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GST105: HISTORY AND PHILOSOPHY OF SCIENCE

The word **'science'** is derived from the ____word
Latin

the word **scientia** means___ **Knowledge**

science generally is regarded in __main ways **three**

science generally is regarded in three main ways as__ **A body of knowledge.**

A method for acquiring knowledge or studying and understanding the world. **An institution.**

The two branches of science are empirical and ___sciences **formal**

____science utilises concepts, rules and theories, and expresses them in quantitative and statistical manner. **Formal**

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

Formal sciences have a formal and ____character. **deductive**

Science is said to be **formal** if its contents, arguments and ___obey certain rules. **procedures**

____science include physics, chemistry, biology, psychology, botany, zoology, biochemistry, microbiology, geology, medical **empirical**

The second way of grouping scientific disciplines is according to ___ **the class of objects**

the second way of grouping scientific disciples involves the following ways__
Natural sciences Physical sciences
Biological sciences.

Medical sciences Pharmaceutical sciences

what disciplines are concerned with drugs and drug contents of plants and other objects?
Pharmaceutical sciences

__ science deal with physical and inanimate objects such as rocks, rivers, and mountains.

physical science

what science deal with living bodies such as human beings, animals, insects and plants.
biological science

what disciplines deal with objects and problems that affect human and animal health? **medical science**

an example of formal science is__
medicine
economics biology
mathematics

objects which can be perceived by senses include___
human body **goats** weather
all of the above

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

__seeks knowledge that is objective, certain, systematic, provable and supported by evidence.
Science

_____is a collection of 'facts' (body of knowledge) that describe and explain the workings of nature.
science

The process is characterised by a sequence of steps, which enable scientists to approach objective truth as closely as possible which are_____
Observation Problem definition Hypothesis formulation Experimentation Conclusion Theory formulation

Knowledge comes from noticing resemblances and recurrences in the events that happen around us,this was said by _____ **Wilfred Trotter**

_____is the first step of the scientific method. **Observation**

Observations can also be classified into _____
Spontaneous or passive observations and Induced or active observations

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

the second step of scientific method is called____ **problem definition**

the third step of scientific method is called_____ **Hypothesis formulation**

The main function of a hypothesis is to _____ **predict new experiments or new observations.**

who was a german scientist who went to bed one night after fairly getting drunk and in his sleep, he dreamt of six monkeys Kekulé went chasing one another in a circle, the tail of one held in the teeth of the other.
Kekulé

who concluded that benzene has six carbon atoms 'chasing' one another in a circle(structure of benzene) **kekule**

The German chemist called ———————————— discovered the structure of benzene. **kekule**

The final step of the scientific method is ____ **theory formulation.**

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

A _____is usually proposed when a hypothesis has been supported by really convincing evidence. **theory**

A principle characteristic of scientific thinking is that the sequence of observing, hypothesising, experimenting, concluding and ____ **interpreting**

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

In_____, it was generally believed that organisms originatedspontaneously from non-living matter. **ancient times**

who believed that rats came from garbage? **ancient Egyptians**

acteria was a microorganisms discovered in __ **1676**

who clearly declared his belief that each kind of animal and plant had remained unchanged from the day it was created? **john ray**

The study of fossils which was begun in the **eighteenth century** by __ **Georges**

in what year was Charles Darwin born? **1809**

___ proposed that all species, including human beings were descended from other species **Jean Baptiste de Lamarck**

___ believed that life changed progressively from the simple to the more complex. **Jean Baptiste de Lamarck**

____ theory states that 'changes acquired during an individual's life are brought about by environmental pressure and internal "desires" and that offspring inherit the desired changes' **theory of inheritance**

At the age of eight, _____ interest in observing the natural world was manifested**.** **Charles Robert Darwin**

Darwin's theory of evolution provides an explanation for three main sets of facts about life on earth, which we observe and these are__
The incredible display of different types of living things we see about us.
The different degrees of likeness among the living things. The likeness could be anatomical or molecular.
The fossil record that shows a sequence in the kinds of organisms that have lived on earth over billions of years.

in what year was archaeopteryx discovered? **1861**

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

_____is the science of inheritance. **Genetics**

___is the science that examines the chemical processes and substances that occur in living things. **Biochemistry**

The pattern and regularity of these changes can be expressed as rules or laws. These laws are called_____ **natural laws**

___defined laws of nature as 'nothing but the uniformities, which exist among natural phenomena'. **Nwala (1997)**

laws of nature refer to, that is, encompass the following__
Those uniformities found in nature (that is uniformities in behaviour, function, relations and properties of things).
Established connection of successive events which make up the order of the universe. Established theories through scientific research

Examples of laws of nature are____
Law of the uniformity of nature
Law of causation
The law of gravitation
The law of natural selection

____is the force which pulls every object in the universe toward every other object in the universe **Gravitation**

The law of gravitation first started as a theory of universal ___ **gravitation.**

theory of universal gravitation was first postulated by___ **Sir Isaac Newton (1642-1727)**

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 origin of science is often traced to the **Egyptians** and the ____ **Babylonians.**

at the time of the Egyptians and Babylonians, people who studied plants, animals, stars and other heavenly bodies, rocks, soils, etc were all called _____ **philosophers.**

'philosophy' was taken from two Greek words, namely: **'philos'** which means____ and **'sophia'** which means____ **love/wisdom**

The kingdom of Egypt was divided into three religious centres, which were Memphis, Heliopolis and____ **Thebes or Hermopolis.**

Astronomy originated with the ____through their study of the heavens **Egyptians**

Credit is also given to the ___for the origination of mathematics.
Egyptians

The sciences of mathematics, astronomy and engineering (irrigation and canal construction) also developed in _____about 1800-1600 BC.

Babylonia

The first accurate astronomical observation they recorded was the rising and setting of the ____ **planet Venus**

The Babylonians also realised the importance of fixed units of physical measurement. Their unit of length was the ___ **finger**

in the physical measurement of Babylonians, the foot contained ____fingers **twenty**

in the physical measurement of Babylonians, the cubit contained ____fingers **thirty**

the medium of exchange for the Babylonians was the ___ **barley**

The world's first philosopher in history was called___ **Ptah-Hotep**

who was the world's first social philosopher? **Ipuwar**

The black Egyptian **Imhotep** who lived **2000 years** before Hippocrates, was called by the Greeks ____ **'the god of medicine'**

The world's first woman philosopher is called____ **Hypathia**

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

_____ people were known as natural philosophers because they engaged themselves with the study of nature and the origin of the world. **Pre-socratics**

who was usually referred to as the father of Western philosophy? **Thales of Miletus**

who taught that water was the source of all things in the universe? **Thales of Miletus**

____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**

___ believed that the universe was composed of numbers in various shapes -squares, cubes, oblong, triangular,
Pythagoras

___ was the first Greek to advance the principle of change as a universal law.

Heraclitus

According to _____, 'From life comes death; from death comes life; sleep changes into wakefulness and wakefulness changes into sleep'. Everything in the universe, he says, has its own opposite **Heraclitus**

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

___proposed that matter is made up of atoms and they are infinite in number and too small to be perceived by the senses. **Democritus**

According to ____, everything new is produced from a combination of atoms and that death or cessation takes place when atoms separate. **Democritus**

The Socratics includes Socrates, Plato and ___ **Aristotle.**

who was the teacher of Plato and was born in Athens? **Socrates**

who was the philosopher that loved mathematics and he formulated the idea of negative numbers? **Plato**

__suggested that the earth rotates on its own axis once in every 24 hours and that Mercury and Venus circle round the sun like satellites **Heracleides**

___enriched science with universal definitions and inductive reasoning. **Socrates**

___wrote books on almost all the areas of knowledge - biology, zoology, physics, astronomy, etc. **Aristotle**

Scientific innovation began to decline in the **Roman Empire**.

The calendar invented by the Egyptians was modified further by **Julius Caesar** and __ **Pope Gregory III.**

Julius Caesar, one of emperors gave the world its present calendar called the ___ **Julian calendar in 46 BC.**

Science originated in ____
Egypt and Babylonia

Egyptian priest-scholars established a kind of school known as the ____Schools where every known discipline was taught by the priests. **Egyptian Mystery System**

Evidence for the Egyptian origins of mathematics and medicine can be found in the _____and the _____respectively.
Rind Mathematical Papyrus/Edwin Papyrus

who developed the most descriptive astronomy of the ancient world? **Babylonians**

__ were the first to divide the day into hours, minutes and seconds and also divided the circle into 360 degrees.
Babylonians

____philosophy is the origin of Western philosophy.
Egyptian

the period from about AD 450 to 800 is sometimes called the _____ **'Dark Ages'.**

All through the Middle Ages, there was only one Christian church (Roman Catholic) in Western Europe. It became a symbol of unity, such that the united Christian world was called '_____'. **Christendom**

Aristotle were assimilated in Islam, by the end of the _____century.
9th

In the field of science were two very influential theologians and philosophers: Albert 'the Great'(1193 1280 AD), a Bavarian Dominican priest, and **Thomas Aquinas (1225 - 1274 AD), an Italian monk.**

_____was an English philosopher who determined the main direction of the physical science in the 13th and 14th centuries and had knowledge of the workings of mirrors and of the nature of lenses **Robert Grosseteste (1175 -1253).**

Renaissance period is the second half of the Middle Ages of Western Europe and it started from the _____century. **9th to 15th**

This spirit of questioning old beliefs and forming new opinions generally came to be described as the __ **'Renaissance'**

____was the first man in Europe, during the renaissance period, approached in scientific spirit, the great Arabians who preceded him
Roger Bacon

____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)

___was a painter, a sculptor, an engineer, an architect, a physicist, a biologist and a philosopher
Leonardo da Vinci (1452 - 1519)

According to _____, 'those sciences which do not begin with experiments, the mother of all certainties and which do not end with one clear experiment are vain and full of errors'

Leonardo da Vinci (1452 - 1519)

The Middle Ages of Western Europe comprise two phases which are: **the Dark Ages (450 to 800 AD)** and **the Renaissance (9th to 15th century AD).**

In the_____, knowledge of nature was valued only as a means of edification or as an illustration of the passages of scripture **Dark Ages**

In ____ages, the monks in monasteries translated ancient works into Latin and thus kept alive some amount of learning **Dark**

While Europe was in the____, Islamic learning started to flourish **Dark Ages**

Islamic scholars translated Greek writings into their language because ____ **they treasured ancient science**

Islamic thinkers also created the science of algebra and the study of _____functions **algebraic**

___ also borrowed the idea of zero from the Hindu mathematicians and invented the Arabic numerals. **Islamic thinkers**

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)**

____was an Italian, provided a most beautiful evidence, to justify that ancient authorities should no longer be accepted without criticisms **Galileo**

____is regarded as the first person to attempt to arrange the steps of the scientific method in a logical manner.
Francis Bacon (1561 - 1626 AD)

____discovered that it was a gas, which he named oxygen that enables combustion (burning) and respiration to take place
Laurent L avoisier (1743 - 1794 AD

In human beings also, the cells which aid reproduction are called ___ **gametes**

The gametes from fathers are called **sperms**, while those from mothers are called ____ **eggs or ova**

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

cell theory.

in_____, 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' **1839**

Another fundamental theory of Biology proposed in the _____ century was the theory of Evolution

19th

who was called the 'Newton of Biology' **Charles Darwin**

There was a complete change in scientific outlook from late 15th century up to ____ **17th century**

The first great change in scientific outlook was made by ___ **Nicolaus Copernicus (1473 -1543)**

____ disproved the Ptolemaic system or Geocentric theory, which stated that 'the earth was the centre of the universe and all other heavenly bodies move round it in circles' **Nicolaus Copernicus (1473 - 1543)**

who discovered the laws that govern movements of the heavenly bodies? **Johannes Kepler(1571 -1630)**

___ proposed a theory of gravitational attraction to answer these questions. Gravitation is the force that pulls every object in the universe towards ever y other object in the universe. **Isaac Newton**

The classic ages of science were the _____centuries **18th and 19th**

The explosion in Chemistry was started by __ **Antoine Laurent Lavoisier (1743 - 1794).**

who discovered that it was a gas, which he called oxygen that enables combustion and respiration to take place.? **Francis Bacon**

In_____, the German Physicist, Wilhelm Röntgen discovered the xrays **December 1895**

___is therefore defined as the techniques that make use of living organisms or parts of organisms such as cells, to make or roducts, to improve plants and animals, or to develop microorganisms for specific applications **Biotechnology**

Some of the techniques of biotechnology are as follows:

1. cell and tissue culture technique
2. fermentation technology

3. cell fusion
4. embryo transfer
5. recombinant DNA (r DNA) technology (or genetic engineering).

_____engineering is the hard core of biotechnology **Genetic**

A _____is the basic unit of heredity **gene**

In agriculture, applications of genetic engineering include the following___
Herbicide resistance
Insect resistance

Aeroplanes with jet engines were built during the late __
1930's

the 20th century was called____ **space age**

who was the first person to be in space? **Yuri Gagarin**

The first American in space is called ___
Allan Shepard

The first communication satellite called **Echo I**, was launched by the United States in ___ **1960**

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

The first electronic digital computer was built in **1946**, and was called ____
ENIAC (Electronic Numerical Integrator and Computer)

The Internet is another invention of the 20th century. It began in the early ___ **1970's**

Cellular phones were introduced in _____ **1979.**

The first petrol-engined aeroplane was built in **1903** by _____
Orville and Wilbur Wright

Genetic engineering is also used in human _____ **cloning**

In _____genetic engineering is used to confer herbicide resistance to plants, such as soyabean and cotton plants. **Agriculture**

In_____, genetically- engineered proteins include, human insulin human interferon, tissue plasminogen activator and atrial peptides **pharmaceuticals**

Genetic Engineering, which is the hard core of Biotechnology, started in ____ **1980**

___ is a collection of various computer networks, linked together and communicating by a common protocol known as TCP/IP (that is Transmission Control Protocol/Internet Protocol) **internet**

Some of the facilities and services which the Internet can provide include ___ **(a) E-mail**
(b) File Transfer Protocol (ftp)
(c) Telnet

In 1978, ____A very both of Brown University, USA, announced that between 1,500 - 2,000 years ago, Africans who lived on the western shores of Lake Victoria in Tanzania had produced carbon steel **Peter Schmidt and Donald**

The _____people are the present occupants of the western shores of Lake Victoria **haya**

____excavated iron crystals from the site where the Haya people said that one of their ancient kings had climbed a pillar of iron to ascend to the heavens **Peter Schmidt**

who persuaded some Haya blacksmiths to carry out a smelting experiment? **Peter Schmidt**

The ____people introduced a process in their smelting that was very original and in advance of their time **Haya**

The _____people of Mali incorporated the rising and setting of certain stars or groups of stars into their various calendar. **Dogon**

what star is the brightest star in the sky? **Sirius**

The __ extensive knowledge of the heavenly bodies, especially 'Sirius B' sent shock waves around the scientific world **Dogon's**

Two French anthropologists called ____and _____were the people that revealed this information on the Dogon people
Marcel Griaule and Germaine Dieterlen

who studied the Dogon people form 1931 to 956 and Their ambition was to fully understand the Dogon especially their religion

Marcel Griaule and Germaine Dieterlen

Among the earliest evidence of the use of numbers in Africa is called___ **carved bone**

The Yorubas have a complex number system, which is based on ____ **twenty**

The subtractive principle in the Yoruba number system originated because of ___ **the practice of counting cowries by fives**

_____is both the process and product of investigation and research **Science**

Curiosity motivates scientists to carry out investigations and research, while the desire to know how to translate ideas and ____into concrete products or processes, is what motivates technologist **plans**

what began when man-made and used tools, in his desire to provide for his basic needs of food, clothing and shelter. **Technology**

Technology can be subdivided into **classical - low technology** such as fabrication of iron, steel etc, and **science - based** high technology such as space technologies, Nuclear energy etc

___ is concerned with human reasoning or thought **logic**

there are _____types of logic **two(deductive logic and inductive logic)**

when move from a set of premises, which we assume to be true to a conclusion then we say it's a ____logic **Deductive logic**

the method of reasoning is also called____ **Deductive logic or inductive logic**

_____ is the type of reasoning in which we go from some particular statements to a general conclusion **Inductive logic**

The inductive method is also called the _____method **Baconian**

the Various views on the origin of man are___
The religious view
The scientific view

The religious view is upheld by the ___ **creationists.**

what view is held by the evolutionists? **The scientific view**

The theory of _____developed from the perspective of science states that man, like all other living things (animals and plants) have evolved from simpler forms of life by a process of slow and gradual change (evolution). **evolution**

Australopithecus africanus was discovered in **1924** in **South Africa** by ___ **Raymond Dart.**

Australopithecus boisei and Australopithecus robustus appeared in East Africa about ___years ago **2.5-3 million**

The **Neanderthals** lived in Europe and Western Asia from 70,000 to about ____years ago **32,000**

The evolutionary development of man from an ape-like primate was marked by four important factors, namely___
1. the growth and elaboration of the brain
2. the perfection of erect posture
3. a slowing down of postnatal development
4. the growth in human popula

Two views on the origin of man are the religious or **creationist** view and the scientific or the **evolutionist view**

The first Hominids emerged ____million years ago **5 to 10**

The earliest known hominids were the members of the genus ___ **Australopithecus**

___were the first known representative of the human lineage. **Homo - H. habilis**

___ were the first humans to use fire and to live at times in caves
Homo erectus

what is the cell responsible for the birth of new organisms. **reproductive cell**

_____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

DNA stands for ____ **deoxyribonucleic acid**

there are estimated ___ billion different combinations chromosomes possible when the sex cells from husband and wife unite at the time of conception

281

One chromosome in each pair of chromosomes is sex chromosome while the rest of the 22 cells are ___ **autosomes**

In the case of_____, it means that the mother released two female sex cells at one time for the particular month in which conception occurred, each being joined or fertilized by separate male sex cell **fraternal twins**

Fraternal twins make up ___of all twin pregnancies
75%

identical twins make up ___of all twin pregnancies **25%**

What distinguishes man and places him high above all other earthly and visible creatures is his infinite capacity to ____ **create**

Six kinds of specialised cells in man which are_____
(a) skin cells called epithelium tissues
(b) bone or connective tissue cells
(c) muscle cells
(d) blood cells
(d) nervous tissue cells
(f) reproductive cells

The _____are the carriers of the hereditary materials **chromosomes**

The hereditary materials or determinants of heredity are called the _____ **genes**

___is the world or the universe, regarded as one orderly system with a structure, whose parts are linked together in an orderly manner **cosmos**

The branch of philosophy, which studies the structure of the universe is called___ **cosmos**

____ is a branch of astronomy, which deals with the general structure and evolution of the universe. **Cosmology**

The branch of philosophy which deals with the evolution and origin of the universe is called _____ **cosmogony**

___ takes the earth approximately 24 hours (around the equator) to rotate or turn on its axis. **Rotation of the earth**

___ takes the earth about 365 days (i.e. one year) to complete one revolution around the sun **Revolution of the earth**

The earth is ____ million miles away from the sun **93**

The earth has a surface area of ____square miles **196,550,000**

what is the part of the earth's crust, water and atmosphere where living organisms can subsist? **biosphere**

what is the gaseous envelope (or air) surrounding the earth? **atmosphere**

there are____sublayer of the atmosphere **three(troposphere,strastosphere and ionosphere)**

___is the sublayer of the atmosphere from the sea level to about 5 miles high at the North Pole and 11 miles at the equator **The troposphere**

___layer in the atmosphere is a protective layer important for the sustenance of life on earth. **ozone**

____is a sublayer of the atmosphere that is high up to 50miles **ozone**

____is a sublayer of the atmosphere that ranges from 50 miles t0 300 miles. **The ionosphere**

The various layers of the atmosphere differ mainly in their __ **temperature**

For the_____, temperature drops to about 30F for every 100 feet height **troposphere**

For_____, temperature rises to 900 F in the ozone layer and falls to about 1000 F at the top of the layer **strato sphere**

For the_____, temperature rises to about 4,0000 F at the 300 miles up **ionosphere**

The smallest planet in the solar system is called____ **mercury(has no satellite)**

the most brilliant planet in the solar system is called___ **venus**

how many satellite or moon does earth have?

one

how many satellite or moon does mars have?
two

how many satellite or moon does jupiter have?
12

what is the largest planet in the solar system? **Jupiter**

what planet is the second largest in the solar system? **Saturn**

how many satellite or moon does saturn have?
10

how many satellite does Uranus have?
5

how many satellite does neptune have?
2

the outermost planet in the entire solar system is called? **pluto**

The sun, plus its nine planets and their satellites form the ____ **solar system**

The solar system along with other stars and their satellites form a collection or group called the ____ **Galaxy**

____are a large system of stars held together by mutual gravitation and isolated by similar systems by vast regions of space **Galaxies**

The Milky Way Galaxy contains about _____million stars
100,000

a _____is a unit of measurement of distant objects such as stellar (i.e. star) distances **light year**

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 unit of measurement which is used to measure astronomical distances is called__
light year

__is the main source of energy needed by plants and animals **carbohydrate**

The three main types of carbohydrates are sugar, starch and ____ **cellulose**

___means the plant life of a region

Vegetation

natural resources could be classified in two ways, which are:living resources and____ **non-living resources**

__ are resources that can reproduce or renew themselves **renewable resources**

___are those resources which do not usually replace themselves once they are used **non-renewable**

___ is the process of care whereby a resource that occurs in an uneconomical formation is upgraded or improved, i.e. rendered economically viable. **Beneficiation**

___ is the sum of those measures that make for the avoidance of waste and which also increase the production of a resource **Maximisation**

___ is the utilisation of readily available resources in place of a rare one **Substitution**

___ involves the determination of the best use of a particular resource and the scheduling of such a resource for that use
Allocation

___ is the gathering of waste or used materials, reprocessing them, and using them again in place of fresh materials **Recycling**

Philip Emeagwali was born on ___in Akure **August 23, 1954**

the father of Philip emeagwali was ?
james emeagwali

the mother of Philip emeagwali was ? **Agatha**

james emeagwali worked out a theoretical scheme for using **64,000 far-flung processors** that will be evenly distributed around the Earth, to forecast the weather which he called___ **Hyper Ball International Network of computers**

an International Network of Computers is called the ____ **Internet.**

There are ___ chromosones within the nucleus of a productive cell Ans:
46

All living beings are said to compose of ___
Ans: **cells**

___ distinguishes him from other living things Ans:
Capacty create

The first known hominids were the ___ Ans:
Southern apes

The use of language first evolved among ___
Ans: **homo habilis**

The evolutionists believe that man evolved directly from ___ Ans:
apes

Current evolutionists put forward the belief that man and primates originated from ____ Ans:
Africa

Scientists who try to prove the theory of evolution rely heavily on ___ Ans:
fossils

The belief that God created the universe is called ___ Ans:
creationism

___ type of logic is also regarded as Baconian logic Ans:
inductive

Branches of philosophy do not include ___ Ans:
science

The beleief in a existence of external reality independent of our belief or knowledge of it is called ___
Ans: **objectivity**

Whch of these is not a characteristic of scientific knowledge? Ans:
relativity

___ is not among the similarities between science and philosophy Ans:
both employ empirical method of investigation

Which of these is not among the commitment of British Society for Social Responsibility in Science?
make scientists aware of social significance of science
make them aware of their social responsibility
Ans: **make them aware of the need to bridge scince gap among countries** help
create an informed public that can exercise a choice in scientific matters

Scientists and Engineers for Social and Political Action was formed in __ Ans:
1969

Technological progress is not responsible for ___
Ans: **purification of air**

We owe the discovery of electricity to ___
Ans: **Faraday**

___ is not method of technology acquisition
Ans: **apprenticed technology**

The discovery of ___ is the most important discovery of stone age Ans:
fire

Man's technical progress is governed by __ and ___
Ans: **discovery and invention**

___ drives scientific inventions
Ans: **curiousity**

The advantage of email over regular mail is ___ Ans:
speed

__ was the first person to fly into the space
Ans: **Yuri Gagarin**

The aeroplane is an example of invention of the __ century Ans:
20th

Genetic engineering emerged in the ___ Ans:
1980s

The basic unit of heredity is called ___
Ans: **gene**

The first man to walk on the moon with his partner was ___ Ans:
Armstrong

___ was the number of scientists able to understand the relativity theory of Albert Einstein Ans:
12

Wilhelm Röntgen discovered the ___
Ans: **xrays**

___ confirmed that atoms and molecules were the building blocs of matter
Ans: **Dalton**

We credit the invention of telescope to ___ Ans:
Galileo

The idea that the sun is the centre of the universe was first held by ___
Ans: **Copernicus**

The author of "Al Magest" is ___
Ans: **Ptolemy**

Leonardo da Vinci held that true knowledge must begin with ___
Ans: **observation**

Renaissance means___
Ans: **rebirth**

The ___ were responsible for te development of primitive alchemy into modern Chemistry Ans:
Arabs

The dark age of history was marked by _____
Ans: **halt in the advancement of knowledge**

The fixing of leap year to any year whose number is exactly divisible by four is attributed to ___ Ans:
Pope Gregory III

Greek science was more __ and ___
Ans: **speculative and theoretical**

__ is regarded as the most accomplished of Plato's pupils Ans:
Aristotle

__ formulated the idea of negative numbers Ans:
Plato

The practice of definition in scientific discourse is owed to ___ Ans:
Socrates

According to Democritus, separation of atoms leads to __ Ans:
death

___ first advanced the principle of change as a universal law Ans:
Heraclitus

__ believed that the universe is composed of numbers Ans:
Pythagoras

Thales regrded __ as the source of all things Ans:
water

The world's first woman philosopher is ___
Ans: **Hypathia**

God of medicine is the name given by the Greeks to ___ Ans:
Imhotep

Ptah-Hotep is reputed the world's first ___
Ans: **philosopher**

The Egyptians and the Babylonians regrded all knowledge as __
Ans: **revelation from the gods**

The Babylonians divided the circle into___ degrees Ans:
360

The two great rivers of the ancient Babylonians were __ and __

Ans: **Tigris and Euphrates**

In Babylonian system of measurement one cubit consisted of ___ Ans:
30 fingers

The Babylonians engaged in astronomy in order to ___ Ans:
pacify the gods

The greatest physician of the ancient time is an Egyptian known as ___ Ans:
Imhotep

Astronomy has its origin in ___
Ans: **Egypt**

___ is not among the religious centres of ancient kingdom of Egypt Ans:
Miletus

Love of wisdom is etymological meaning of ___ Ans:
philosophy

Philos, the Greek word that is a component of the term philosophy means ___ Ans:
love

Science is said to have its origin in the __ age Ans:
Neolithic

We trace the origin of science to __ and __ Ans:
Egyptians and Babylonians

The theory of relativity was formulated by ___ Ans:
Einstein

The theory of universal gravitation was intended to explain the phenomenon of ___ Ans:
falling objects

___ does not capture the character of scientific explanation of realities
Ans: **meditation**

The view that developments occur because of the purpose or design they serve is known as ___ Ans:
teleology

Theories that have proved to be so universally valid or true, that is, they are true anywhere in the world and have such a high degree of probability, are called ___ Ans: **natural laws**

The science that examines the chemical processes and substances that occur in living things is called __
Ans: **Biochemistry**

The observation that any population tends to outgrow its resources and its members must compete for what is available was first made by ___
Ans: **Malthus**

The ship whose expedition to America that Charles Darwin was a member is known as ___ Ans:
H.M.S. Beagle

An explanation about the cause or causes of a broad range of related phenomena is known as ___ Ans:
theory

The second step in scientific method is known as __ Ans:
definition of problem

When observations are unexpected we regard it as ___ Ans:
passive

Scientific observation can be __ and ___ Ans:
direct and indirect

Characters of science does not include___ Ans:
speculative

___ is not anexample of empirical science
Ans: **mathematics**

A branch of science whose contents, arguments and procedures obey certain rules is known as ___ Ans:
formal science

___ cannot be attributed to formal science
Ans: **prophecy**

Science regarded as a body of knowledge does not include ___ Ans:
Sophistry

The term, science, was derived from a Latin word, namely___ Ans:
scientia

What is the English meaning of the Greek word, Philo?

Ans: Love

Who do we owe the practice of definition in scientific research?

Ans: Aristotle

What is the etymological meaning of the word, philosophy?

Ans: Love of wisdom

Which of these has its origin in Egypt?

Ans: astronomy

Who was regarded as the greatest physician of the ancient Egypt?

Ans:
Imhotep

On what does the reputation of Hypatia rests on? **Ans:**
Her being the first female philosopher

Who championed the division of the circle into 360 degrees?

Ans: Babylonians

Who regarded water as the source of all things?

Ans:
Thales

Who theorised that the universe is composed of numbers?

Ans:
Pythgoras

Who is known as the world's first philosopher?

Ans: Ptah-Hotep

All living things are composed of what?

Ans:
cells

Which of these first made use of language? **Ans:**
Homo Habilis

What is the name given to the belief that man descended from the apes? **Ans:**
Evolutionism

On what do scientists who try to prove the theory of evolution rely?

Ans: Gene Mutation

Which of these is not a characteristic of scientific knowledge?

Ans: Relativity

What do we regard as the first hominids? **Ans:**
The Southern apes

What is another name for inductive logic? **Ans:**
Baconic Logic

What is regarded as the most important discovery of the stone age? **Ans:**
Discovery of Fire

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Which of the following is not a branch of philosophy? **Ans:**
Science

Where do current evolutionists regard as the birthplace of man and primates? **Ans:**
Africa

The simple meaning of Australopithecus is_____ **Ans:Southern**
Ape

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

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

According to the theory of evolution, man might have evolved from the following except_____
Ans: God

According to the evolutionist,man originated from_____ **Ans:**
Africa

Which of the following is a characteristics of evolution._____ **Ans:**
It involves struggle for survival

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

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

According to history, the first great change in scientific outlook after the renaissance was made by a Polish mathematician and astronomers called_____ **Ans:**
Nicolaus Copernicus

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

The geologist who propounded the idea of gradualism in evolution is called _____ **Ans:**
James Hutton

_____ is the remains or body impressions of dead organism that lived is the past **Ans:**
fossils

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

The progressive change of living things through ages and time is called _____ **Ans:**
evolution

The basic type of food needed by man include all the following except_____ **Ans: vitamin**

One of the following is given off during photosynthesis. It is_____ **Ans: oxygen-oxide**

Among the ancient settlement,Tigris and Euphrates valley is found in _____ **Ans: babylonia**

Agricultural production depend on all the following except_____
Ans: solar energy

_____ is not part of primitive agriculture
Ans: seasoning

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

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

Historically rebirth or revival of learning was started in Italy by three scholars called_____, _____ and_____
Ans: Dante,Petrarch and Boccaccio

The spirit of questioning old beliefs and forming new opinions was described as_____ **Ans: renaissance**

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

The food that man eat are derived from _____
Ans: plant and animal

The sun supplies solar energy while the plants provide_____ **Ans: oxygen**

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

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

Yangte is a river found in_____
Ans: China

Which of these is most useful to the plant during photosynthesis. _____ **Ans: carbondioxide**

The interdependence between man and plant in their air consumption is called_____ **Ans: symbiosis**

_____ is a simpler form of sugar which is derived from carbondioxide, water and sunlight **Ans: glucose**

Yankari Game Reserve is located in _____ state
Ans: Bauchi

Which of these sphere is not part of the layers in the atmosphere _____ **Ans: xtratosphere**

In which of these vegetation is farming difficult. _____ **Ans: tundra**

Temperate rain forest can be found can be found in _____
Ans: 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 _____ **Ans: Geocentric**

A scientist who used his primitive microscopic in 1665 to observe that plant materials have cellular structure was_____ **Ans: Robert Hooke**

The combination of two hydrogen atom and one atom of oxygen will produce_____ **Ans: water**

Who among the following scientists will receive the honour of revolution in chemistry. It goes to _____
Ans: Antoine Laurent Lavoisier

Which of these may not constitute environmental pollution **Ans: crude oil**

____ is a substance whose presence in the air is harmful? **Ans: pollutant**

Which of these gases is an air pollutant?
Ans: carbon monoxide

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

Envoronmental assault such as constant flaring of gas may happen to one of these communities **Ans: Ogoni**

In which year was the cellular phone introduced? ___ **Ans: 1979**

Which of these diseases is not associated with the radioactive particles from atomic bomb **Ans: diabetes**

All the following are facts about atomic bombs except ____
Ans: part of the radioactive element can be used to cure cancer

All these constitute water pollution except ___
Ans: oxygen transformation

The bombing of Japanese cities during the second world war in 1945 was carried out by the ___ **Ans: Americans**

Hiroshima was a popular town in ____
Ans: Japan

Which of these towns were destroyed by atomic bombs during the 2nd world war **Ans: Nagasaki**

Which of the following is not an effect of climate change **Ans: desertification**

___ refers to absorbing and returning of heat to the earth's surface due to green house gases **Ans: global warming**

Which of these is not a green house gas **Ans: neon**

The threat to climate arises from the retention of a level of _____ in the atmosphere **Ans: carbondioxide**

____ is a collection of various computer networks linked together and communicating by a common protocol **Ans: internet**

The term ENIAC simply means_____
Ans: Electronic Numeral Intergrator and Computer

The first electronic digital computer was assembled in the year ____ **Ans: 1946**

The first communication satellite called "Echos" was launched by the _____ **Ans: United state**

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

In which region of the world did Islamic knowledge flourish **Ans: east**

One significant invention during the dark ages that was not noticed is _____
Ans: 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 ____ **Ans: Aristotle**

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

Why did the father of the church show little interest in knowledge of nature

Ans: knowledge of nature would not help them in their hope of life to come

Why was the study of biology lagged far behind chemistry and physics
Ans: people at that time believed that organisms were too complex to study

The following facts supported the proposotion that 19th century was considered as the classic scientific age except_____
Ans: the usage of scientific method in the field of science was introduced

In what century was the role of air and gas in chemical reaction (combustion) discovered **Ans:**
18th-19th century

The first scientist-philosopher who attempted to arrange the steps of scientific method in a logical manner was ___ **Ans: Francis beacon**
Who among the following is not a proponent of the heliocentric theory of the universe **Ans:**
Leonardo da vinci

Which of the following is not a planetary law according to the proponents of heliocentric theory **Ans:**
the rotation and revolution is inversely proportional to their astronomical distance

Who among the early scientists searched the heaven with his mind and not the telescope **Ans:**
Nicolas Copernicus

The most gratest eminent Muslim Physicist was ____ **Ans:**
Ibn-al-Huthaim

Why did the church authorities oppose the heleocentric theory of the universe
Ans: the theory implied that humanity is no longer at the centre of the creation

The copernican theory of the universe was ____
Ans: 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____ **Ans: heliocentric theory**

The view of the author of Al- Majest about the earth and other planets is called ____ **Ans:**
geocentric theory

Australopithecus_____ was found in 1924 in South Africa **Ans:**
Africanus

Which century marked the true freedom of true experimental science from philosophy and religion **Ans:**
16th-17th century

Paradigm conservation in philosophy refers to _____ **Ans:**
impractical proposal

Semantic in philosophy is about____
Ans: language

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

Falsifiability simply means_____

Ans: the principle which take care of statement which cannot be verified

Philosophy with the analysis of concepts and the meaning of words is called ____ **Ans: semeiotic**

The branch of philosophy which deals with validity and soundness of an argument is called ____ **Ans: logic**

All men are mortal, John is a man, therefore John is a mortal. The conclusion John is Mortal is a _____ knowledge **Ans: deductive**

Consider the argument " All men are mortal. Peter is a man. Therefore Peter is Mortal. Which of these statement is a premise?

Ans: all men are mortal

_____ is a branch of philosophy that deals with human and thought **Ans: logic**

Objectivity in science can be sustained if one does all the following but_____ **Ans: disregard all unpleasant or threats situation**

The objectivity in critical thinking can be affected due to all the following except **Ans: exposure to inspiration**

All the following are forms in which theory can be stated except **Ans: tentative assertion**

Which of the following is regarded as the final step in scientific method **Ans: theory formulation**

Scientific conclusion has the following characteristics except_____ **Ans: it is absolute**

Philosophy of science is hinged on the _____ nature of philosophy **Ans: reflective**

Which of these statements is false in respect of philosophy and science
Ans: inductive method is applied in philosophy while deductive method only is for science

Which of the following may not be considered as the point of convergence between philosophy and science
Ans: they emphasize irrationality and spirituality

Which of these questions may not get response in philosophy of science **Ans: what is the essence of humanity?**

Which of these statements is not true about philosophy **Ans: philosophy as a subject originate from science**

According to the greeks, a philosopher is simply _____ **Ans: lover of wisdom**

All the features below describes religion except _____ it **Ans: it could be authenticated using scientific method**

All the following are nonscience disciplines except_____ **Ans:**
anthropology

Which of the following is not true about science
Ans: it contribute to the development of theology

Which of these does not explain why is man involved in scientific activity
Ans: to enhance spiritual fulfillment

All these disciplines reflect curriculum integration except _____ **Ans:**
anthropology

All the folllowing are example of social science except _____
Ans: physiology

The disciplines that are concerned with drugs and drug contents of plant can be grouped under ___ **Ans:**
pharmaceutical science

Anatomy, physiology, surgery can be categorized as _____ **Ans:**
medical science

All these are examples of biological science except_____ **Ans:**
chemistry

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

Which of these can be described as non-perception object: **Ans:**
virtues

Which of the following does not belong to genus Australopithecus?_____ **Ans:**
Asianus

Sense perception objects are mostly associated with _____
Ans: empirical science

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

Religion relies on the principle that the universe is generally governed by ____ laws **Ans:**
spiritual

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

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

Which of the Australopithecus was discovered in Ethiopia in 1978?_____ **Ans:**
A ferensis

All of these terms are associated with formal science except ____ **Ans:**
myth

Which of these group of science adopt scientific method to acquire knowledge **Ans:**
empirical and formal science

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

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

Which of these is not a branch of mathematics? **Answer:**
Addition

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

Which of the following is an appropriate concern of empirical science?
Answer: Material Things
Which of the following is not a tool of the empirical science? **Answer:**
History

Which of these is not an example of physical science? **Answer:**
Mathematics

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

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

Which of these is not a characteristic of non science? **Answer:**
Objectivity

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

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

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

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

_____science has deductive character **Answer:**
Formal

What is the name given to unexpected scientific observation? **Answer:**
Spontaneous observation

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

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

What are the types of thinking required by the scientific method?
Answer: Creative thinking and critical thinking

Falsifiability as a scientific attitude is credited to ___ **Answer:**
Karl Popper

Hypothesis is basically about what?
Answer: Guessing answers to questions raised

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

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

From who did the Islamic scholars borrow the idea of Zero? **Answer:**
Hindu Mathematicians
Modern science arose in what centuries AD? **Answer:**
15th and 16th

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

Who first propounded the theory of universal gravitation? **Answer:**
Isaac Newton

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

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

Which of the following is not a rule of Mathematics? **Answer:**
Triangulation

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

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

In which country was the lunar calendar invented? **Answer:**
Egypt

Who pioneered the division of day into hour? **Answer:**
Babylonians

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

_____ science is concerned with knowledge which can be observed with the senses **Answer:**
Empirical

Anatomy is an example of _____ science
Answer: medical

Religion believes that the universe is governed by_____ laws
Answer: 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.
Answer: Objectivity

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

The ancient Egyptians believed that rats came from _____ **Answer: Garbage**

Another name for doctrine of fixed species is _____
Answer: Creationism

The theory of spontaneous generation was disproved by _____ **Answer: Louis Pasteur**

The carriers of hereditary materials in living organisms are called____ **Answer: Chromosomes**

_____is the third step of scientific method
Answer: Hypothesis formulation

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

Another name for basic science is_____
Answer: Pure science

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

_____is the author of "Elements of Geometry"? **Answer: Euclid**

Democritus believed that everything is achieved by combination of_____ **Answer: Atoms**

_____introduced inductive reasoning to scientific and philosophical discourses **Answer: Socrates**

The Babylonian unit of length was_____ **Answer: Finger**

The Greek father of modern medicine is_____ **Answer: Hippocrates**

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

In scientific method hypothesis is tested during _____
Answer: Experimentation

The Latin word for knowledge is _____
Answer: Scientia

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

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

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

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

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

_____ is the name which the ancient Greeks gave the Egyptian greatest physician of the ancient time
Answer: God of medicine

The Babylonian gods lived in_____
Answer: Heaven

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

_____is often referred as the father of western philosophy **Answer: Thales**

The Pythagorean theory is named after _____
Answer: Pythagoras

The atomic theory was invented by_____ **Answer: Leucipus**

Aquinas regarded _____as the source of all knowledge **Answer: God**

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

The only single surviving species of hominids is the_____ **Answer: Homo sapiens**