remains or body impressions of dead organism that lived is the past
Fossils

The belief that each kind of animal and plant had remained unchanged since creation is called _____
doctrine of fixed creationism

The progressive change of living things through ages and time is called _____
Evolution

Among the ancient settlement, Tigris and Euphrates valley is found in _____
Babylonia

_____ is not part of primitive agriculture
Seasoning

True experiment science, free from philosophy and religion emerged in the _____
16th and 17th century

An Italian monk who taught alongside Albert the great at University of Paris in the 12th century was _____
Thomas Aquinas

Historically rebirth or revival of learning was started in Italy by three scholars called _____, _____ and _____
Dante, Petrarch and Boccaccio

The spirit of questioning old beliefs and forming new opinions was described as _____
renaissance

What is the difference between the renaissance men and the men of dark of ages in term of attitude. It is _____
men of dark ages were satisfied and did not ask question

The food that man eat are derived from _____

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plant and animal

The sun supplies solar energy while the plants provide _____
Oxygen

Man's existence is sustained through biological reproduction and _____
utilization of natural resources from his environment

The founder of the Geometric Machine Corporation and a consultant to North Atlantic Treaty Organization is _____
Bartholomew Nnaji

Yangte is a river found in _____
China

The interdependence between man and plant in their air consumption is called_____
Symbiosis

_____ is a simpler form of sugar which is derived from carbondioxide, water and sunlight
Glucose

Yankari Game Reserve is located in _____ state
Bauchi

Which of these sphere is not part of the layers in the atmosphere _____
Xtratosphere

In which of these vegetation is farming difficult. _____
Tundra

Temperate rain forest can be found can be found in _____
USA and China

The theory that state that the earth is the center of the universe and all other heavenly bodies move round it. This theory is called _____
Geocentric

A scientist who used his primitive microscopic in 1665 to observe that plant materials have cellular structure was _____
Robert Hooke

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The combination of two hydrogen atom and one atom of oxygen will produce _____

Water

Who among the following scientists will receive the honour of revolution in chemistry. It goes to _____

Antoine Laurent Lavoisier

____ is a substance whose presence in the air is harmful

Pollutant

_____ refers to the release of substances or energy into the environment in quantities which are harmful to man and other living things

Pollution

The bombing of Japanese cities during the second world war in 1945 was carried out by the _____

Japan

Which of these towns were destroyed by atomic bombs during the 2nd world war?

Nagasaki

_____ refers to absorbing and returning of heat to the earth's surface due to green house gases

global warming

The threat to climate arises from the retention of a level of _____ in the atmosphere

Carbondioxide

____ is a collection of various computer networks linked together and communicating by a common protocol

Internet

The term ENIAC simply means _____

Electronic Numeral Integrator and Computer

The first electronic digital computer was assembled in the year _____

1946

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The first communication satelite called "Echos" was launched by the _____
United State

The first step of the Arabs when they came in contact with ancient science was _____
searched for the writing of the greeks and translated them into their language

In which region of the world did Islamic knowledge flourish?
East

One significant invention during the dark ages that was not noticed is _____
the convention of rigid horse collar and iron horse shoes

The proposition that "everything that moves is moved by something else" can be credited to _____
Aristotle

From the point of view of early christians, knowledge on nature was valued only as a means of _____
Edification

The first scientist-philosopher who attempted to arrange the steps of scientific method in a logical manner was _____
Francis beacon

The most greatest eminent Muslim Physicist was _____
Ibn-al-Huthaim

The copernican theory of the universe was _____
not based on experimentation

The view of the universe which posited that the sun is at the centre of universe while the planets revolve round is called _____
heliocentric theory

The view of the author of AlMajest about the earth and other planets is called _____
geocentric theory

Australopithecus_____ was found in 1924 in South Africa
Africanus

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Paradigm conservation in philosophy refers to _____
impractical proposal

Semantic in philosophy is about _____
Language

The philosopher that introduced the principle of falsifiability is called _____
Karl Popper

Falsifiability simply means _____
the principle which take care of statement which cannot be verified

Philosophy with the analysis of concepts and the meaning of words is called _____
Semeiotic

The branch of philosophy which deals with validity and soundness of an argument is called _____
Logic

All men are mortal, John is a man, therefore John is a mortal. The conclusion John is Mortal is a ____ knowledge
Deductive

_____ is a branch of philosophy that deals with human and thought
Logic

Philosophy of science is hinged on the _____ nature of philosophy
Reflective

According to the Greeks, a philosopher is simply _____
lover of wisdom

Anatomy, physiology, surgery can be categorized as _____
medical science

Physics, chemistry and astronomy can also be described as _____
physical science

Sense perception objects are mostly associated with _____
empirical science

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Physics, chemistry, biology and medical sciences are best described as _____
empirical science

Religion relies on the principle that the universe is generally governed by ____ laws
Spiritual

Logic, physics and statistics will be best described as _____
formal science

Geometry, algebra, trigonometry and arithmethic are examples of _____
formal science

Which of the Australopithecus was discovered in Ethiopia in 1978?
Aferensis

The year _____ seems to be the most important time in early development of modern science.
1660

_____ formed the first great synthesis of physical knowledge which is the primary aim of science.
Copernicus, Kepler, Galileo and Newton

_____ proposed a principle of gravitational attraction
Newton

By using principle of gravitational attraction, _____ was able to explain the motion of the planets round the sun, the familiar fall to the ground of fruit from trees, and all other motions which we see on earth.
Newton

_____ is regarded as the first person to attempt to arrange the steps of the scientific method in a logical manner.
Francis Bacon

In the _____centuries, further advances were made in Mathematics and Astronomy.
18th and 19th

The person that can be called the 'Newton of Chemistry' was a man named _____

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Antoine

_____ discovered that it was a gas, which he named oxygen that enables combustion (burning) and respiration to take place
Laurent Lavoisier

_____ insisted that the central concern of the new chemistry was the use of gravimetric method.
Lavoisier

Lavoisier insisted that the central concern of the new chemistry was the use of _____ method.
Gravimetric

_____ involves paying particular attention to the weight of the ingredients involved in chemical reactions and of the products that result.
Gravimetric method

The discovery of Laurent Lavoisier became known as the_____
law of the conservation of mass (or matter)

The revolution in _____ was both a revolution in method as well as in ideas.
Chemistry

The _____ century has been regarded as the beginning of the scientific age
19th

The 19th century has been regarded as the beginning of the _____
scientific age

Living things are built with_____.
Cells

In human beings also, the cells which aid reproduction are called_____.
Gametes

The gametes from fathers are called _____
sperms

The gametes from mothers are called_____.
eggs or ova

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The combination of the sperm of a man and the egg from his wife brings _____

Pregnancy

The statement that 'cells are the building blocks of living things' is called the_____.

cell theory

_____ is called the 'Newton of Biology'.

Charles Darwin

Charles Darwin is called the_____.

Newton of Biology

_____ was the first person who attempted to arrange the steps of the scientific method in a logical manner.

Francis Bacon

The theory of evolution by natural selection was proposed by _____

Charles Darwin

The theory of evolution by natural selection was proposed by Charles Darwin in_____.

1859

The formulation of the cell theory by Theodor Schwann and Matthias Schleiden took place in _____

1839

_____ states that the earth is the centre of the universe and all other heavenly bodies move round it.

Geocentric theory

Geocentric theory was proposed by_____.

Ptolemy of Alexandria

The observation made by Copernicus is called _____

direct observation

The observation made by Galileo is called_____.

indirect observation

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_____ use his naked eyes to view the heavens while _____ made use of the telescope.
Copernicus, Galileo

The _____ states that 'cells are of universal occurrence and are the basic building blocks of an organism and that cells come from pre-existing cells'.
cell theory

The most disturbing of all the upsetting results of early 20th century physics was the formulation of Theory of Relativity by _____
Albert Einstein

The most disturbing of all the upsetting results of early 20th century physics was the formulation of Theory of Relativity by Albert Einstein in _____
1905

Picture phone or videophone is where the callers pictures are transmitted along with their voices. It was first introduced in_____.
1964

The first communication satellite is called _____
Echo I

The first communication satellite called Echo I was launched by the United States in_____.
1960

A _____ is a transportation vehicle launched into space to transport existing forms of communication devices, such as camer as, radios, television Etc.
communication satellite

The _____ enables the communication devices to operate at a far greater distance and add vast amounts of information to man's knowledge
Satellite

The first electronic digital computer was built in _____
1946

The Internet is a collection of various computer networks, linked together and communicating by a common protocol known as _____
TCP/IP

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The Internet is an invention of the _____ century.
20th

E-mail means_____
Electronic mail

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