CSS-2016

Date

CSS; General Science 2016

Q NO1 - a

What is Kyoto Protocol?

Kyoto protocal was a joined effort put by the countries of world to curb down the carbon emission sources. It was a first effort to shift industrial dependence from non-renewable sources to green sources

Q NO1 - a

What is Kyoto Protocol?

Kyoto protocol was a joined effort put by the countries to shift their energy requirement from non-renewable energy sources to renewable energy sources. similarly, it was a first step to curb down all carbon emission sources which are the major cause of contributing pollutants elements in atmosphere. In city of Japan, Kyoto, during the time period of 11-Dec-1997, these protocol were decided which came into force on 13-Feb-2005. Initially, About 192 countries were part of these protocol. However, many countries from global north removed themselves due to their economical concerns.

objectives of Protocol:

Ijazi

Ijazi

Use subheadings to elaborate things

Date

Primarily, objective of kyoto protocol was to encourage all countries of the world to shift their energy dependencie on green energy sources. To achive that, they had set some certain task for the countries, such as;

- Developed countries would shift their energy dependencie in quickest possible time, while some time would be given to developing economies of the world, so they can achive maximum growth.

Financially and technologically, developed countries would help poor countries

Criticism on Kyoto Protocol:

Main criticism comes in the form of divide between global-north and global-south. Due to their difference of opinion, the objectives of Kyoto Protocol remained unsuccessful to achieve. Reason given by global north was that under the leadership of US and many other europe an countries was that these protocols were limiting their economical growth, at one hand, on the other hand, it was putting more burden on global north countries however, global south is equally responsible for the contribution of polluting elements into the environment, as the global warming is not limited within the boundaries of countries. That was the reason Canada and USA under the presidentship of Donald Trump resigned from this

agreement, respectively.

(b)

Landfills:

Landfills are the sites where ~~municipal~~ waste can be burried or disposed. This land fill method can also be used for the purpose of making foundation of a building. After a little degradation, the gas formation process of these Landfills can be also used as a natural gas. It is cosidered completely safe, when it is completely degraded, chemically, biologically, and physically. land fills are mostly of 4 types:

- Sanitary Landfills
- Industrial Landfills
- Construction waste Landfills
- Solid waste Landfills

In GSA, discuss differences in a tabular form

Difference between Sanitory Laned fills and industrial Laned fills:

Sanitory Landfills:

Sanitory Land fills are used to dispose municipal waste. Munucipal waste is disposed on the form of layers, and the thickness of these layers can vary upto 3m. After making layers of this waste in compact form, this layened form of waste is covered by soil to prevent odors and wendblown debris. Then, it is capped.

Date _____

with a thick layer of clay to prevent it from water entering. A final layer of soil is placed, upgraded and compacted where different types of so vegetables may be planted. Sanitory Landfills can be operated by the governments and private entities.

Industrial Landfills:

Industrial waste Landfills are used for various purposes which include dumping of solid industrial waste, generation of bio-gas for industrial use, and making of tanks to store gas and fuel which can be used for gas and fuel stations and for storing fuels for industrial use etc. The solid waste may consist of nonhazardous waste which are used for manufacturing and other industrial activities and hara hazardous wastes that are harmful for human's health. Therefore, while Choosing Lands for such kinds of wastes, it must be considered that these Lands are selected away from populated areas. Industrial Landfills are Controlled by industry owners.

Add examples.....

Landfill selection Criteria

- There must be sufficient land area available for the disposal of solid wastes for a reasonable period of time preferably greater than one year. This is due to the fact that for short periods, the disposal operations become expensive

Date

- Before selecting area for the disposal purposes, it must be made sure that the material that will be used to cover the waste must not be far from the site.

- climate conditions are important because this will have impact to Landfill on the access to the land fill sites.

- The soil condition, tropography with the of the site with geologic and hydro geologic conditions must be considered as these are to assess the pollution potential of the proposed site

- It should be ensured that the movement of leachate and the gasses from the Landfill will not contaminate the ground water aquifier

-

Q No 3-a

What is Artificial Intelligence?

Artificial intelligence is the making of machines that are characterized to do work like a human. It includes complex computer systems like robots, e-commerce and apps like chat GPT. Initially self-intelligence of machines was built to do specific works, but in 20th century, intelligence of these machines has grown at the level where they can do multiple tasks.

Date _____

This self intelligence of machines has been using in different fields, from medical sector to agricultural sector. and other. Along with benefits. It is technology is creating different kinds of problems for the man kind, ~~These problems are~~ included as from attention span to social distrubence

Advantages of AI:

- Cost efficient
- increases work efficiency
- Saves time
- Reduces error
- All time available.
- less human interaction is needed.

Dis-advantages of AI:

- Reduces attention: According to experts, due to increasing use of AI, People are unable to creative thinking
- Social distrubence; easily facilitates to spread false news.
- Threat to people job. less expensive, so there are more chances it can replace labror work

3-b

(i) Fiber optic:

~~Optical~~ Fiber optic is relatively new technology that uses glass or plastic

Use full sentences

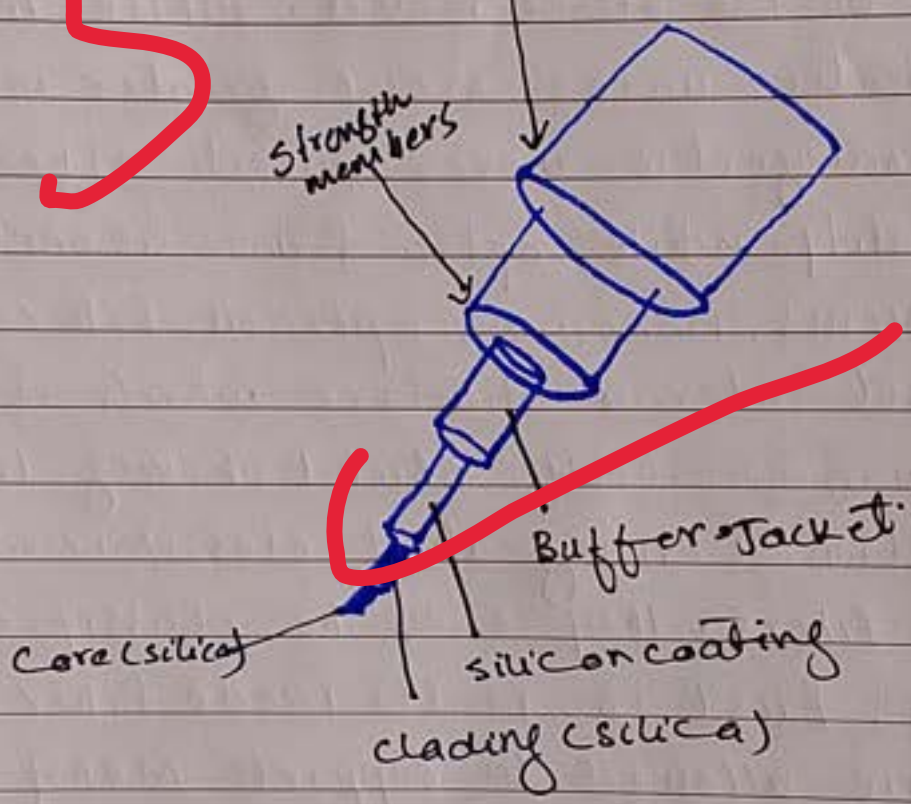
Date _____

Do not use this long paragraphs.
Divide them into subheadings

threads (fibers) to transmit data. optical fiber is consist upon a bondle of threads which are capable of transferring information modulated on light waves. These fibers are commonly used in the transmission of information where they are allowed to carry information at longer distances, and with broader width, by making less amount of energ loss, which is a common problem in metalic wire. on the other hand, while transferring data, metalic wires make greater interference with electromagnetic waves which effect the data quality, while optic fibers donot face such problems. Because, optical fibers have transparent interior structure which is surrounded by transparent shield having lower index of reflection. Talking about classification of of optic fibers, they can be classified into two types; first is multi mode fiber; such fibers are allowed to support many propogation paths and tronverse modes. Having wider diameter, such fibers are allowed to support short length communication through links and applications where high energy is reauired. the second is single mode fiber; such fibers are used for long communication purposes where low amoont of energy is reauired. opticel fibers are used for different purposes, such as, remote sensing, and sometimes remote sensor itself works as an optical fiber. other uses of optic fibers are; measoning of pressure,

temperature, strain and other physical quantities. These fibers are also used for security purposes where light is reflected through optical sensor and transferred into data form, so it can be analyzed. In case of any distrubence, the alarms trips.

7.5



b — ii

What is Gps and how it works?

Global positioning system that is installed in sattelites which revolve around the earth, to find precise location of desired objects. A system of Gps moving unit is installed in sattelites which are helpful in determining the exact location of target, even it moves. Now a days, Gps is being used for multiple purposes; It is being used in cars and mobiley

living organisms; there are

Short and incomplete answer.
Discuss in detail by giving more points and subheadings

Date _____

to recover them, whenever they get stolen. Forthmore, this system is also being used in digital maps to help people to reach at their desired destination. similarly, high profile criminal cases have also been solved with the help of surveillance and GPS. Lastly, military operations have also the edge of using GPS system to target their enemies through fighter jets and drones.

Transformation of target's information through GPS to different devices.

Q.No.4

Attempt and upload a single qs at a time. Work on the pointed mistakes and then attempt the next answer

(a) Vaccines:

Vaccines are made through biological preparation of antigens that help help human organisms to fight against different diseases. Vaccines are classified into different types on the basis of their preparation and use which are discussed below:

Classification:

Date

1. Live Attenvated.

Such vaccines are prepared by modifying those diseases which cause virus or infection in the body of living organisms. Such vaccines donot have any harmful effect, when they are injected in human body.

2. Killed and Inactivated.

Such types of vaccines are prepared by killing viruses and extracting dead cell out of them which are injected in infected body

3. Subunit

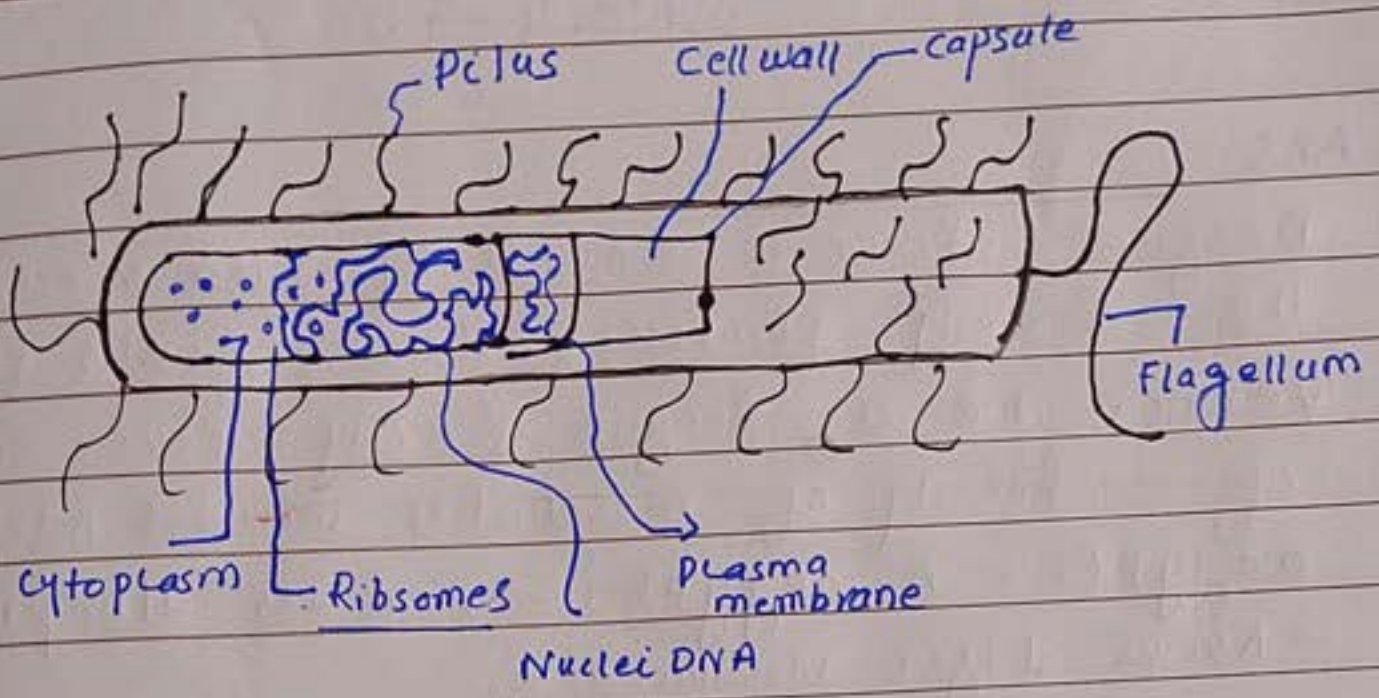
Subunit vaccines are only used prepared from the antigens that are known to provide active ~~imf~~ immunity. These subunit vaccines are ~~fo~~ further classified as:

3.1 Toxoid.

These vaccines are used to prevent clinical symptoms of diseases that are caused by toxin secretation of bacteria. During preparation, toxins are chemically treated and converted into toxoid.

3.2; Polysaccharides:

Some bacteria have large amount of Polysaccharieles (strings of sugar). These polysaccharides enclose bacteria in the form of capsule which gives them extra protection against immunity.



3.4 conjugate

This is a new generation of vaccines that has limited number of Polysaccharicles. In these vaccines, Polysaccharides are linked with carrier molecule.

3.5 Heterotypic or Heterologous:

Or Heterotypic or Heterologous are prepared from the pathogens that cause no disease or mild disease in host organisms.

DNA vaccines

Such vaccines are injected through genetically engineered DNA. These vaccines allow the cells of host organisms to directly produce antigens which help them to produce immunological response against diseases. These vaccines are belonged to third generation vaccines. They cause a small amount of its cells to produce the introduced gene products. They consist of DNA that codes for specific antigens or protien from a pathogens. The DNA is injected into cells, whose "inner machinary" uses the DNA to synthesize the protiens.

Date _____

Q.No.4 – b

Ans

Dengue fever is caused by RNA virus of the family Flaviviridae & genus Flavivirus vector for a dengue family fever consists of family of mosquitos includes Ades aegypti - A. aegypti -, Ades albopictus - Asian tiger mosquitos -.

Dengue Prevention Measures:

- Try to live in air-conditioned room or well screened houses. As, mosquitos carrying dengue fever cannot exist in cool temperature, specifically below than 48°F. The dengue virus is mostly activated from down to dusk, some it also bites at ~~nights~~ nights.

- While going out side, specially dengue infested areas, whole body should be covered. so, wear shirts with long sleeve, Pants, shoes and sox socks

- Use mosquitos repellent products ~~to~~ ~~skin~~ clothes, socks and bed nettings. For skin, use repellents that have minimom 10pc concentration of Dheet (diethyltoluamide) which is an active ingredient in mosquitos repellents.

Date _____

- Mosquitos carrying dengue virus usually grow in moist and watery areas so, in order to prevent their growth, remove unnecessary water from surroundings.

- Recent discovery confirmed that there are also some mosquito repellent plants and that discovery was also published in dawn article. As per Dawn article ~~ing~~ findings, these plants include lavender, mint, Roosemerry and others. So, in order to decrease the population of dengue mosquitos, these plants can also be grown on road sides, parks etc..

Q NO5 — a

Liver:

Liver is a vital organ in all vertebrates and in some other living organisms. A chemist has ability to understand the structure and properties of a substance and to reproduce them into larger quantities, in same way liver functions. Considering the importance of liver's functions, it has following properties:

- It manufactures thousands of essential proteins, harmones, and fluids, which are trasported throughout body for use and elimination

Date _____

- It uses iron for the manufacturing of red blood cells, glycogen to regulate blood glucose (sugar) levels, and esst. essential vitamin and minerals.

- It captores unhealthy cells like bacteria, cancerous cells, dying, and dead cells and other micro-organisms, sending them through a type of detox and killing center, pass them on to be eliminated from the body. This process is called detox detoxification

- Regulate iron absorbation, metabolism and also regulates our body harmonal balance and blood pressure.

5-b

Cholestrol:

Belonging to the family of macro biomolecule, cholestrol is waxy and fat like substance which weighs about 800 Dalton. ~~Steriod~~ cholestrol is made up of from the family of steriod, specifically from 'sterol molecule'; a lipid molecule and biologically synthesized by all animal cell. Moreover, cholestrol travels in blood's stream in the form of packets called lipo protien. These lipoprotion are made up of fats inside and proption outside

Date ____________

Importance of cholestrol:

Importance of cholestrol can be understood by its functions which it performs inside the body of living organisms; there are main four functions of cholestrol:

1. structural constituent:

It is a essential contributor in the structural constituent of cell membrane and lipoprotien.

2. Percursor of steriod:

It works as a percursor of different steriod such as:

- Glucocorticoids
- Mineralcorticoids
- Androgens (male sex harmones)
- Estrogen (female sex harmone)
- Progesterone

3. Precusor of Bile acide and emulsify dietary acid.
4. Precusor ~~for~~ vitamin D, absorbation calcium and phosphate.

Effect of High Cholestrol level

- High cholestrol level is a condition in which body possess to much cholestrol in blood that becomes a reason behind coronory disease, commonly known as high cholestrol.

Q. No. 6. — a

Ans.

Date _____

Remote sensing technology refers to the science of collecting information about the earth. This information can be collected from various sources such as aircrafts and satellites. In the process of remote sensing, data is collected by detection of the energy that is reflected from the surface of the ~~earth~~. Remote sensing can be Active and passive. While operating, passive remote sensing uses internal stimuli system to collect information and transfer it the stations. on the other hand, Active Remote Sensing system: external stimuli system which mainly comes from the active energy of the sun. Talking about its uses, remote sensing technique plays an important role while collecting data about oceans circulation and ocean currents and to see its reducing effects on sea store. Likewise, it is used to study proportion of gases on environments; all environmental activities are measured through remote sensing technique. It is also helpful for advance agricultural productions.

Techniques of Remote sensing

1. Satellite Remote sensing:
This technique ~~direct~~ uses sensors which digitally captures the image by using a camera device which is similar to a television camera. After collecting information, these satellites send them in the form of electrical signals to the stations. found on earth.

2. Optical and infrared Remote Sensing:

Date _____

optical Remote sensing uses optical sensors which detect solar radiation which are reflected or scattered from the earth. Images are appeared in the form of photographs taken by highspeed commeras

3. Microwave Remote Sensing:

In this method, electromagnetic radiation are used to collect information of various objects like surface of earth, ocean, atmosherphere and mountain, and then send to the station.

Resoutions and its Types

Resoution is the ability of remote sensing devices to how much they can magnify an object. Resolution devices are of two types;

- Radiometric resolution

Radiometric resolution refers to the number of levels that a sensor can record spectral information. It ranges from 0-255 to 0 65,535 These numbers can be of integers or whole value.

- Geometric resolution (spatial resolution)

Geometric resolution (spatial information) refers to the smallest area to record radiometric spectral information. It is usually measured in the form of Pixels. Pixel measuring size of thermometic mapper sensor on Landsat 7 is 30 m which relates an area of 30 x 30 m on earth's surface. It has alot of variations, and defined as Low, moderate and high.

Q. NO-6 b

Hydrogical cycle:

Date

The hydrological or water cycle is a continous physical process of which forms a continuom of water movemont. The first step of the whole cycle is the evaporation of water from the surface of earth. As a result, the moisted air-containing-water vapors gets lifted up in the air where it is Converted into water droplets in the form of clouds. As a result, the same water comes down on the surface of the earth in the form of Percipitation The ~~gets~~ water gets absorbed by the land, scatters in the forms of rivers, lakes and Ponds, and also again get evaporated into the air. This circle keepsitself carrying on, again and again. During this process, the water is being converted from liquid state to gaseous and from gaseous stete to liquid.

Importance;

This water cycle is very important for living beings on earth, when it comes about their survival. It causes solubalisation and several other chemical reaction like Photosynthesis, hydrolatic digestation of Polymeric nutrients etc. It is important for the working of macromolecules, as a good conjer, transport of material. It is a cause of water reaching plants, animal. It also moves things like nutrients, pathogens and sediments in and out of aquatic ecosystems.

Q NO 7 — a.

Tsunami and its generation;

Tsunami is a wave train; or series of waves

Date _____

generated by a body of water due to impulsive ~~disturbance of~~ displacement of waves in vertical coloumn. Earthquake, Landslides, expulsion, volcanic eruption and the impact of cosmic bodies, such as meteorites, can generate tsunami.

characteristics:

- Size of the heights of tsunami can vary It is variable from inches to feet.
- when there is temporarily rise in the heights of tsunami, it remains for the shorter percod of time, at sea-shore, which is usually known as 'Run up'.
- Generally, it appears in the foom of wave like structure.
- About 80 pc of tasunamics appeared in the pacific-ocean.
- velocity of the tasunamies depends upon the depth of the water.

7-b

Earthquake;

one of the most frightening and destructive phnomena of nature is severe earthquake and its implications. An earthquake is the sudden and rapid shaking of earth caused by certain shaking and breaking of tectonic plates which are located in interior part of the earth. originating from the interior part of the earth, when these waves reach at the surface of earth, they become destructive.

Richter scale;

Earthquake are measured using observations from seismograph. These earthquakes are measured on the local magnitude, also refered as the Richter scale. The epicenter is the point on the Earth's surface that is directly above the hypocenter or focus, the point where an earthquake or volcanic underground explosion originates.

Earthquake of 2005;

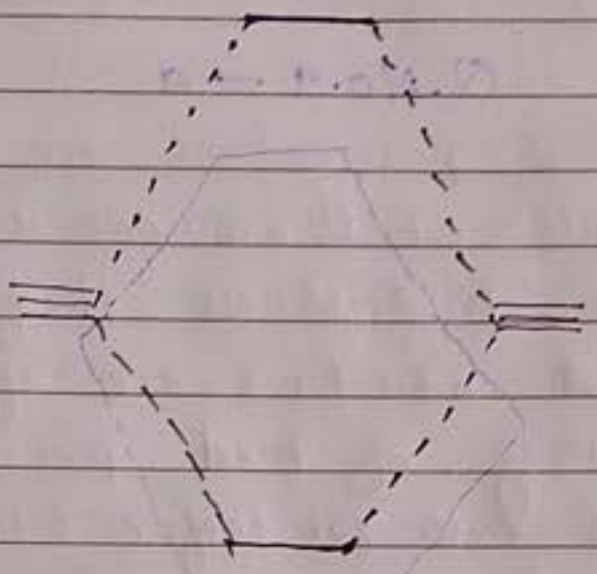
The 2005 earthquak occurred in the Pakistan territory of Azad Kashmir which was centered near the city of Muzzaffarabad, and also effected the Pakistan's province of Khyber Pakhtun Khawa and the Indian occupied Kashmir. It was recordered with the magnitude of 7.6 on Richter scale.

Q.No. 8. (a)

water molecules form hydrogen bond with each other and are strongly polar. This polarity allows it form separate cons on salts and strongly bond to other polar substances such as alchols and acids, inorder to dissolve them. The bonding angle of the two hydrogen atom is almost 105 degrees rather than 180 degrees which would make the molecule symmetrical. This causes it to be dipolar, which gives it a positive and negative side allowing the formation of hydrogen bonds between adjacent molecules

In the water molecule 1b1 is the highest occupied orbital which is non-bonding and highly localized on the oxygen atom 2a1 is the next lowest orbital

which can be considered as a non-bonding orbital, having a lobe pointing away form the two hydrogens.



8— b

Gamma Rays:

The term gamma ray was first introduced by British Physicist Ernest Rutherford in 1903 while studying the emissions of radioactive nuclei. Gamm-rays are a form of electromagnetic radiations produced from the radioactive decay of atomic nuclei. They consist of high energy photons. Gamma rays have generally shorter wavelength, shorter than a few tenths of angstorm (10^{-10} meter) and gamma-ray photons have energies that are greater than tens of thousands of electron volts (eVs).

Applications of Gamma Rays;

Due to high penetration power and energy, Gamma-rays are used

- to treat cancerous tumor by destorying its DNA
- to detect heart and brain abnormalities
- to sterlize medical instruments
- used by engineer to detects the cracks of

buildings and machines (heavy)
- used to kill bacterial germs in food industry like yeast etc.
- used in the development of atomic bombs.

Q.No.9 – a

Food additives and perservatives are substances such as antioxidants which are added to processed food to enhance it's freshness, shelf life, flavour or texture. Food additives are often added during the processing of food products, to keep the product fresh for longer times and to make the food more appealing, some food additives are natural and some are chemical. Natural food additives include herbs or spices which are added to enhance flavour, vingar is used to preserve and pickled food, salt which is added to enhance flavour or preserve meat. Some additive substance are found in food during and after it have been processed, but were not initially added to the food on purpose, such substance are called indirect substances food additives. Indirect food additives are present in small amount in the final product. Food additives, preservatives and antioxidant are added to food for several important reasons. Emulsifier are added to food while processing inorder to prevent liquid products from separating. stabilizer and thickeners are added to provide an even, uniform texture to food products. Anticaking agents agents are added to allow substances to move freely

certain food additives are added to change acid-base balance of foods to get certain flavours. ~~Leaving~~ Leavening agents are added to ~~help change~~ bake goods such as cakes or biscuits to help them rise. Many foods are enriched to provide vitamins, minerals and other additional nutrients. Examples of some commonly fortified foods include milk, flour, cereal, salt, milk, and margarine. A daily intake of these foods help to up any nutrients that might be lacking in Person's diet.

Q.No. 9 – b

Ans:

The greenhouse effect is a natural process by which the atmosphere absorbs some of the sun's energy, warming the surface of earth which is enough to support life. A greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiations, thereby trapping and holding heat in the atmosphere. By increasing heat in the atmosphere, green house gases are responsible for the green house effect, which ultimately leads to global warming.

World has been discussing the effect of global warming on the climate of the earth and to reduce the effect but there is a brighter side that we can say greenhouse is a blessing for our planet. Some of these blessing have been discussed below:

Enhanced Green House Effect and Global warming

The enhanced green house effect simply

Date _____

refers to the greenhouse gases such as carbondioxide and chloroflouracarbon which are emerged due to human activities. The green house effect has following effects;

- Helpful for warming the surface of earth;
  By traping the solar radiation at night, greenhouse gases keep the temperature warm which is important for the survival of living beings
- Realized the humanity to change their energy dependencie;
  As green house gases are the main cause of warming the temperature, so, it has realized the countries to shift their energy dependence from non-renewable energy resources

- Increasing level of CO_2 may increase the production of crops:
  Plants need CO_2 to increase their prodution and it keeps them alive and fresh. ~~High~~ amount of carbondioxide in the atmosphere would help plants to increase the production of ~~food~~.
- sign of relief for the people who are living at northern and Souther poles
  People who are living away from the equator mostly face winter season throughout the whole year. As ~~the~~ due to the greenhouse effect has increased, the temperature in the polar region has also increased. This would help them to cultivate crops and enjoy the voriety of seasons.