

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

+2 ZOOLOGY
IMPORTANT QUESTIONS WITH ANSWERS
UNIT III
(CHAPTERS 7, 8 and 9)

HUMAN HEALTH AND DISEASES

1 MARK QUESTIONS:

1. A patient is hospitalized with fever and chills. Merozoites are observed in her blood. What is your diagnosis?
She must be suffering from malaria.
2. Name the causative agent of filariasis.
Filarial worm, *Wuchereria bancrofti*
3. How is filariasis transmitted?
Through *Culex* mosquito
4. Name the causative agent of kala-azar.
Kala-azar or visceral leishmaniasis is caused by *Leishmania donovani*.
5. How is leishmaniasis transmitted?
Through *Phlebotomus* (sand fly)
6. What test is done to confirm typhoid?
Widal test
7. What is the infective stage of *Entamoeba histolytica*?
Trophozoite
8. Which acts as a carrier animal for *Entamoeba histolytica*?
House fly
9. Name the stage of plasmodium in human RBC.
Trophozoite
10. What is the zygote of plasmodium called?
Ookinete
11. Name the toxin released by malarial parasite.
Haemozoin
12. What causes ascariasis?
Ascaris lumbricoides commonly called the round worms.
13. Name the pathogen that causes athlete's foot.
Taenia pedis
14. Name the diseases controlled by the use of vaccines and by creating awareness.
Polio, diphtheria, pneumonia and tetanus
15. What is euphoria?

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
 PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

“Euphoria” is characterized by mental and emotional preoccupation with the drug.

16. Name the chronic memory disorder caused by alcohol misuse.

Korsakoff syndrome

17. What causes African sleeping sickness?

African sleeping sickness is caused by Trypanosoma species.

18. How is Trypanosoma transmitted?

Trypanosoma is transmitted by the blood sucking flies Tsetse.

2 MARK QUESTIONS:

19. Compare and contrast bacillary dysentery and amoebic dysentery.

Bacillary dysentery	Amoebic dysentery
Caused by a bacterium Shigella sp.	Caused by a protozoan Entamoeba histolytica
Abdominal pain, dehydration, blood and mucus in the stools	Diarrhoea, dysentery with blood and mucus in the stool

20. Mention the symptoms of filariasis.

The obstruction of lymph vessels causes elephantiasis or filariasis of the limbs, scrotum and mammary glands. It also causes inflammation of the lymph nodes.

21. Why do you think it is not possible to produce a vaccine against 'common cold'?

Common cold is caused by more than 150 different strains of Rhino viruses. More over their RNA genome keeps changing due to mutation. Hence it is very difficult to prepare a common vaccine for the disease.

22. What do you mean by drug abuse?

The intake of certain drugs for a purpose other than their normal clinical use in an amount and frequency that impair one’s physical, physiological and psychological functions is called drug abuse.

23. What are the effects of cannabinoids?

They interfere with the transport of the neurotransmitter, dopamine and has a potent stimulating action on the CNS, producing increased energy and a sense of euphoria.

24. What do you mean by addiction?

Addiction is a physical or psychological need to do or take or use certain substance such as alcohol to the extent that, it becomes harmful to the individual.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

3 MARK QUESTIONS:

25. List the common withdrawal symptoms of drugs and alcohol abuse.

Mild tremors and convulsions, severe agitation and fits, depressed mood, anxiety, nervousness, restlessness, irritability, insomnia, dryness of throat

26. Mention some of the ways to control mosquitoes.

- ✓ Oil can be sprayed over the water surface, to make it impossible for mosquito larvae and pupae to breathe.
- ✓ Ponds, drainage ditches and other permanent bodies of water can be stocked with fishes such as Gambusia which feed on mosquito larvae.
- ✓ Preparations containing *Bacillus thuringiensis* can be sprayed to kill the mosquito larvae since it is not toxic to other forms of life.

27. Say about malaria vaccine.

Malaria vaccine is used to prevent malaria. The only approved vaccine as of 2015 is RTS, S (Mosquirix). It requires four injections and has relatively low efficacy (26–50%). Due to this low efficacy, WHO does not recommend the use of RTS, S vaccine in babies between 6 and 12 weeks of age

28. Say about the effect of alcohol on liver.

Alcohol interferes with the ability of the liver to break down fat. Over time fat accumulation and high levels of alcohol destroy the liver cells and a scar tissue grows in the place of dead cells. This scarring of the liver is called “Liver cirrhosis”

29. What are the positive attitudes of participating in an exercise programme?

- + Participating in an exercise programme can:
 - + Increase self-esteem
 - + Boost self-confidence
 - + Create a sense of empowerment
 - + Enhance social connections and relationships

5 MARK QUESTIONS:

30. Explain any five bacterial diseases in humans.

1. Shigellosis (Bacillary dysentery):

Causative agent - *Shigella sp.*

The part affected - intestine

Mode of transmission: It is transmitted by food and water contaminated by faeces /faecal oral route.

Symptoms

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

Abdominal pain, dehydration etc. Blood and mucus are removed through stools.

2. Diphtheria:

Causative agent - *Corynebacterium diphtheriae*

The part affected - Larynx, skin, nasal and genital passage

Mode of transmission: Droplet infection

Symptoms

Fever, sore throat, hoarseness and difficulty in breathing

3. Cholera

Causative agent - *Vibrio cholerae*

The part affected – Intestine

Mode of transmission: Contaminated food and water/faecal oral route

Symptoms

Severe diarrhoea and dehydration

4. Pneumonia

Causative agent – *Streptococcus pneumoniae*

The part affected - Lungs

Mode of transmission: Droplet infection

Symptoms

Fever, cough, painful breathing and brown sputum

5. Tuberculosis

Causative agent – *Mycobacterium tuberculosis*

The part affected - Lungs

Mode of transmission: Droplet infection

Symptoms

Thick mucopurulent nasal discharge

31. What are the benefits of doing exercise?

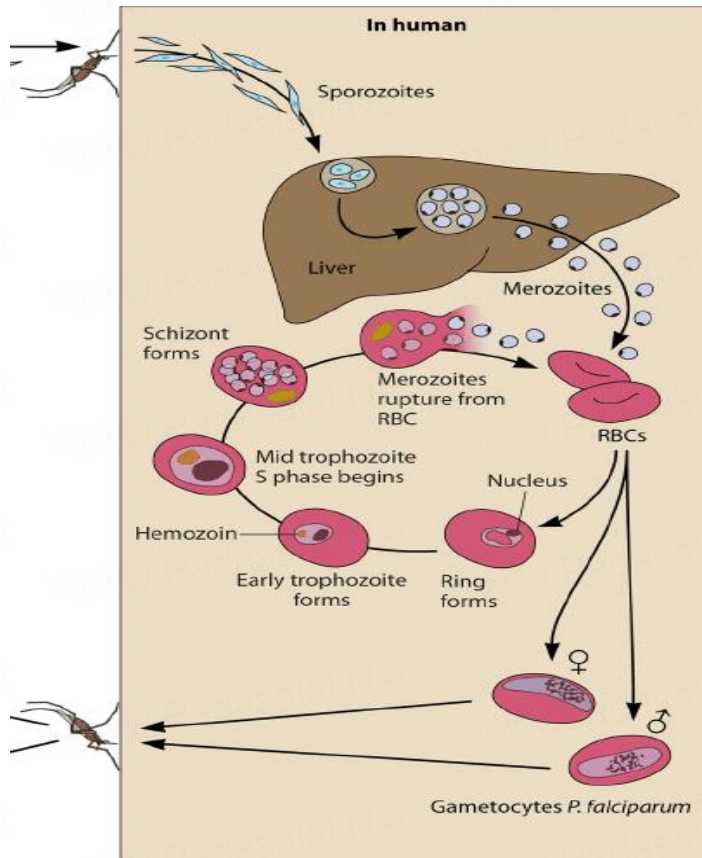
- ❖ Exercise stimulates the body to produce serotonin and endorphins, which are neurotransmitters that suppress depression.
- ❖ Practicing exercise in daily life creates a positive attitude. Participating in an exercise programme can:
 - ❖ Increase self-esteem
 - ❖ Boost self-confidence
 - ❖ Create a sense of empowerment
 - ❖ Enhance social connections and relationships

32. Explain the life cycle of malarial parasite in man.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
 PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

When a mosquito carrying sporozoites in its salivary gland bites a person, sporozoites enter into liver cells through blood stream. Sporozoites undergo asexual fission and become merozoites, which then enter into RBCs.

Merozoites develop into trophozoites. Then enter into ring stage. The nucleus of the trophozoites divide asexually to produce schizont.



Schizont divides to produce mononucleated merozoites.

Sometimes merozoites differentiate into mega gametocytes and micro gametocytes.

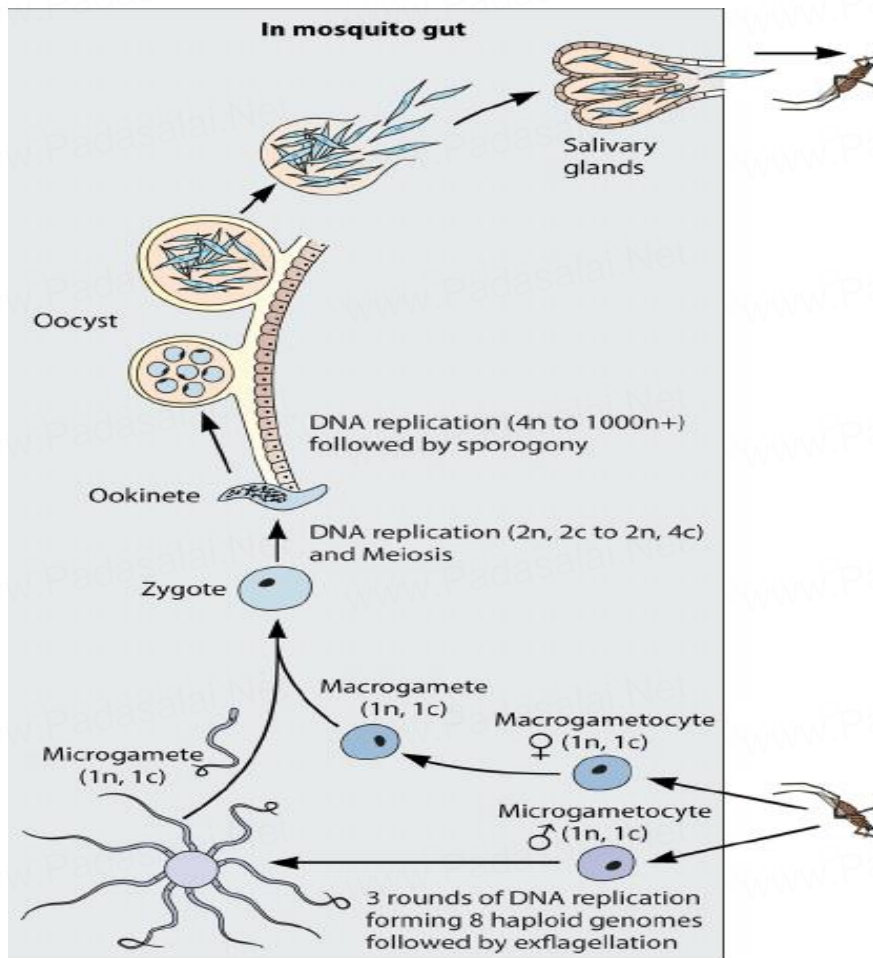
33. Explain the life cycle of malarial parasite in mosquito.

The mega and micro gametocytes after entering into mosquito become female and male gametes respectively.

In the mosquito's gut, the infected erythrocytes rupture and male and female gametes fertilize to form a diploid zygote called ookinete.

The ookinete migrates to the mosquito's gut wall and develop into an oocyte.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
 PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007



The oocyte undergoes meiosis by a process called sporogony to form sporozoites.

These sporozoites migrate to the salivary glands of the mosquito. The cycle is now completed and when the mosquito bites another human host, the sporozoites are injected and the cycle begins again.

IMMUNOLOGY

ONE MARK QUESTIONS:

34. Name the primary lymphoid organs.

Bursa of Fabricius in birds, thymus and bone marrow in mammals

35. What is secreted from thymus?

Thymosin

36. What is the function of thymosin?

It stimulates T - cells to become mature and immunocompetent.

37. What are tonsils?

Tonsils are the secondary lymphoid organs.

38. What are the function tonsils?

Tonsils help to fight infections. They stop invading germs

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
 PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

including bacteria and viruses.

39. Name the enzyme present in saliva.

Lysozyme

40. What is the function of lysozyme?

It inhibits the growth of bacteria in oral cavity.

41. Where is B - cells and T- cells produced from?

Bone marrow

42. What does susceptibility mean?

It means lack of immunity.

43. What do you mean by antigen?

Any substance capable of eliciting immune response is called an ANTIGEN (ANTIBody GENERator).

44. What is haematopoiesis?

The process of production of blood cells in the bone marrow is called haematopoiesis.

45. What are the cells involved innate immune system?

Lymphocytes, monocytes, neutrophils, macrophages, dendritic cells etc.

TWO MARK QUESTIONS:

46. Differentiate B- cells and T-cells

B-cells	T- cells
B- cells stay in bone marrow until they mature.	T- cells leave bone marrow and mature in Thymus gland.
B- cells when receive antigens, multiply to become plasma cells, which in turn produce antibodies.	T- cells do not produce antibodies, but recognize antigen presenting cells and destroy them.

47. Why is an antibody molecule represented as H₂ L₂?

An antibody molecule consists of four polypeptide chains, two identical light chains (L) and two identical heavy chains (H). Hence, an antibody is represented H₂ L₂.

48. What is diapedesis?

Diapedesis is the process in which white blood cells come out of the blood vessels into the surrounding area in case of injuries.

49. Mention the secondary lymphoid organs.

Lymph nodes, appendix, Peyer’s patches of gastrointestinal tract, tonsils, adenoids, spleen, MALT (Mucosal- Associated Lymphoid Tissue), GALT (Gut-Associated Lymphoid Tissue), BALT (Bronchial/Tracheal-Associated Lymphoid Tissue).

50. What is Anaphylaxis?

It is a sudden, systematic, severe and immediate hypersensitivity

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
 PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

reaction occurring as a result of rapid generalized mast-cell degranulation.

51. Differentiate between epitope and paratope.

Epitope is an antigenic determinant and is the active part of an antigen.

A paratope is the antigen binding site and is a part of an antibody which recognizes and binds to an antigen.

52. What are the two important types of T cells?

The two important types of T cells are Helper T cells and Killer T cells. Helper T cells release a chemical called cytokine which activates B cells. Killer cells move around the body and destroy cells which are damaged or infected.

53. Where does the maturation of B cells and T cells occur?

In mammals, B cell maturation occurs in the bone marrow and T cells maturation occurs in the thymus.

3 MARK QUESTIONS:

54. What are interferons? Mention their role.

Interferons are proteinaceous, antiviral, species specific substances produced by mammalian cells when infected with viruses.

They stimulate the cellular DNA to produce antiviral enzymes which inhibit viral replication and protect the cells.

55. List out chemical alarm signals produced during inflammation.

Tissue damage and infection that occur during inflammation induce leakage of vascular fluid, containing chemotactic signals like serotonin, histamine and prostaglandins. They drive the phagocytic cells into the affected area. These phagocytic cells destroy pathogens.

56. Autoimmunity is a misdirected immune response. Justify.

Autoimmunity is due to an abnormal immune response in which the immune system fails to properly distinguish between self and non-self and attacks its own body. Our body produces antibodies (auto antibodies) and cytotoxic T cells that destroy our own tissues. If a disease state results, it is referred to as auto-immune disease. Thus, autoimmunity is a misdirected immune response.

57. Differentiate innate immunity and acquired immunity

Innate immunity	Acquired immunity
It is the natural phenomenon of resistance to infection present in an individual right from the birth.	This is the resistance developed or acquired in an individual after birth.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

It is a non-specific resistance against a wide range of infectious agents.	It is a specific resistance against a particular pathogen.
It is also known as non-specific or natural immunity.	It may be active acquired or passive acquired immunity.

58. Why is opsonization efficient in phagocytosis?

Opsonization is a process in which pathogens are coated with a substance called an opsonin, marking the pathogen out, for destruction by the immune system. This results in a much more efficient phagocytosis.

59. What are adenoids?

The adenoids are glands located in the roof of the mouth, behind the soft palate where the nose connects to the throat. The adenoids produce antibodies that help to fight infections. Typically, the adenoids shrink during adolescence and may disappear by adulthood.

60. What is a lymph node? What is its function?

Lymph node is a small bean-shaped structure and is part of the body's immune system. It is the first one to encounter the antigen that enters the tissue spaces.

61. How does immune system work?

Immune system initiates the destruction and elimination of invading organisms and any toxic molecules produced by them. These immune reactions are made in response only to molecules that are foreign to the host and not to the molecules of host itself.

62. A person is infected by HIV. How will you diagnose for AIDS?

The ELISA test (Enzyme Linked Immuno Sorbent Assay) detects the presence of HIV antibodies. It is a preliminary test. Western blot test is more reliable and a confirmatory test. It detects the viral core proteins. If both tests detect the presence of the antibodies, the person is considered to be HIV positive.

5 MARK QUESTIONS:

63. Say about MALT, GALT and BALT.

MALT (Mucosa- Associated Lymphoid Tissue) is a diffuse system of small concentrations of lymphoid tissue in the alimentary, respiratory and urino-genital tracts.

MALT is populated by lymphocytes such as T and B cells, as well as plasma cells and macrophages, each of which is well situated to encounter antigens passing through the mucosal epithelium.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

It also possesses IgA antibodies.

GALT (Gut Associated Lymphoid Tissue) is a component of the MALT which works in the immune system to protect the body from invasion in the gut.

BALT (Bronchus Associated Lymphoid Tissue) is also a component of MALT, made of lymphoid tissue (tonsils, lymph nodes, lymph follicles) is found in the respiratory mucosa from the nasal cavities to the lungs.

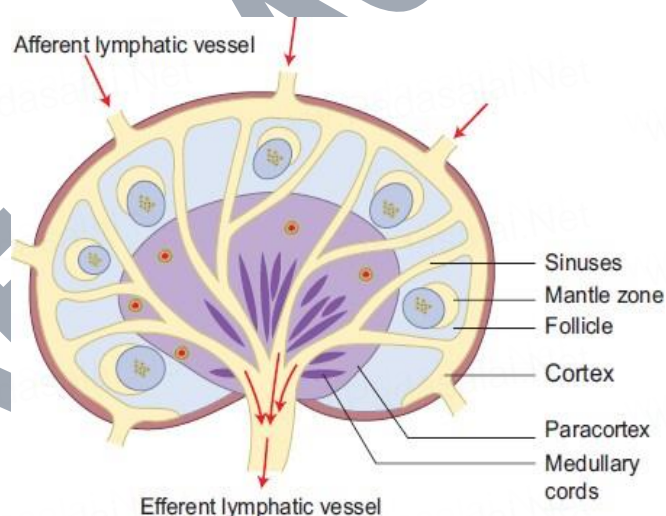
64. Briefly explain the structure of lymph node.

Lymph node has three zones. They are the cortex, paracortex and medulla.

Cortex is the outer most layer of the lymph node, which consists of B-lymphocytes, macrophages, and follicular dendritic cells.

The **paracortex** zone is beneath the cortex, which is richly populated by T lymphocytes and interdigitating dendritic cells.

Medulla is the inner most zone, which is sparsely populated by lymphocytes, but many of them are plasma cells, which actively secrete antibody molecules.



65. What is vaccine? What are its types?

A vaccine is a biological preparation that provides active acquired immunity to a particular disease and resembles a disease-causing microorganism.

It is often made from weakened or attenuated or killed forms of the microbes, their toxins, or one of its surface proteins.

The vaccines are classified as first, second and third generation vaccines.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

First generation vaccine:

It is further subdivided into live attenuated vaccine, killed vaccine and toxoids.

Live attenuated vaccines:

To prepare live attenuated vaccines weakened (attenuated), aged, or less virulent form of the virus are used. Ex. Measles, mumps and rubella (MMR) vaccine and the Varicella (chickenpox) vaccine

Killed (inactivated) vaccines:

In this type vaccines are prepared using killed virus or inactivated virus by heat and other methods. Ex. Salk's polio vaccine.

Toxoid vaccines:

These vaccines contain a toxin or chemical secreted by the bacteria or virus. They make us immune to the harmful effects of the infection, instead of to the infection itself. Ex. DPT vaccine (Diphtheria, Pertussis and Tetanus).

Second generation vaccines:

These are the pure surface antigen of the pathogen. Ex. Hepatitis-B vaccine.

Third generation vaccines:

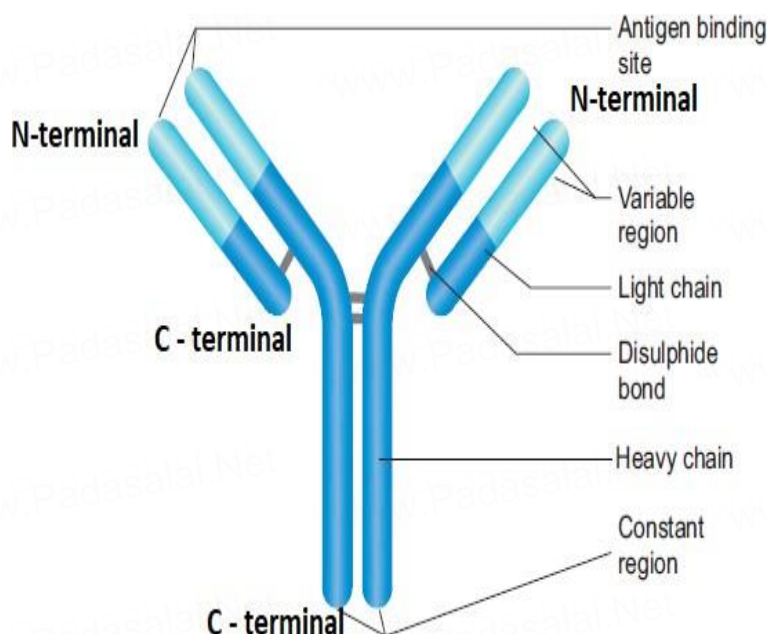
These are the purest and the highest potency vaccines which are synthetic in generation.

66. Explain the structure of immunoglobulin with suitable diagram.

- An antibody molecule is Y shaped structure that comprises of four polypeptide chains, two identical light chains (L) of molecular weight 25,000 Da (approximately 214 amino acids) and two identical heavy chains (H) of molecular weight 50,000Da (approximately 450 amino acids).
- The polypeptide chains are linked together by di-sulphide (S-S) bonds. One light chain is attached to each heavy chain and two heavy chains are attached to each other to form a Y shaped structure. Hence, an antibody

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
 PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

is represented as H₂ L₂.



- Each chain (L and H) has two terminals. They are C-terminal (Carboxyl) and amino or N-terminal.
- Each chain (L and H) has two regions. They have variable (V) region at one end and a much larger constant (C) region at the other end.
- Antibodies responding to different antigens have very different V regions but their C regions are the same in all antibodies.

67. Differentiate primary and secondary immune response.

Primary immune response	Secondary immune response
It occurs as a result of primary contact with an antigen.	It occurs as a result of second and subsequent contacts with the same antigen.
Antibody level reaches peak in 7 to 10 days.	Antibody level reaches peak in 3 to 5 days.
Prolonged period is required to establish immunity.	A short period is enough to establish immunity.
There is rapid decline in antibody level.	Antibody level remains high for longer period.
It appears mainly in the lymph nodes and spleen.	It appears mainly in the bone marrow, followed by spleen and lymph nodes.

68. Differentiate active and passive immunity.

Active immunity	Passive immunity
-----------------	------------------

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

It is produced actively by host's immune system.	It is produced passively without the participation of host's immune system.
It is produced due to contact with pathogen or by its antigen.	It is produced due to antibodies obtained from outside.
It is durable and effective in protection.	It is transient and less effective.
Immunological memory is present.	Immunological memory is absent.
Booster effect on subsequent dose is possible.	Subsequent dose is less effective.
Immunity is effective only after a short period.	Immunity is effective immediately.

MICROBES IN HUMAN WELFARE

ONE MARK QUESTIONS:

69. What is zymology?
It is an applied science, deals with the biochemical process of fermentation and its practical use.
70. What do you mean by super bug?
It refers to bacterial strains that are resistant to majority of antibiotics.
71. Name two bioactive molecules.
Cyclosporin A and Recombinant human insulin.
72. What is the source of cyclosporin?
It is extracted from a fungus, Trichoderma polysporum.
73. What is used to produce Recombinant insulin?
Saccharomyces cerevisiae
74. What is commonly called Brewer's yeast?
Saccharomyces cerevisiae
75. What is the use of Brewer's yeast?
It is used to ferment malted cereals and fruit juices to produce various alcoholic beverages.
76. What does antibiotic mean?
It means "against life."
77. What was the antibiotic discovered by Selman Waksman?
Streptomycin
78. Who coined the term antibiotic?
Selman Waksman
79. Who discovered the first antibiotic?
Alexander Fleming discovered the first antibiotic, Penicillin.
80. Where is Penicillin extracted from?

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

It is extracted from the fungus *Penicillium notatum* and *Penicillium chrysogenum*.

81. What is Pasteur effect?

The inhibiting effect of oxygen on the fermentation process is called Pasteur effect.

82. Name the science that deals with the study of wine and wine making.
Oenology

83. Which is called as industrial alcohol?
Ethanol

84. What do you mean by wine coolers?

Wine coolers are the beverages made by mixing wine, carbonated water and flavourings.

85. Name the enzyme which is used in detergent formulations and to remove oily stains from laundry.
Lipases

86. What is the use of rennet in food processing?

Rennet is used to separate milk into solid curds for cheese making.

87. What bioactive molecule is used in organ transplantation?
Cyclosporin A

88. What act as clot buster to remove the clots in heart patients?
Streptokinase and genetically engineered Streptococci

89. Name some enzymes used to clarify bottled juices.
Pectinase, protease and cellulase

90. What bioactive molecule is used to lower blood cholesterol level?
Statins

91. How is yogurt produced?
By the fermentation of milk.

92. How is cheese produced?
By the coagulation of milk protein casein

93. What causes flavour in yogurt?
Acetaldehyde

94. What is Pathaneer?
Pathaneer is a traditional drink produced in some parts of South India. It is obtained from fermenting sap of palms and coconut trees.

2 MARK QUESTIONS:

95. What is recombinant insulin?

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

Recombinant human insulin is a bioactive molecule produced predominantly using *E. coli* and *Saccharomyces cerevisiae*. It is used to treat diabetic patients.

96. What is the role of *Ideonella sakaiensis* in plastic recycling?

It is currently tried for recycling of PET plastics. These bacteria use PETase and MHETase enzymes to breakdown PET plastic into terephthalic acid and ethylene glycol.

97. What do you mean by Microbial Fuel Cells?

A microbial fuel cell is a bio-electrochemical system that drives an electric current by using bacteria and mimicking bacterial interaction found in nature.

98. What is bioremediation?

The use of naturally occurring or genetically engineered microorganisms to reduce or degrade pollutants is called bioremediation.

99. How is *Penicillium* is useful?

It is bactericidal (antibiotics that kill bacteria) in action and inhibits the synthesis of bacterial cell wall.

100. Why is Penicillin referred as the “queen of drugs”?

It is because of its full potential as an effective antibiotic and its superiority over other drugs by acting against pathogens.

101. When is biodiesel day celebrated? What is its significance?

World biofuel day is observed every year on 10th August to create awareness about the importance of renewable bio-fuels as an alternative to conventional non-renewable fossil fuels.

102. What bacterium helps in reducing oil spills?

Pseudomonas putida is a genetically engineered microorganism (GEM). It is a multi- plasmid hydrocarbon-degrading bacterium that can digest the hydrocarbons in the oil spills.

3 MARK QUESTIONS:

103. How is milk converted into curd? Explain the process of curd formation.

The LAB bacteria grow in milk and convert it into curd, thereby digesting the milk protein casein. A small amount of curd added to fresh milk as a starter or inoculum contains millions of *Lactobacilli*, which under suitable temperature ($\leq 40^{\circ}\text{C}$) multiply and convert milk into curd. Curd is more nutritious than milk as it contains a number of organic acids and vitamins.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

104. What are antibiotics?

Antibiotics are chemical substances produced by microorganisms which can kill or retard the growth of other disease-causing microbes even in low concentration. Antibiotic means “against life”. Antibiotics are used to treat diseases such as plague, meningitis, diphtheria, syphilis, leprosy, tuberculosis etc.

105. Differentiate between red wine and white wine.

Red wine is produced from black grapes. Their skin and sometimes the stems also are used to produce red wine.

In contrast white wine is produced only from the juice of either white or red grapes without their skin and stems.

106. List the advantages of biogas plants in rural areas.

- The raw materials required to produce biogas like agricultural wastes, manure, municipal wastes, plant material, sewage, food waste, etc., are easily available in rural areas. Hence biogas plants in rural areas are inexpensive.
- The biogas plant can be easily set up in rural areas as more space is available close to kitchen in rural areas as compared to urban areas.
- The slurry drained during the biogas production can be used as fertilizer in farm lands, hence it is cost effective.

107. When does antibiotic resistance develop?

Antibiotic resistance develops when bacteria are able to defeat the drug designed to kill or inhibit their growth. Antibiotic resistance is accelerated by the misuse and over use of antibiotics, as well as poor infection prevention control.

108. Briefly describe the preparation of Ethanol/industrial alcohol.

The process of ethanol production starts by milling a feed stock followed by the addition of dilute or fungal amylase (enzyme) from *Aspergillus* to break down the starch into fermentable sugars. Yeast is then added to convert the sugars to ethanol which is then distilled off to obtain ethanol which is up to 96 percent in concentration.

109. What do the following terms refer to?

a) Antibiosis b) Broad spectrum antibiotics c) Narrow spectrum antibiotics

a) Antibiosis is the property of antibiotics to kill microorganisms.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

- b) Broad-spectrum antibiotics act against a wide range of disease-causing bacteria.
- c) Narrow-spectrum antibiotics are active against a selected group of bacterial types.

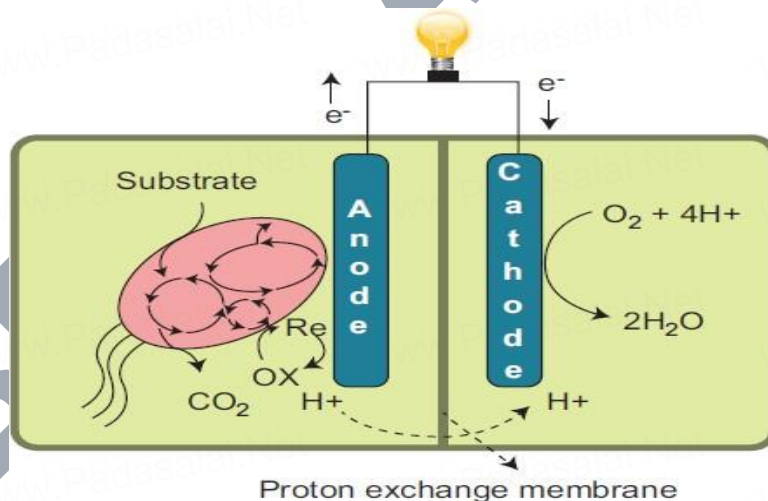
110. Why is testing injection given, before injecting Penicillin drug into a body?

Hypersensitivity reaction is a major problem with the use of penicillin, resulting in nausea, vomiting, wheezing and ultimately cardiovascular collapse.

To check the sensitivity reaction, doctors use a needle to prick the forearm of the patients to give a weak dose of penicillin. An itchy red region in the forearm is an indication that the patient is allergic to penicillin. This test is important before administration of penicillin to a patient.

111. How does MFC work?

A MFC consists of an anode and a cathode separated by a proton exchange membrane. Microbes at the anode oxidize the organic fuel generating protons which pass through the membrane to the cathode and the electrons pass through the anode to the external circuit to generate current.

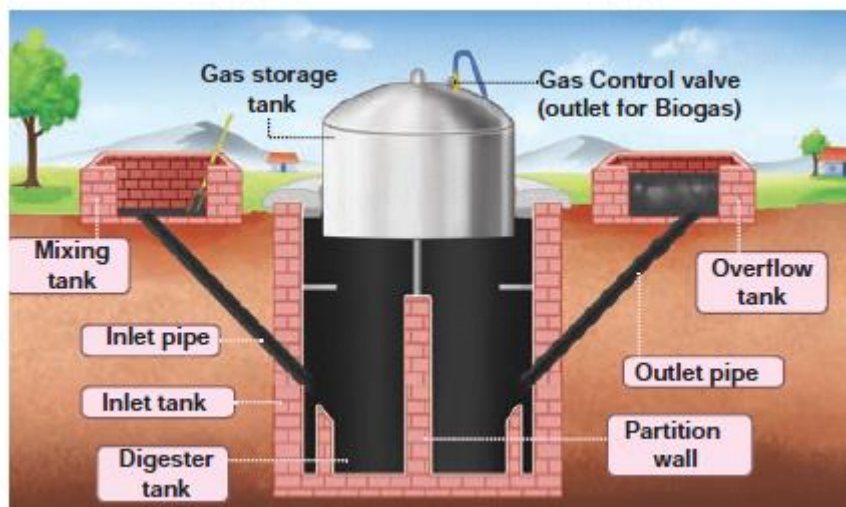


112. Explain the production of biogas in biogas plant with illustration.

- ✓ In a biogas plant, anaerobic digestion is carried out in an air tight cylindrical tank known as digester.
- ✓ It is made up of concrete bricks and cement or steel.
- ✓ Bio-wastes are collected and slurry of dung is fed into this digester.

Mrs. M. AHAMED NOWROSE BEGAM M.Sc., M.Phil., B.Ed., M.A., M.Phil., (Edn.)
PRINCIPAL, J.M. MATRIC. GIRLS HR. SEC. SCHOOL, CHENNAI – 6000 007

- ✓ It has a side opening into which organic materials for digestion are incorporated for microbial activity.



- ✓ Anaerobic digestion is accomplished in three stages: solubilisation, acidogenesis and methanogenesis.
- ✓ The outlet is connected to a pipe to supply biogas.
- ✓ The slurry is drained through another outlet and is used as fertilizer.
- ✓ Biogas is used for cooking and lighting.

ALL THE BEST!

TO VIEW BIOLOGY, ZOOLOGY VIDEO LESSONS FOR CLASSES X, XI
& XII PLEASE CLICK THE FOLLOWING LINK

<https://youtu.be/x42260h4Nlo>



OR CLICK THE LINK GIVEN BELOW TO VISIT THE BLOG

<https://www.blogger.com/blog/posts/953431245247623415?tab=rj>

THANK YOU!