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WHO (World Health Organisation) defined health as follows $\Rightarrow$ Health is a state of physical, mental and social well being in which disease or infections are absent. Our immune system maintains our health against the disease.

* Factor which affect^{to} health $\Rightarrow$ There are three main factors which affect to our health $\rightarrow$

- ① Genetic disorder $\Rightarrow$ They are caused due to abnormalities in genes or chromosomes. They are inherited from parents to offspring. They are capable of being transmitted from generation to generation.
- ② Infections $\Rightarrow$ The health is affected by the infection of pathogens. Such as bacteria, viruses, protozoans and worms etc.
- ③ Life & style $\Rightarrow$ The present imbalance life style affect to our health. It includes our eating behaviour, type of food, exercise, body rest, mental tension etc.

Healthy person can perform his duties with full capacity and Mortality rate is less in healthy person, life of healthy person is more. Health brings prosperity in the society.

Requisitions for health: →

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- (i) Balance ~~etc~~ diet is required.
- (ii) Daily exercise is essential which must include "Yoga" which makes the body and mind strong.
- (iii) Vaccination of self and family is essential.
- (iv) House and the surrounding area should be clean.
- (v) pathogens and their vectors should be controlled.

Any disease makes a person unhealthy, which affects body organs and their functions. it results in symptoms of the disease.

There are two types of disease in human being →

① Infectious or Communicable disease: →

Diseases which are transmitted from one person to another person, called infectious diseases. Infectious diseases are very common and every one of us suffers from ~~the~~ such types diseases at some time. Ex - Bacterial, Viral, ~~and~~ fungal and protozoans disease.

② Non infectious or non-Communicable disease: →

Diseases which do not transmitted from one person to another person called non-infectious disease. Such types diseases do not spread by infection. Ex - Cancer.

* Common diseases in humans : →

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The disease-causing microorganisms like as bacteria, virus, fungus, protozoa, helminthes are called pathogen. They are also called as parasites. Some of human disease are as follows →

① Bacterial diseases : →

(i) Typhoid : → pathogen → *Salmonella typhi*

Mode of infection → Contaminated food and water

Affected organ → Stomach and small intestine and then migrates to other parts of the body by blood.

Symptoms : → High fever (39°C to 40°C), weakness, stomach pain, Constipation, headache, loss of appetite, indigestion and intestinal perforation and death may occur in severe cases.

Diagnosis : → ~~The~~ Typhoid fever is confirmed by "Widal test"

A classic case of typhoid in medicine is Mary Mallon nicknamed "Typhoid Mary". She was a cook by profession and was a typhoid carrier who continued to spread typhoid for several years through the food she prepared.

Treatment : → Take medicine according to suggestion of doctor.

(ii) Pneumonia : → pathogen → "*Streptococcus pneumoniae*"

or "*Haemophilus influenzae*"

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~~Affected~~

Mode of infection: → Droplet infection (Aerosol)

Affected organ: → Alveoli of lungs.

Symptoms: → fever, chills, cough and headache, and in severe cases lips and finger nails turn gray to bluish colour.

Some other bacterial disease are TB, Biphtheria, cholera, plague, Bacterial dysentery ~~etc~~, Tetanus^{etc.}

② Viral diseases: →

(i) Common cold: → Pathogen → Rhinovirus

Affected organ: → Internal lining of nasal cavities and respiratory passage.

Symptoms: → Nasal congestion and discharge, (Runny nose), Sore throat, Cough, headache, weakness, tiredness, hoarseness^{etc.}

Mode of infection: → Transmitted by direct inhalation of droplets from cough and sneeze of infected person, through contaminated objects like as pen, book, cups, Computer key^{bd} and mouse etc.

Treatment: — Take medicine according to doctor's suggestion.

3) Protozoan diseases: →

(i) Malaria: → pathogen → plasmodium ^{Zoa} proto

It's four species cause malaria —

(i) plasmodium vivax (ii) plasmodium ovale
(iii) plasmodium malariae (iv) plasmodium falciparum

Vector or Carrier → female anopheles mosquito

Affected organ → Liver and RBC (Blood)

Symptoms: — (i) High fever with chill at an interval of 48-72 hours.

(ii) profuse sweating (iii) Severe headache

Note: → Malignant malaria caused by plasmodium falciparum is the most serious one and can even be fatal.

Infectious stage of plasmodium: → "Sporozoites"

Malarial parasite requires two hosts to complete their life cycle: →

(i) Human (ii) Anopheles mosquito

★ The life cycle of plasmodium (Malarial parasite): →

(a) primary host: → Man, Asexual cycle occurs in this host.

(b) Secondary host: — female anopheles, Sexual cycle completes in this host.

- When an infected female anopheles bites a healthy person, sporozoites enter into the human blood. Sporozoites are released from the mosquito saliva.
- Then sporozoites enter into the liver cell where they initially multiply in liver cells and then they attack on the Red blood cells (RBC). Due to this RBC's is rupture (Bursting).
- Then A toxic substance "Haemozoin" gets released from rupture RBC, which is responsible for high fever and chill.
- parasites reproduce asexually in RBC and they infect new RBC.
- finally sexual gametocytes are produce in RBC.
- Then a female anopheles bites an infected person. The male and female gametocytes reach in the mosquito gut. Where they form gametes and fertilised to form zygotes. Hence, formation of gametes and fertilization take place in the gut of female anopheles.
- Then sporozoites are formed and they are stored in salivary gland of mosquito.

and the cycle is repeated.

* Mode of Infection :- → (i) By biting of infected female anopheles mosquito.

(ii) By blood transfusion of infected blood.

(iii) From mother to child during pregnancy through the placenta.

* Malaria prevention and Control :- →

(i) Keep the drains of the house clean and close, and avoid stagnant water.

(ii) Spraying of kerosene oil over the stagnant water. it ~~blocks~~ destroys the larva of mosquito.

(iii) Keep the mosquito-cidal fishes in the nearby stagnant water which feed on mosquito larva such as Gambusia.

(iv) Use of mosquito net in the night to sleep.

* Treatment of malaria :- →

(i) Take chloroquinone tablets.

(ii) Use of juice of bark of Sincana plant.

ii) Amoebiasis (Amoebic dysentery) :- →

Pathogen → *Entamoeba histolytica*

Vector → House fly

Mode of infection :- → Contaminated food and water.

Affected organ → Intestine (Digestive system)

Symptoms :- → Constipation, abdominal pain, cramps, Stools with mucous and blood clots etc.

Prevention :- → Drink clean water and eat freshly cooked food. Avoid eating products openly in the streets.

Treatment :- → Take medicine according to doctor's suggestion.

Helminth diseases :- →

i) Ascariasis :- →

Pathogen → *Ascaris lumbricoides* (Round worm)

Vector → House fly

Mode of Infection :- → Contaminated food, water, fruits, Vegetables etc.

Affected organ → Small intestine (Dig. sys^{te})

Symptoms :- → Constipation, Abdominal pain, vomiting, Headache, Fever, indigesti^{on}, intestinal bleeding, anemia, Ulcer etc.

Elephantiasis or

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(ii) Filariasis: → Pathogen → ~~Wch~~ Wuchereria bancrofti (filarial worm)
Vector → Mosquitoes - culex, Aedes etc.
Affected organ → lymph glands and lymph and genital organs.
Symptoms: → fever, Abnormal swellings of the lower limbs, arms and genital organs

Prevention: - prevent mosquito bite by killing them.

Treatment: - Take medicine according to doctor's suggestion.

⑤ Fungal disease: →

(i) Ringworm: → Pathogen → fungi of genera microsporum, Trichophyton, Epidermophyton^{etc}

Mode of infection: - Contact of contaminated soil, other articles and transmitted by sharing towel, clothes or even comb with infected person.

→ Heat and moisture further helps these fungi to grow.

Symptoms: - Appearance of dry skin, scaly lesions in nails and scalp with intense itching are some of the common symptoms.

Prevention and Control of infectious disease:-

- (i) Maintenance of personal and public hygiene is very important for prevention and control of diseases.
- (ii) Measures for hygiene include keeping the body clean, consumption of clean drinking water, food, vegetables, fruits, proper disposal of waste and excreta, periodic cleaning and disinfection of water reservoirs, pools, cesspools and tanks.
- (iii) House fly, Mosquitoes and other insects are the carrier of pathogens of many diseases. Infection of such pathogens can be prevented by controlling such vectors.
- (iv) Various diseases can be controlled by taking vaccine.
- (v) Protection for air borne diseases - wear masks and have specific distance from infected individuals.
- (vi) Antibiotics and other medicines are used for the treatment of diseases.

★ Immunity : → The overall ability of the body to fight against disease causing organisms with the help of immune system is called immunity.

Term 'immunity' originates from a latin word called 'Immunis' which means "to make safe."

Immune system includes all the body cells and organs which protect the body from pathogens and other harmful external substances.

The branch of Science in which deals with the study of immune system is called immunology.

★ Types of Immunity : → There are two types of immunity : —

① Innate immunity / Non-specific / Natural immunity : → It is present at the time of birth. It is obtained from parents. In our body some organs act as barrier. They prevent entry of the foreign agents into the body and kills the foreign agents which entered into the body.

There are four types of barriers present in the defence mechanism of our body.

- ① **Physical barriers**: → Skin on our body is the main barrier which prevents entry of the microorganism. It does not permit the germs to enter into the body, and there are mucus coating in nasal cavities, buccal cavity, respiratory passage, gastrointestinal and urinary tract etc. also help in trapping microbes entering our body.
- ② **Physiological barriers**: → Saliva, tears, sweat, and stomach acid etc. are physiological barriers which prevents the entry of the microbes into the body.
- ③ **Cellular barriers**: → Leukocytes (WBC) of our body like polymorpho-nuclear leukocytes (PMNL - neutrophils), monocytes, Natural killer lymphocytes etc. are cellular barriers which can destroy microorganisms.
- ④ **Cytokine barriers**: → Virus infected cells secrete proteins are called interferons which protect non-infected cells from further viral infection.

* Acquired immunity :- →

The immunity which develops during life time by exposure to suitable foreign agents like microorganisms, is called acquired immunity.

→ Acquired immunity is pathogen specific and it is characterized by memory.

→ It is obtained after birth by various processes i.e. it does not exist since birth. It is also called adaptive immune system.

→ When any pathogen enters into our body, it then a response is produced which takes long time to develop, called as primary immune response. When immune system fights with external pathogen, acquired immunity develops which destroys the pathogen.

The memory of this first encounter is stored in a special cell, the memory cell. When the same pathogen again enters into the body, the memory cells immediately identify it and destroy with fast response. It is called as secondary immune response.

→ The primary and secondary immune response are carried out with the help of two special types of lymphocytes present

in our blood.

① B-lymphocytes → The B-lymphocytes produce an army of proteins in response to pathogens in to our blood to fight with them called as antibodies. Differentiation and maturation of B-lymphocytes take place in bone marrow.

② T-lymphocytes → The T-lymphocytes do not produce antibodies but help B-cells to produce them. They are formed in bone marrow but their maturation take place in the thymus gland.

* Structure of antibody: → It is immunoglobulin protein. It is produce by B-lymphocytes. Each molecule of antibody has four peptide chain out of them two chains are long and are called as heavy chains or H-chains. Two chains are small and are called as light chain or L-chains. They are arrange in a shape of "Y". Hence an antibody is represented as H_2L_2 .

The peptide chains of antibody are bounded together by disulphide bonds. The upper ends of ~~per~~ polypeptide of Y consists of Variable domains and

bonds with antigen. Hence are called as antigen binding sites or fab segment. fab segment binds to a specific antigen, like lock and key and an antigen-antibody complex is formed.

→ The molecular weight of light chain is low and weight of heavy chain is high.

The variable part of antibody which binds to the antigen is called as paratop and the part of antigen which binds with paratop is called as epitop.

→ There are five types of antibodies produce in our body → (i) IgG (ii) IgM (iii) IgD (iv) IgA (v) IgE

→ IgG is transferred to a foetus through the placenta and protect the infant until their own immunity develops.

→ IgA is present in the breast milk, colostrum, the yellowish fluid secreted initially during lactation.

→ IgE is involved in the allergic reaction

⇒ Based on the type of immune cell acting against the antigens, immunity can be classified into two types →

- ① Humoral immunity: → The immunity which is mediated by antibodies produced by B-lymphocytes is called humoral immunity. It is also called antibody mediated immunity. The B-lymphocytes on contact with germ, then secrete a glycoprotein called globulin. These globulin proteins circulate along with blood, lymph and tissue fluid and destroy germs.
- The globulin proteins provide immunity hence are also called as immunoglobulin (Ig). They oppose antigens. Hence also called as antibodies.
- The antibodies are always found in plasma, lymph or tissue fluid. The plasma and lymph are called as humors, hence the humoral immunity is named so.
- ② Cell-mediated immunity: → The immunity which is mediated by T-lymphocytes by directly attaching to the antigens is called ~~Cell~~ cell-mediated immunity.
- Cell mediated response is responsible for distinguishing b/w self from non-self and graft rejection after transplantation of any organ.

Based on the nature of antibody, Immunity is divided into two types: →

① Active immunity (i) passive immunity

① It develops in a person as a result of vaccine or infection. ① Readymade antibodies are used in this immunity.

② It acts slowly.

② It acts rapidly.

③ It persists for life long.

③ It develops for a short period.

④ It is harmless and no side effect.

④ It may have some side effect.

⑤ It is not transmitted from mother to child.

⑤ It passes from mother to child through the placenta.

⑥ It is functional against many types of infections.

⑥ It acts against a specific infection.

* Vaccination and Immunisation: →

Vaccination is the process of introduction of vaccine into the body to produce antibodies against the antigens to neutralize the effect of pathogens during actual infection.

- Vaccines are the dead or weakened pathogens introduced into the body.
- The dead or weakened pathogen leads to the production of antibodies which neutralizes the pathogenic agents during actual infection with the same pathogen.
- Immunization is the process where ^{med} antibodies against the toxin are introduced into the body. Example - performed antibody injection against Snake venom. This type of immunization is called passive immunization.
- Using recombinant DNA technology antigenic polypeptides of pathogens in bacteria or yeast. Example - Hepatitis-B Vaccine produced from yeast.

★ Allergy : → Allergy is a condition in which the immune system reacts abnormally to any foreign particle or substance. Or The exaggerated response of the immune system to certain antigens present in the environment is called allergy.

Allergens :- The factors which cause allergy are called ~~as~~ allergens or The substances to which immune response is produced are called allergens. for example $\rightarrow$ Dust particles, pollen grains, Cold, heat, feathers, scent, clothes, mites, soaps, some medicine, UV rays and specific smell etc.

$\rightarrow$ IgE antibody is produced during an allergic reaction.

$\rightarrow$ Mast cell release histamine and serotonin during an allergic reaction.

$\rightarrow$ Antihistamines, adrenalin and steroid reduce the allergic symptoms.

$\rightarrow$ Symptoms of allergy :- The allergy symptom are variable. It mainly affects skin, mucosa membrane, respiratory system etc. Some common symptoms are sneezing, running nose, watery eyes, difficulty in breathing etc.

★ Auto Immunity :- Sometime, the imm^{une} system of a person starts killing self cells considering self cells as antigen. The diseases caused because of this reason are called auto immune diseases.

Ex- Rheumatoid arthritis and insulin-dependent diabetes. Immune system in the body plays an important role in organ transplantation, allergic reaction and autoimmune disease.

★ Immune system in the body : → The human immune system consists of lymphoid organs, lymphoid tissue, B-cells, T-cells and antibodies.

→ Primary lymphoid organ : → Bone marrow and thymus. Here lymphocytes develop, mature and differentiate to antigen-specific lymphocytes. After maturation the lymphocytes migrate to secondary lymphoid organ.

→ Secondary lymphoid organ : → Spleen, lymph nodes, tonsils, Peyer's patches in small intestine and appendix etc.

The secondary lymphoid organs provide the sites for interaction of lymphocytes with the antigen, which then proliferate to become effector cells.

→ The bone marrow is the main lymphoid organ where all blood cells including lymphocytes are produced.

- The thymus is a lobed organ which is located near the heart. The thymus is large at the time of birth but keeps reducing in size with age and by the time puberty is attained it reduces to a very small size. Both Bone marrow and thymus provide micro-environment for the development and maturation of T-lymphocytes.
- The spleen act as a filter of the blood. It contains lymphocytes and phagocyte and a large number of erythrocytes are present.
- Lymph nodes trap the antigens present in the lymph or tissue fluid.
- Mucosa-associated lymphoid tissue (MALT) :→ The mucosal lining of respiratory, digestive, and urogenital tract etc. accounts for the 50% of total lymphoid tissues present in the body.
- ★ AIDS (Acquired immuno deficiency syndrome) :→ It is a pandemic disease which is caused by the infection of HIV.
- AIDS means deficiency of acquired

immune system during the life time of an individual indicating that it is not a congenital disease. Syndrome means a group of ~~disease~~ symptoms. AIDS was first reported in 1981.

* Pathogen: →

AIDS is caused by the human immunodeficiency virus (HIV). The infected person is known as HIV positive. HIV is a type of retrovirus with RNA as its genome. It is found in the blood, lymph, CSF, bone marrow and semen or vaginal fluid of the infected person.

* Mode of infection: → Transmission of HIV-infection generally occurs by—

- (i) Sexual Contact with infected person
- (ii) Transfusion of contaminated blood and blood products.
- (iii) Sharing infected needles as in the case of intravenous drug abusers.
- (iv) from infected mother to her child through placenta during embryonic development.
- (v) Sexual Contact with multiple sexual partner.

* Symptoms :->

- (i) Infection of common diseases again and again.
- (ii) Prolonged fever
- (iii) Prolonged diarrhoea
- (iv) Constant loss of body weight
- (v) Difficulty in breathing.
- (vi) Sharp depletion of body immunity.
- (vii) Headache and Dizziness.

* Mechanism of HIV infection :->

- After getting the body of the person, the virus enters into macrophages, where RNA genome of virus replicates to form viral DNA with the help of the enzyme reverse transcriptase.
- This viral DNA binds to the DNA of macrophages and it directs the host cell to produce virus particles.
- This way, the macrophages continuously produce virus. Hence, macrophages (host cell) act as HIV factory.
- HIV enters into helper T-lymphocytes replicates and produce progeny viruses.
- The progeny viruses released into the blood and attack other helper T-lymphocytes.
- This is repeated and due to this the number of helper T-lymphocytes are decreased in the body of infected person.

- During this period, the infected person suffers from fever, diarrhoea and weight loss.
- Due to decrease in the number of helper T-lymphocytes, the infected person starts suffering from infections of microbacterium, viruses, fungi and even parasites like toxoplasma.
- The patient becomes so immuno-deficient that he/she is unable to protect himself/herself against these infections.
- Hence, we can say that AIDS invites many other diseases.

★ Diagnosis: → AIDS can be diagnosed using following techniques: →

- (i) ELISA (Enzyme linked immuno Sorbent assay)
- (ii) Western blot test.

★ Prevention of AIDS: →

- (i) Use of sterilized needles every time.
- (ii) Blood should be HIV free, before blood transmission.
- (iii) Use of Condoms during Sexual reaction.
- (iv) Narcotic drugs should not be used using injection.
- (v) Prostitution should be banned completely.
- (vi) By making the public aware.

Note:- for the Control of AIDS, Govt. of India established national AIDS Control Organisation (NACO).

★ AIDS do not spread by following activities :- →

- (i) By shaking hands and body contact.
- (ii) By kissing each other.
- (iii) By hugging each other.
- (iv) By using utensils of others.
- (v) By blood donation.
- (vi) By Using toilets and items of other persons.

★ Cancer :- → Cancer is a non infected disease in which cells of any body tissue or part become abnormal which exhibit uncontrolled cell division and form a tumor.

→ In our body, Cell growth and differentiation is highly controlled and regulated. There is breakdown of these regulatory mechanism in cancer cells.

→ Normal cells show a property called Contact inhibition by virtue of which contact with other cells inhibits their uncontrolled growth.

→ Cancer cells appear to have lost this property. As a result of this, cancerous cells just continue to divide giving rise to masses of cells called tumors.

→ The tumors form in the body are of two types →

(i) Benign tumor: → It is a mass of cells that lacks the ability to either invade nearby tissues. It is bounded by a covering made up of connective tissues. When removed they do not grow back. So they are harmless when removed. Benign tumors do not spread to other parts of the body.

(ii) Malignant tumor: → They are cancerous and very harmful. They grow and their cells spread to other parts of the body and form new tumors which are called as secondary tumors. This process is called as metastasis.

→ The cells of new tumor develop blood capillaries, which provide nutrients to the tumor cells.

→ Malignant tumors have invading ability and damage surrounding tissue.

Causes of Cancer : →

The physical, chemical Biological agents which cause Cancer are called as Carcinogens or Cancer factor. They are following : →

- (i) Ionizing rays : - x-rays, gamma rays, and non ionizing rays like as Uv rays.
 - (ii) Chemical factors : - chemical carcinogen present in tobacco smoke have been identified as a major cause of lung Cancer.
 - (iii) Biological factors : → Cancer Causing viruses called oncogenic viruses have genes called viral oncogenes. Every body cell has cellular proto-oncogenes which get activated by Carcinogens and cause Cancer. The active cellular oncogenes make the cell division uncontrolled and cause Cancer. The oncogenes are Cancer Causing genes.
- * Cancer detection and diagnosis : → Cancer detection is based on biopsy and histopathological studies of the tissue and blood and bone marrow tests for increased Cell Counts in the case of leukemias.

- ① Biopsy : → In biopsy, a sample of tissue is collected for testing in the laboratory.
- ② Histopathology : → The tissue sample is examined under the microscope by a pathologist.
- ③ Imaging tests : → for diagnosis of Cancer of internal organs, imaging tests are used. Such as radiography (x-rays), Ultrasound, Computerized tomography (CT) scan, and magnetic resonance imaging (MRI) etc.
- ★ Treatment of Cancer : — following techniques are used in Cancer treatment¹
 - ① Radiotherapy : — Ionizing radiations are used which kill the Cancer cells. Such as x-rays, Cobalt-60 etc.
 - ② Surgery : — In this technique, the malignant tumor is removed by surgery.
 - ③ Chemotherapy : → In this technique certain chemicals are used to kill cancerous cells. Some of these are specific for particular tumors. chemotherapy has side effects like loss of hairs, anemia etc.

- Most Cancers are treated by combination of Surgery, Radiotherapy and Chemotherapy.
- Immune system is unable to identify and destroy tumors. Therefore, α -interferon (Bio response modifier) is used which activates immune system to destroy tumor cells.

★ Drugs and alcohol abuse :- →

At present, the trend of using alcohol and drugs is increase at the adolescence and young age. which is a "Matter of great worry". Use of drugs and alcohol is really a Cause of concern as it could result in many harmful effects. proper education and guidance would enable youth to safeguard themselves against these dangerous behaviour pattern and follow healthy life style.

→ The drugs, which commonly abused are following three types →

- ① Opioids ② Cannabinoids ③ Coka alkaloids

① Opioids :- → They are depressant drug (ex-morphine) which slow down our body activity. They pass into the body through the digestive system and binds to the Opioid receptors found in Central nervous system, and gastrointestinal tract and suppress its activities.

⇒ plant source :- → It is extracted from the latex of opium poppy plant, *Papaver Somniferum*. The latex is obtained by making scratch on the stem. It is called Morphine.

→ Heroin is a type of opioid and it is also called as smack. Chemically it is diacetyl morphine. It is a white, odourless with bitter smell and Crystalline Compound. It is formed by acetylation of morphine. It is taken by snorting & injection.

② Cannabinoids : →

They are depressants which are received by Cannabinoid receptors found in the brain. They affect on Cardiovascular System of the body.

→ Plant Source : - Cannabinoids are obtained from the resin collected from leaves, bark and inflorescence of plant *Cannabis sativa* (Bhang).

→ They are group of chemical Compounds and are prepared by mixing various parts of *Cannabis* plant in a specific ratio. Such as Marijuana, charas, Hashish and Ganja etc. Generally Cannabinoids are taken by inhalation and oral ingestion.

③ Cocaine alkaloids : →

It is also called as cocaine. It is a type of stimulant which stimulates the central nervous system. It inhibits the transmission of neurotransmitter Dopamine. It is snuffed through the nose.

→ Plant Source : → It is obtained from a plant named *Erythroxylum coca* which is native plant of South America.

→ Other name → Cocaine, or coke, or Crack.

→ It is a stimulant and produces excitement, euphoria and increased energy. It's excessive intake causes hallucinations. Other well-known plants with hallucinogenic properties are Atropa-

belladonna and Datura.

→ Cannabinoids are also being abused by some sportspersons.

→ Drugs like barbiturates, amphetamines, benzodiazepines etc. drugs are normally used as medicines to help patients cope with mental illness like depression and insomnia are often abused.

→ Tobacco: — Tobacco has been used by human beings from many years. It is smoked, chewed or used as a snuff. Tobacco contains a highly addictive stimulant alkaloid Nicotin. Nicotin stimulates adrenal gland to release adrenaline and nor-adrenaline into blood circulation.

which increase blood pressure, breathing rate, heart rate and cause excitement.

★ Smoking Effect of tobacco: → Inhaling of tobacco smoke increase Carbon mono oxide (CO) in the blood and reduce the concentration of O₂ in the blood.

① Chewing of tobacco Causes Cancer of the oral cavity.

② Smoking of tobacco Causes Cancer of lungs, Urinary bladder, and throat, bronchitis, emphysema, coronary heart disease etc.

★ Adolescence and drug/Alcohol abuse: → The period between 12 to 18 years of age in human beings is called Adolescence. It is the age b/w childhood and adult hood. Several changes like as

physical, sexual, cognitive, social and emotional etc. are occur during this phase in a child. The child wants to increase his recognition and participation in the society.

→ Need for adventure and excitement and experimentation etc. common causes

which motivate youngsters towards drug and alcohol use. A child's natural curiosity motivates him/her to experiment.

→ The first use of drug and alcohol may be out of curiosity, but later the child starts using these to escape facing problems.

→ Stress, from pressure to excel in examination, has played a important role in persuading the youngsters to try alcohol and drugs.

→ Television, movies, newspapers and internet etc. help to promote this perception.

★ Addiction and dependence : → Addiction is a psychological attachment to certain effects, such as euphoria and a temporary feeling of well-being & associated with drugs and alcohol. or

→ Addiction is a state when the body demands continuous presence of psychoactive substance with in it.

→ with repeated use of drugs, the tolerance level of the receptors present in our body increases and consequently the receptors respond only to higher doses of drugs or alcohol leading to greater intake and addiction.

- Dependence is the tendency of the body to manifest a characteristic and unpleasant withdrawal syndrome if regular dose of drug / alcohol is abruptly discontinued.
- Withdrawal syndrome is characterised by anxiety, shakiness, nausea and sweating.
- ★ Effect of drug / Alcohol abuse :-
- (i) Immediate effects are reckless behaviour, vandalism and violence.
 - (ii) Excessive doses of drugs may lead to coma and death due to respiratory failure, heart failure or cerebral haemorrhage.
 - (iii) Those who take drugs intravenously can get infected with AIDS, hepatitis-B.
 - (iv) The chronic use of drugs and alcohol damage nervous system and cause liver cirrhosis.
 - (v) The use of drugs and alcohol during pregnancy is also known to adversely affect the foetus.
 - (vi) Use of anabolic steroids in female can cause masculinisation, increased aggressiveness, mood swings, depression, abnormal menstrual cycle, excessive hair growth on the face and body, enlargement of clitoris, deepening of voice.
 - (vii) In male anabolic steroids can cause acne, increased aggressiveness, mood swings, depression, reduction of size of the testicles, decreased sperm production, potential for kidney and liver dysfunction, breast

enlargement, premature baldness, enlargement of the prostate gland.

These effects may be permanent with prolonged use.

* Prevention and Control : → The person may attracted towards drugs/alcohol during adolescence but we have to protect the youth as prevention is better than cure — following are some ways of prevention and control →

- ① Avoid undue peer pressure : → The family members should not put unnecessary pressure on children. Normally, parents put pressure on children regarding education, competition, sports etc. As a result the child can't work as per his/her choice and finally deviated from the goal. Hence, there should not be any pressure on children his carrier.
- ② Education and Counselling : → The education should be according to the feeling and desires of the child. There are many fields of education such as games, Occupation, acting, music, yoga, drawing and painting in which child can make successful carrier as per his/her choice. Counselling is such a powerful tool which can save the child from negative thinking.
- ③ Seeking help from parents and peers : → Help from parents and peers should be sought immediately so that they can guide appropriately.

Parents, family members and friends can protect the child from bad habits.

- (iv) Looking for danger sign :→ Alert parents and teachers need to look for and identify the danger signs discussed above. Even friends, if they find someone using drugs or alcohol, should not hesitate to bring this to the notice of parents or teacher in the best interests of the person concerned.

- (v) Seeking professional and medical help :→ Affected individuals should seek medical help of qualified psychologists, psychiatrists and deaddiction and rehabilitation programmes.

* The end *