

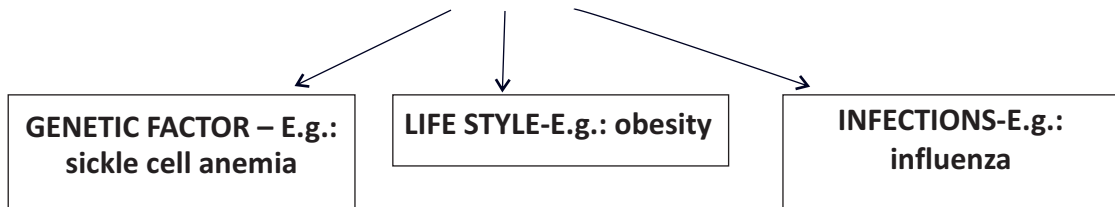
UNIT VIII - BIOLOGY IN HUMAN WELFARE
CHAPTER: 8 HUMAN HEALTH & DISEASES
(KEY POINTS)

S.No.	Term	Explanation
1	PMNL	Polymorpho-Nuclear Leukocytes
2	CMI	Cell Mediated Immunity
3	ELISA	Enzyme Linked Immunosorbent Assay
4	MALT	Mucosal Associated Lymphoid Tissue
5	SCID	Severe Combined Immuno Deficiency
6	NACO	National AIDS Control Organisation
7	MRI	Magnetic Resonance Imaging
8	HLA	Human Leukocyte Antigen
9	Carcinogens	Cancer causing agents. e.g., gamma rays. UV rays, dyes and lead.
10	Immunity	Resistance to infection or antigen
11	Immuno Suppressant`	The chemical which supress the immunity response to antigen.
12	Interferon	The glycoproteins produced by our body cells in response to a viral
13	Incubation Period	The time period between infection and the appearance of symptoms.
14	Metastasis	The property in which the cancer cells spread to different sites through blood and develop secondary tumours.
15	Oncogene	Viral genome which causes cancer
16	Retrovirus	A virus having RNA as genetic material and forms DNA by reverse transcription and then replicate e.g., Human Immunodeficiency Virus (HIV).
17	Syndrome	Collection of disease symptoms responsible for a disorder or a disease.
18	Vaccination:	Inoculation of a vaccine to stimulate production of antibodies and provide immunity for one or more disease

CHAPTER 8
HUMAN HEALTH AND DISEASES
(FLOW CHART)

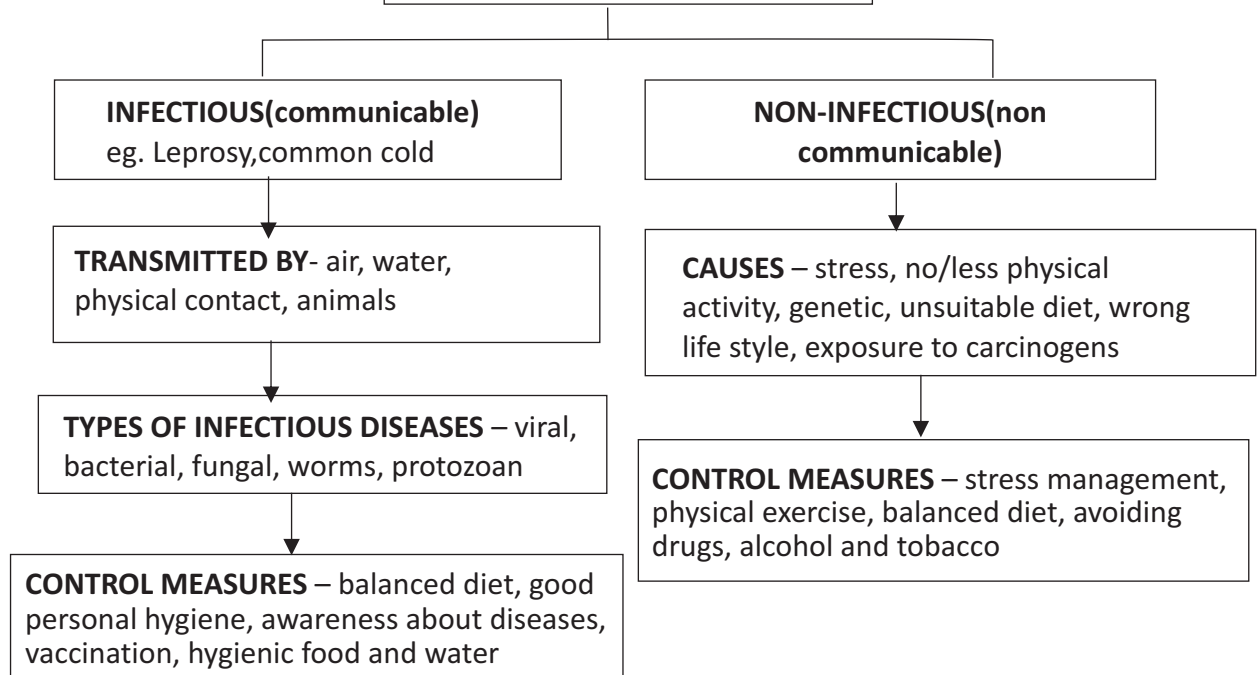
1 HEALTH (Physical, mental, social well being)

2. FACTORS AFFECTING HEALTH



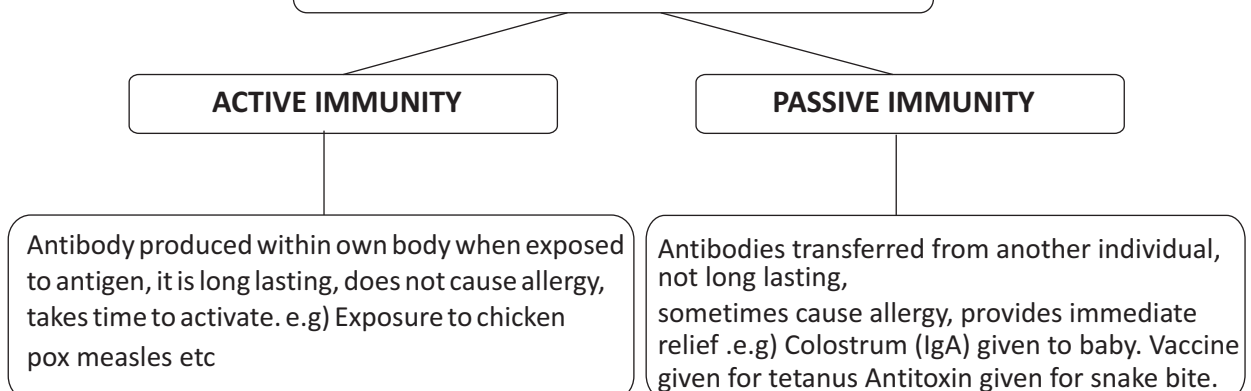
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TYPES OF DISEASES



4

TYPES OF ACQUIRED IMMUNITY



5

TYPES OF IMMUNE RESPONSES

Humoral immunity

? Response by antibodies produced by B cell. found in Blood/LYMPH
Ig^A, Ig^M, Ig^E, Ig^G are the types of antibody

--Antibody It has 2 small light chains & 2 longer heavy chains (H₂L₂)

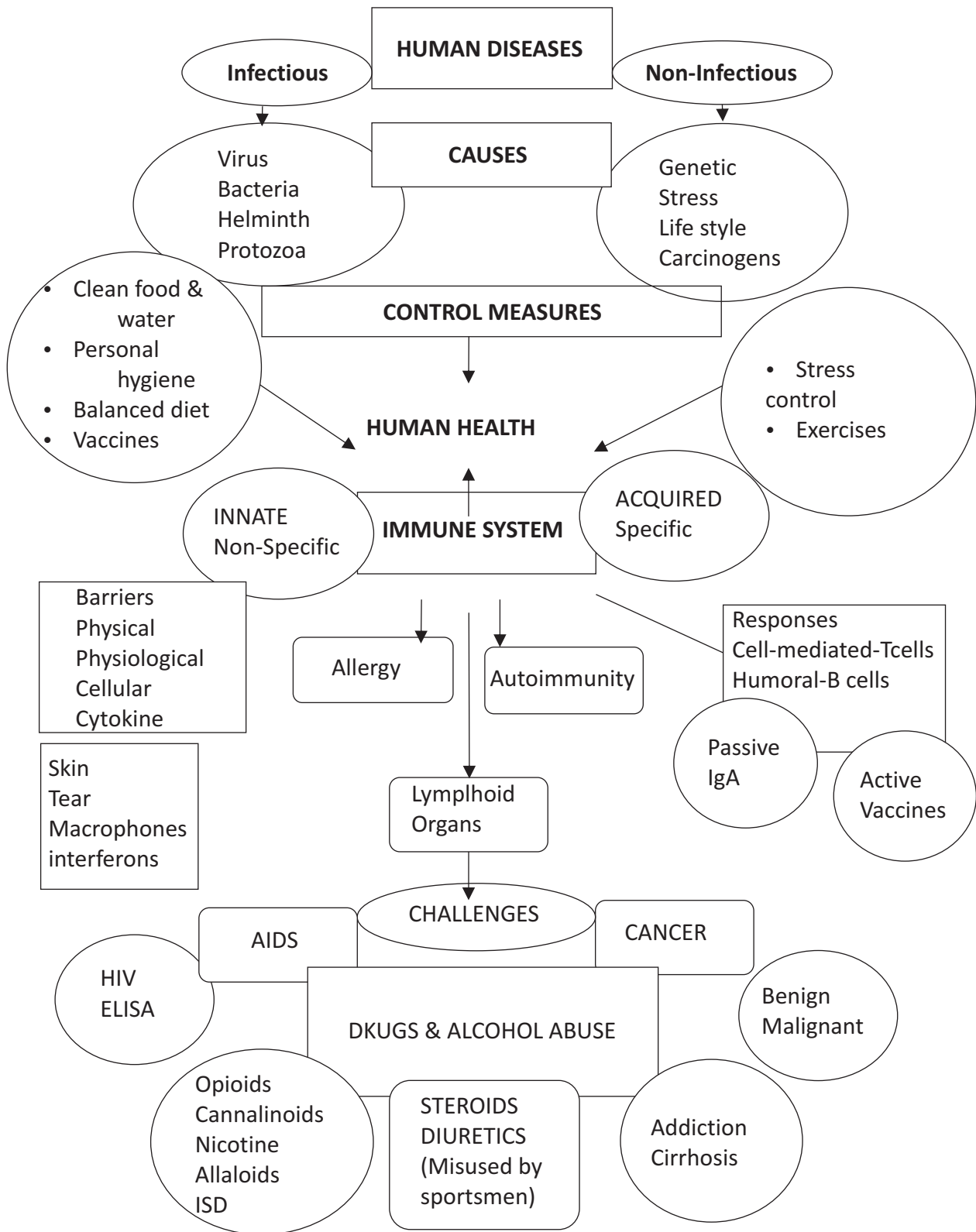
Cell mediator immunity

? Response produced by T-lymphocyte ? Role in organ transplantation

CHAPTER 8

HUMAN HEALTH AND DISEASES

(CONCEPT MAP)





CHAPTER 8- HUMAN HEALTH AND DISEASES

(QUESTION BANK)

1. Name the diagnostic test which confirms typhoid.
2. Name the two major groups of cells required to attain specific immunity.
3. You have heard of many incidences of Chickengunya in our country. Name the vector of the disease.
4. Breast fed babies are more immune to diseases than the bottle fed babies. Why?
5. Name the pathogen which causes malignant malaria.
6. Which microorganism is used to produce hepatitis B Vaccine?
7. What is the reason of shivering in malarial patient?
8. Where are B-cells and T-cells formed? How do they differ from each other?
9. Given below are the pathogens and the diseases caused by them. Which out of these pairs is not correct matching pair and why?
(a) *Wuchereria* . Filariasis
(b) *Microsporium* . Ringworm
(c) *Salmonella* . Common Cold
(d) *Plasmodium* . Malaria
10. What would happen to the immune system, if thymus gland is removed from the body of a person?
11. Lymph nodes are secondary lymphoid organs. Describe the role of lymph nodes in our immune response.
12. What is the role of histamine in inflammatory response? Name few drugs which reduce the symptoms of allergy.
13. What are Cannabinoids? From which plant Cannabinoids are obtained? Which part of the body is affected by consuming these substances?
14. In the figure, structure of an antibody molecule is shown. Observe it and Give the answer of the following questions.
(i) Label the parts A, B and C.
(ii) Which cells produce these chemicals?
(iii) State the function of these molecules.
15. Mention any three causes of drug abuse. Suggest some measures for the prevention and control of drug abuse.
16. A person shows unwelcome immunogenic reactions while exposed to certain substances.
(a) Name this condition.
(b) What common term is given to the substances responsible for this condition?
(c) Name the cells and the chemical substances released which cause such reactions.
17. What is innate immunity? List the four types of barriers which protect the body from the entry of the foreign agents.
18. Fill the blanks 1,2,3,4,5,6 in the given table.

Name of disease	Causative organism	Symptoms
- Pneumonia	<i>Streptococcus</i>	(1)
-. Typhoid	(2)	High fever, weakness headache, stomach pain
(3)	<i>Rhinoviruses</i>	Nasal Congestion, and discharge sorethroat cough, headache cough, headache
Ascariasis	<i>Ascaris</i>	(4)

<i>Ringworm</i>	(5) <i>Dry, Scaly lesions on</i>	<i>various body parts, Intense itching, redness.</i>
(6)	<i>Entamoeba histolytica</i>	<i>Constipation, cramps, abdominal pain, Stools with excess mucous and</i>

19. Answer the following with respect to Cancer.
 - (a) How does a cancerous cell differ from a normal cell
 - (b) Benign tumour is less dangerous than malignant tumour. Why
 - (c) Describe causes of cancer.
 - (d) Mention two methods of treatment of the disease.
20. The pathogen of a disease depends on RBCs of human for growth and reproduction. The person with this pathogen suffers with chill and high fever.
 - (a) Identify the disease.
 - (b) Name the pathogen.
 - (c) What is the cause of fever?
 - (d) Represent the life cycle of the pathogen diagrammatically.
21. The immune system of a person is suppressed. He was found positive for a pathogen in the diagnostic test ELISA.
 - (a) Name the disease, the patient is suffering from.
 - (b) Which pathogen is identified by ELISA test?
 - (c) Which cells of the body are attacked by the pathogen?
 - (d) Suggest preventive measure of the infection.
22. Municipal corporation has deputed personnel to check for mosquito in your school.
 - i) Which are the places they should check for mosquitoes & their larvae?
 - ii) Name two disease which are spread by mosquitoes and their larvae?
 - iii) What values are promoted by MC?
23. Shashi, a 15 year old boy thinks that smoking makes him more active and energetic and feels like adult and thus a more responsible citizen. He tries to smoke when he is with peer group. As a friend you want to educate him:
 - i) Why he feels more energetic while smoking?
 - ii) What are the effects of CO in smoking?
 - iii) What are the values shown by you, as a friend?

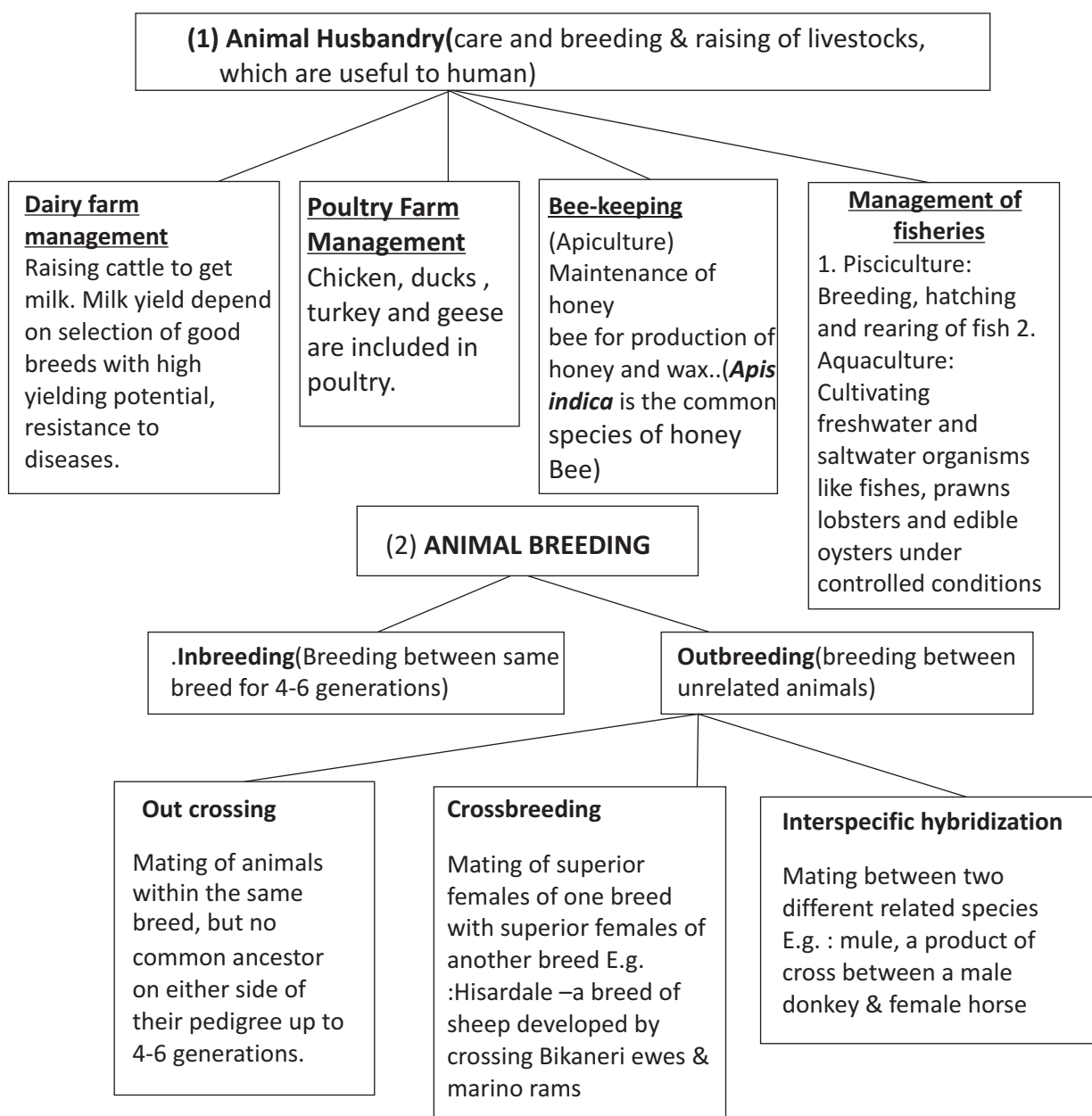
CHAPTER 8 -HUMAN HEALTH AND DISEASES

(ANSWER KEY)

. s.no	Value points	Marks
1	Widal test	1
2	B-lymphocytes and T-lymphocytes	1
3	<i>Aedes</i> mosquitoes	1
4	The mother's milk consists of antibodies (Ig A) such antibodies are not available to bottle fed babies	1
5	<i>Plasmodium falciparum</i>	1
6	Yeast	1
7	After sporozoite infection, when RBC ruptures, a toxic substance haemozoin is released which cause chilling and high fever.	1
8	B-cells and T-cells are formed in bone marrow. B-cells produce antibodies but T cells do not produce antibodies but help B-cells to produce them	1+1=2
9	- <i>Salmonella</i> : Common cold is not a matching pair.	1+1=2
10	T-lymphocytes are developed and matured in thymus gland, Immune system will become weak on removal of thymus gland	1+1=2
11	Lymph nodes provide the sites for interaction of lymphocytes with the antigen. When the microorganisms enter the lymph nodes, lymphocytes present there are activated and cause the immune response.	1+1=2
12	Histamine acts as allergy-mediator which cause blood vessels to dilate. It is released by mast cells. Antihistamine steroids and adrenaline quickly reduce the symptoms of allergy	1+1=2
13	Cannabinoids are a group of chemicals which interact with Cannabinoid receptors present . Principally in the brain Cannabinoids are obtained from the inflorescences of the plant <i>Cannabis sativa</i> . The substances affect the cardiovascular system adversely	1+1+1=3
14	. (a) A-Antigen binding site B-Light chain (b) B-lymphocytes. (c) Heavy Chain (d) Antibodies provide acquired immune response	1/2+1/2 1/2+1/2 1=3
15	Reasons to attract towards drug abuse : Curiosity, peer pressure, escape from frustration and failure, family problems, false belief of enhanced performance. Preventive measures : Avoid undue peer pressure Education and Counselling Seeking help from parents and peers. Looking for danger signs Seeking professional and medical help	1+2=3

16	(a) Allergy (b) Allergens (c) Mast Cells. Histamine, Serotonin	1+1+1=3
17	Innate Immunity is non-specific type of defence that is present at the time of birth. (i) Physical Barriers: Skin, mucous-coated epithelium or respiratory, digestive and urinogenital tract. (ii) Physiological Barriers: Acidity of Stomach, lysozyme in saliva, tears, sweat. (iii) Cellular Barrier: Macrophages, neutrophils, monocytes and natural killer lymphocytes.(iv) Cytokine Barriers : Interferons produced by Viral infected cells, protect the non-infected cells from further Viral infection	1+ (4x1/2)=2
18	i) Alveoli filled with fluid, reduced breathing, fever, chills, cough and headache. (ii) <i>Salmonella typhi</i> (iii) Common Cold(iv) Internal bleeding, muscular pain, anaemia, fever and blockage of the intestinal passage.(v) Microsporium species/Trichophyton species/Epidermophyton Species.(vi) Amoebiasis/amoebic dysentery.	6x1/2=3
19	(a) In normal cells, growth and differentiation is highly controlled and regulated (contact inhibition). The cancerous cells have lost the property of contact inhibition,hence continue to divide giving rise to masses of cells (tumors). (b) The benign tumor remains confined in the organ affected as it is enclosed in a connective tissue sheath and does not enter themetastatic stage.(c) Cancer may be caused due to carcinogens which are physical(radiations), chemicals (Nicotine, Aflatoxin, Cadmium oxide, Asbestos) and biological (viral oncogens)(d) Surgery, radiothera]py, Chemotherapy	2+1+1+1=5
20	(a) Malaria(b) Different species of Plasmodium viz P. vivax, P. Malariae and P.falciparum.(c) Malaria is caused by the toxins (haemozoin) produced in the human body by the malarial parasite. This toxin is released by the rupturing of RBCs. (d) Life cycle of Plasmodium	1+1+1+2=5
21	(i) AIDS (Acquired Immuno Deficiency Syndrome) (ii) HIV (Human Immunodeficiency Virus) (iii) Helper T-cells, macrophages, B-lymphocytes. (iv) Preventive measures : (a) People should be educated about AIDS transmission. (b) Disposable needles and syringes should be used (c) Sexual habits should be changed immediately (d) High-risk groups should be discouraged from donating blood. (e) Routine screening may be done	1+1+1+2=5
22	i) Places like water tanks, flower pots, stagnant water. ii)Dengue,malaria,filariasis,chikungunya iii)sensitivity towards health,observation	1+2+1=4
23	The nicotine causes the releases adrenalin and raises blood pressure & increases heartbeat It binds to haemoglobin & reduces concentration of oxygen & oxygen carrying capacity of blood and the other effects include cancer of lung, throat, emphysema, infertility in males Empathy, awareness about health, consciousness ,critical thinking	1+2+1=4

CHAPTER: 9 - STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION (FLOW CHART)



BIOLOGY

(3) CONTROLLED ANIMAL BREEDING

Artificial insemination: semen of superior male is collected and injected into the reproductive tract of selected female by breeder.

MOET- Multiple ovulation embryo transfer. (Technique for herd improvement by successful production of hybrid) Done in cattle, sheep, rabbits, buffalo, mare etc.

(4) PLANT BREEDING

Plant breeding for disease resistance

i) Viral - Tobacco mosaic, turnip mosaic
(ii) Bacterial - Black rot of crucifers, Blight of rice
(iii) Fungal - Rust of wheat, red rot of sugarcane, late blight of potato.

1. Conventional breeding

screening germplasm for resistance sources,
(Eg. Parbhani Kranti (b. hindi) resistant to yellow mosaic virus)

2. Mutational breeding

inducing mutation artificially through chemicals or radiations,
Eg. mung bean resistant to yellow mosaic virus and powdery mildew

Plant breeding for resistance to insect pests.

Hairy leaves, Solid stem, Smooth leaved & nectarless. High aspartic acid, low nitrogen and sugar content

(5) OTHER PLANT BREEDING METHODS

Bio fortification- Breeding crops with higher levels of proteins, vitamins and minerals
eg. Vit C rich bitter melon, . Atlas 66 Maize with high protein content
Iron fortified rice, Vit- A enriched carrots, spinach, pumpkin, Vit-C enriched bitter melon, tomato, iron & calcium rich spinach, protein enriched beans, peas.

SCP (Single cell protein)-

Eg- Spirulina, (algae)
Methylophilus
methylophilus
(bacterium)

Tissue culture- /Micropopagation.

Regeneration of whole from explant in culture medium (sucrose as carbon source, inorganic salts, vitamins, amino acids, auxin, cytokinin)

Somatic hybridization-

Fusion of protoplast of somatic cells of two different species. eg. Pomato is obtained by somatic hybridization of potato and tomato