12th Science Lesson 14 Questions in English

14] Human Health and Diseases

1. Which of the following statement is correct?

1) The World Health Organization [WHO] defines health as 'a state of complete physical, mental and social wellbeing and not merely absence of disease'.
2) Personal hygiene, regular exercise and balanced diet are very important to maintain good health
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

The World Health Organization [WHO] defines health as 'a state of complete physical, mental and social wellbeing and not merely absence of disease'. We can also say "HEALTH IS WEALTH", when people are healthy they are more efficient at work. Health increases longevity of people and reduces infant and adult mortality. **Personal hygiene, regular exercise and balanced diet are very important to maintain good health.**

2. Which of the following statement is correct?

1) Disease can be defined as a disorder or malfunction of the mind or body
2) It does not involve morphological, physiological and psychological disturbances
3) Diseases can be broadly grouped into infectious and non infectious types
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Disease can be defined as a disorder or malfunction of the mind or body. **It involves morphological, physiological and psychological disturbances** which may be due to environmental factors or pathogens or genetic anomalies or life style changes. Diseases can be broadly grouped into infectious and non-infectious types.

3. Diseases which are transmitted from one person to another are called____

a) Infectious diseases
b) Non-infectious diseases
c) Communicable diseases
d) Either a or c

Explanation

Diseases which are transmitted from one person to another are called infectious diseases or communicable diseases. Such disease causing organisms are called pathogens and are transmitted through air, water, food, physical contact and vectors.

5. Which of the following are examples of peripheral lymphoid organs?

1) Spleen
2) Tonsils
3) Adenoids
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

In secondary or peripheral lymphoid organs, antigen is localized so that it can be effectively exposed to mature lymphocytes. The **best examples are 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).

6. ____ is a secondary lymphoid organ located in upper part of abdominal cavity close to diaphragm

a) Tonsils
b) Spleen
c) Adenoids
d) Stomach

Explanation

Spleen is a secondary lymphoid organ located in the upper part of the abdominal cavity close to the diaphragm. Spleen contains B and T cells. It brings humoral and cell mediated immunity

6. Which of the following statement is correct?

1) The disease-causing pathogen may be virus, bacteria, fungi, protozoan parasites, helminthic parasites, etc
2) Most of the bacterial diseases are curable but all viral diseases are not
3) Some infectious disease like AIDS may be fatal.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

The disease causing pathogen may be virus, bacteria, fungi, protozoan parasites, helminthic parasites, etc., Infectious diseases are common and everyone suffers from such diseases at some time or the other. Most of the bacterial diseases are curable but all viral diseases are not. Some infectious disease like AIDS may be fatal.

7. Which of the following is not a non-infectious disease?

a) Heart attack
b) Cystic fibrosis
c) Covid-19
d) Stroke

Explanation

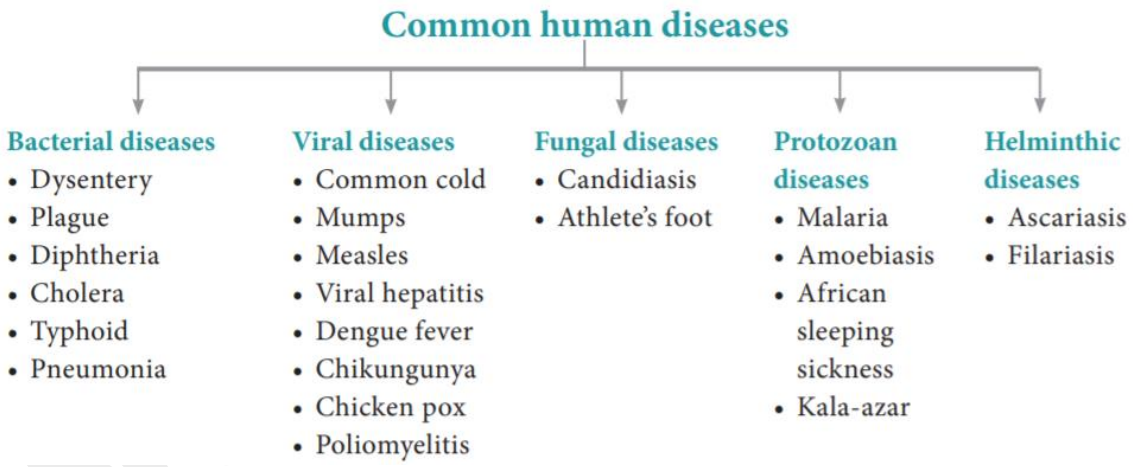
Non-infectious diseases are not transmitted from an infected person to a healthy person. In origin they may be **genetic (cystic fibrosis), nutritional (vitamin deficiency diseases) and degenerative (arthritis, heart attack, stroke)**.

8. Match the following

I.	Bacterial diseases	1. Ascariasis
II.	Viral diseases	2. Candidiasis
III.	Fungal diseases	3. Mumps
IV.	Helminthic diseases	4. Cholera

a) 3, 1, 2, 4
b) 4, 3, 2, 1
c) 4, 2, 3, 1
d) 1, 3, 4, 2

Explanation



9. Bacteria are associated with human diseases are called_____

a) Pathogenic bacteria
b) Urogenic bacteria
c) Useful bacteria
d) Beneficial bacteria

Explanation

Though the **number of bacterial species is very high, only a few bacteria are associated with human diseases and are called pathogenic bacteria**. Such pathogens may emit toxins and affects the body.

10. Which of the following statement is incorrect?

1) If an antibiotic is used too often to fight a specific bacterial infection, the bacteria may become resistant to the specific antibiotic
2) That specific antibiotic can no longer be used to treat the bacterial infection
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

If an antibiotic is used too often to fight a specific bacterial infection, the bacteria may become resistant to the specific antibiotic. Hence the specific antibiotic can no longer be used to treat the bacterial infection. Some bacteria have developed resistance to many antibiotics. Therefore, infections caused by these bacteria are difficult to be cured.

11. Which of the following are the ways for Risk of bacterial resistance?

1) Avoid using antibiotics to treat minor infections that can be taken care by our immune system.
2) Do not use an antibiotic to treat viral infections such as common cold or flu.
3) Always follow the prescription. Skipping doses or failing to complete the prescription may allow antibiotic resistance to develop
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Risk of bacterial resistance can be reduced by observing the following steps:

- Avoid using antibiotics to treat minor infections that can be taken care by our immune system.
- Do not use an antibiotic to treat viral infections such as common cold or flu.
- Always follow the prescription. Skipping doses or failing to complete the prescription may allow antibiotic resistance to develop

12. Match the following

I.	Shigellosis	1. Larynx
II.	Bubonic plague	2. Intestine
III.	Diphtheria	3. Lymph node
IV.	Tetanus	4. Spasm of muscles

    a) 3, 1, 2, 4

b) 2, 3, 1, 4
c) 3, 2, 4, 1
d) 4, 2, 1, 3

Explanation

Diseases	Causative agent	Site of infection	Mode of transmission	Symptoms
Shigellosis (Bacillary dysentery)	*Shigella sp.*	Intestine	Food and water contaminated by faeces / faecal oral route	Abdominal pain, dehydration, blood and mucus in the stools
Bubonic plague (Black death)	*Yersinia pestis*	Lymph nodes	Rat flea vector- *Xenopsylla cheopis*	Fever, headache, and swollen lymph nodes
Diphtheria	*Corynebacterium diphtheriae*	Larynx, skin, nasal and genital passage	Droplet infection	Fever, sore throat, hoarseness and difficulty in breathing
Cholera	*Vibrio cholerae*	Intestine	Contaminated food and water/ faecal oral route	Severe diarrhoea and dehydration
Tetanus (Lock jaw)	*Clostridium tetani*	Spasm of muscles	Through wound infection	Rigidity of jaw muscle, increased heart beat rate and spasm of the muscles of the jaw and face

13. Match the following

I.	Typhoid	1. Mycobacterium tuberculosis
II.	Pneumonia	2. Salmonella typhi
III.	Tuberculosis	3. Streptococcus pneumoniae

a) 1, 3, 2
b) 2, 3, 1
c) 2, 1, 3
d) 1, 2, 3

Explanation

Typhoid (Enteric fever)	*Salmonella typhi*	Intestine	Through contaminated food and water	Headache, abdominal discomfort, fever and diarrhoea
Pneumonia	*Streptococcus pneumoniae*	Lungs	Droplet infection	Fever, cough, painful breathing and brown sputum
Tuberculosis	*Mycobacterium tuberculosis*	Lungs	Droplet infection	Thick mucopurulant nasal discharge

14. Common cold is caused by more than____ different strains of Rhino viruses

a) 300
b) 150
c) 100
d) 200

Explanation

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.

15. Typhoid fever can be confirmed by_____

a) ELISA
b) Western blot
c) Widal test
d) Dimer test

Explanation

Bacteria spread through air, water or by inhaling the droplets/aerosols or even by sharing utensils, dresses with an infected person. **Typhoid fever can be confirmed by Widal test**.

16. Which of the following statement is correct?

1) Viruses are the smallest intracellular obligate parasites
2) They multiply within living cells
3) Outside the living cells they cannot carry out the characteristics of a living organism

a) 1 alone
b) 1, 2
c) 1, 3
d) All the above

Explanation

Viruses are the **smallest intracellular obligate parasites**, which multiply within living cells. Outside the living cells they **cannot carry out the characteristics of a living organism.**

17. Match the following

I.	Common cold	1. Skin and blood
II.	Viral hepatitis	2. Liver
III.	Poliomyelitis	3. Intestine
IV.	Dengue fever	4. Respiratory tract

a) 2, 1, 3, 4
b) 4, 2, 3, 1
c) 3, 2, 1, 4
d) 4, 2, 1, 3

Explanation

1	Common cold	*Rhino viruses*	Respiratory tract	Droplet infection	Nasal congestion and discharge, sore throat, cough and headache
2	Mumps	*Mumps virus (RNA virus), Paramyxo virus*	Salivary glands	Saliva and droplet infection	Enlargement of the parotid glands
3	Measles	*Rubella virus (RNA virus), Paramyxo virus*	Skin and respiratory tract	Droplet infection	Sore throat, running nose, cough and fever, reddish rashes on the skin, neck and ears
4	Viral hepatitis	*Hepatitis - B virus*	Liver	Parenteral route, blood transfusion	Liver damage, jaundice, nausea, yellowish eyes, fever and pain in the abdomen
5	Chicken pox	*Varicella -Zoster virus (DNA Virus)*	Respiratory tract, skin and nervous system	Droplet infection and direct contact	Mild fever with itchy skin, rash and blisters
6	Poliomyelitis	*Polio virus (RNA virus)*	Intestine, brain, spinal cord	Droplet infection through faecal oral route	Fever, muscular stiffness and weakness, paralysis and respiratory failure
7	Dengue fever (Break bone fever)	*Dengue virus or Flavi virus (DENV 1-4 virus)*	Skin and blood	Mosquito vector *Aedes aegypti*	Severe flu like illness with a sudden onset of fever and painful

18. Which of the following are the symptoms of Chikungunya?

1) Fever
2) Dysentery
3) Joint swelling

4) Joint pain
    a) 1, 2, 4
    b) 2, 3, 4
    c) 1, 2, 3
    d) 1, 3, 4

Explanation

Chikungunya	*Alpha virus (Toga virus)*	Nervous system	Mosquito vector *Aedes aegypti*	Fever and joint pain, headache and joint swelling

19. Nipah virus transmitted from_____ to_____

a) Animal, Human
b) Human, animal
c) Plant, animal
d) Animal, plant

Explanation

Nipah virus is a zoonotic virus (transmitted from animals to humans) and also transmitted through contaminated food. In infected people, it causes a range of illness from asymptomatic infection to acute respiratory illness and fatal encephalitis.

20. Which of the following statement is correct?

1) Viruses invade living cells, forcing the cells to create new viruses
2) The new viruses break out of the cell, killing it and invade other cells in the body, causing diseases in human beings
3) Nipah viruses cause one of the most infectious human ailment called the “Common cold”.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Outside the living cells they cannot carry out the characteristics of a living organism. Viruses invade living cells, forcing the cells to create new viruses. The new viruses break out of the cell, killing it and invade other cells in the body, causing diseases in human beings. **Rhino viruses cause one of the most infectious human-ailment called the “Common cold**.

21. Match the following

I.	Pneumotropic diseases	1. Yellow fever
II.	Dermotropic diseases	2. Rabies
III.	Viscerotropic diseases	3. Influenza
IV.	Neurotropic diseases	4. Chicken pox

    a) 2, 1, 3, 4

b) 3, 4, 1, 2
c) 3, 1, 2, 4
d) 4, 2, 1, 3

Explanation

Viral diseases are generally grouped into four types on the basis of the symptoms produced in the body organs.

- Pneumotropic diseases (respiratory tract infected by influenza)
- Dermotropic diseases (skin and subcutaneous tissues affected by chicken pox and measles)
- Viscerotropic diseases (blood and visceral organs affected by yellow fever and dengue fever)
- Neurotropic diseases (central nervous system affected by rabies and polio).

22. About____ genera of protozoans live as parasites within the human body

a) 20
b) 15
c) 35
d) 25

Explanation

About 15 genera of protozoans live as parasites within the human body and cause diseases.

23. Swine flu was first recognised in the_____ pandemic

a) 1919
b) 1920
c) 1935
d) 2012

Explanation

Swine flu was first recognised in the 1919 pandemic and still circulates as a seasonal flu virus. Swine flu is caused by the H1N1 virus strain. Symptoms include fever, cough, sore throat, chills, weakness and body aches. Children, pregnant women and the elderly are at risk from severe infection.

24. Which of the following statement is correct?

1) Amoebiasis also called amoebic dysentery or amoebic colitis is caused by Entamoeba histolytica
2) Infective stage of this parasite is the trophozoite, which penetrates the walls of the host intestine (colon) and secretes histolytic enzymes causing ulceration
3) House flies (Musca domestica) acts as a carrier for transmitting the parasite from contaminated faeces and water

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Amoebiasis also called amoebic dysentery or amoebic colitis is caused by **Entamoeba histolytica**, which lives in the human large intestine and feeds on mucus and bacteria. Infective stage of this parasite is the trophozoite, which penetrates the walls of the host intestine (colon) and secretes histolytic enzymes causing ulceration, bleeding, abdominal pain and stools with excess mucus. Symptoms of amoebiasis can range from diarrhoea to dysentery with blood and mucus in the stool. **House flies (Musca domestica) acts as a carrier for transmitting the parasite from contaminated faeces and water.**

25. _____ species of Trypanosoma cause sleeping sickness in man

a) 2
b) 5
c) 4
d) 3

Explanation

African sleeping sickness is caused by Trypanosoma species. Trypanosoma is generally transmitted by the blood sucking Tsetse flies. **Three species of Trypanosoma cause sleeping sickness in man**.

26. Match the following

I.	T. gambiense	1. Triatoma megista
II.	T. rhodesiense	2. Glossina palpalis
III.	T. cruzi	3. Glossina morsitans

a) 2, 1, 3
b) 3, 1, 2
c) 3, 2, 1
d) 1, 3, 2

Explanation

1. T**. gambiense** is transmitted by **Glossina palpalis (**Tsetse fly) and causes Gambian or Central African sleeping sickness
2. **T. rhodesiense** is transmitted by **Glossina morsitans** causing Rhodesian or East African sleeping sickness.
3. **T. cruzi** is transmitted by a bug called **Triatoma megista** and causes Chagas disease or American trypanosomiasis.

27. Which of the following statement is correct?

1) Kala – azar or visceral leishmaniasis is caused by Leishmania Donovan
2) Infection may occur in the endothelial cells, bone marrow, liver, lymph glands and blood vessels of the spleen
3) Symptoms of Kala azar are weight loss, anaemia, fever, enlargement of spleen and liver
    a) 1, 2
    b) 1, 3

c) 2, 3
d) All the above

Explanation

Kala – azar or visceral leishmaniasis is caused by Leishmania donovani, which is transmitted by the vector Phlebotomus (sand fly). Infection may occur in the endothelial cells, bone marrow, liver, lymph glands and blood vessels of the spleen. Symptoms of Kala azar are weight loss, anaemia, fever, enlargement of spleen and liver.

28. Which of the following statement is correct?

1) Malaria is caused by different types of Plasmodium species
2) Plasmodium lives in the RBC of human in its mature condition it is called as trophozoite
3) It is transmitted from one person to another by the bite of the infected female Anopheles mosquito
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Malaria is caused by different types of Plasmodium species such as P. vivax, P. ovale, P. malariae and P. falciparum. Plasmodium lives in the RBC of human in its mature condition it is called as trophozoite. It is transmitted from one person to another by the bite of the infected female Anopheles mosquito.

29. How many phases are involved in life cycle of Plasmodium?

a) 4
b) 5
c) 3
d) 2

Explanation

Plasmodium vivax is a digenic parasite, involving two hosts, man as the secondary host and female Anopheles mosquito as the primary host. The **life cycle of Plasmodium involves three phases** namely schizogony, gamogony and sporogony.

30. Which of the following statement is correct?

1) The parasite first enters the human blood stream through the bite of an infected female Anopheles mosquito
2) As it feeds, the mosquito injects the saliva containing the sporozoites
3) Further in the liver they undergo multiple asexual fission (schizogony) and produce merozoites
    a) 1, 2
    b) 1, 3

c) 2, 3
d) All the above

Explanation

The parasite first enters the human blood stream through the bite of an infected female Anopheles mosquito. **As it feeds, the mosquito injects the saliva containing the sporozoites. The sporozoite within the blood stream immediately enters the hepatic cells of the liver**. Further in the liver they undergo multiple asexual fission (schizogony) and produce merozoites. After being released from liver cells, the merozoites penetrate the RBC's

31. Incubation period of malaria is about____ days

a) 12
b) 23
c) 33
d) 2

Explanation

The pathological changes caused by malaria, affects not only the erythrocytes but also the spleen and other visceral organs. **Incubation period of malaria is about 12 days**.

32. Which of the following are the early symptoms of malaria?

1) Headache
2) Nausea
3) Muscular pain

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

The early symptoms of malaria are headache, nausea and muscular pain. The classic symptoms first develop with the synchronized release of merozoites, haemozoin toxin and erythrocyte debris into the blood stream resulting in malarial paroxysms – shivering chills, high fever followed by sweating. Fever and chills are caused partly by malarial toxins that induce macrophages to release tumour necrosis factor (TNF-α) and interleukin.

33. Match the malaria causative agent with the duration of erythrocytic cycle:

I.	P. vivax	1. 36 – 48 hours
II.	P. malariae	2. 48 hours
III.	P. falciparum	3. 72 hours

a) 3, 1, 2
b) 2, 1, 3
c) 2, 3, 1
d) 1, 3, 2

Explanation

Sl. No	Types of Malaria	Causative agent	Duration of Erythrocytic cycle
1	Tertian, benign tertian or vivax malaria	*P. vivax*	48 hours
2	Quartan malaria	*P. malariae*	72 hours
3	Mild tertian malaria	*P. ovale*	48 hours
4	Malignant tertian or quotidian malaria	*P. falciparum*	36 – 48 hours

34. Which of the following statement is correct?

1) It is possible to break the transmission cycle by killing the insect vector
2) Larvae hatch and develop in water but breathe air by moving to the surface
3) Oil can be sprayed over the water surface, to make it impossible for mosquito larvae and pupae to breathe
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

It is possible to break the transmission cycle by killing the insect vector. Mosquitoes lay their eggs in water. **Larvae hatch and develop in water but breathe air by moving to the surface. Oil can be sprayed over the water surface**, to make it impossible for mosquito larvae and pupae to breathe.

35. Which of the following statement is correct?

1) Ponds, drainage ditches and other permanent bodies of water can be stocked with fishes such as Gambusia which feed on mosquito larvae
2) Preparations containing Bacillus thuringiensis can be sprayed to kill the mosquito larvae since it is not toxic to other forms of life
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

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**. The best protection against malaria is to avoid being bitten by mosquito. People are advised to use mosquito nets, wire gauging of windows and doors to prevent mosquito bites.

36. When did WHO introduced the Malaria eradication programme?

a) 1995
b) 1950

c) 2005
d) 1985

Explanation

In the 1950's the World Health Organisation (WHO) introduced the Malaria eradication programme. This programme was not successful due to the resistance of Plasmodium to the drugs used to treat it and resistance of mosquitoes to DDT and other insecticides.

37. Which of the following statement is correct?

1) Malaria vaccine is used to prevent malaria.
2) It requires four injections and has relatively high efficacy
3) WHO does not recommend the use of RTS,S vaccine in babies between 6 and 12 weeks of age

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

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.

38. _____ was recognized as a causative agent of human diseases much earlier than bacteria

a) Algae
b) Fungi
c) Virus
d) Protozoan

Explanation

Fungi was recognized as a causative agent of human diseases much earlier than bacteria. Dermatomycosis is a cutaneous infection caused by fungi belonging to the genera Trichophyton, Microsporum and Epidermophyton.

39. Ringworm is one of the most common_____ disease in humans

a) Bacterial
b) Viral
c) Fungal
d) Protozoan

Explanation

Ringworm is one of the most common fungal disease in humans. Appearance of dry, scaly lesions on the skin, nails and scalp are the main symptoms of the disease. Heat and moisture help these fungi to grow and makes them to thrive in skin folds such as those in the groin or between the toes.

40. Ringworms of the feet is known as Athlete's foot caused by_____

a) Mucormycosis
b) Tinea pedis
c) P. vivax
d) P. volatile

Explanation

Ringworms of the feet is known as Athlete's foot caused by Tinea pedis. Ringworms are generally acquired from soil or by using clothes, towels and comb used by infected persons.

41. Which of the following statement is correct?

1) Helminthes are mostly endoparasitic in the gut and blood of human beings and cause diseases called helminthiasis
2) The two most prevalent helminthic diseases are Ascariasis and Filariasis.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Helminthes are mostly endo-parasitic in the gut and blood of human beings and cause diseases called helminthiasis. The two most prevalent helminthic diseases are Ascariasis and Filariasis.

42. Which of the following statement is incorrect?

1) Ascaris is a monogenic parasite and exhibits sexual dimorphism.
2) Ascariasis is a disease caused by the intestinal endoparasite Ascaris lumbricoides commonly called the round worms
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Ascaris is a monogenic parasite and exhibits sexual dimorphism. Ascariasis is a disease caused by the intestinal endoparasite Ascaris lumbricoides commonly called the round worms. It is transmitted through ingestion of embryonated eggs through contaminated food and water

43. Helminthes are mostly endo-parasitic in_____

a) Liver
b) Gut
c) Lung
d) Intestine

Explanation

Helminthes are mostly endo-parasitic in the gut and blood of human beings and causes diseases called helminthiasis. The two most prevalent helminthic diseases are Ascariasis and Filariasis.

44. Which of the following statement is correct?

1) Ascaris is a monogenic parasite and exhibits sexual unique
2) Ascariasis is a disease caused by the intestinal endoparasite Ascaris lumbricoides commonly called the round worms
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Ascaris is a monogenic parasite and exhibits sexual dimorphism. Ascariasis is a disease caused by the intestinal endoparasite Ascaris lumbricoides commonly called the round worms. It is transmitted through ingestion of embryonated eggs through contaminated food and water. Children playing in contaminated soils are also prone to have a chance of transfer of eggs from hand to mouth.

45. Filariasis is caused by_____

a) Plasmodium Vivax
b) Wuchereria bancrofti
c) Ascaris lumbricoides
d) Mucormycosis

Explanation

Filariasis is caused by Wuchereria bancrofti, commonly called filarial worm. It is found in the lymph vessels and lymph nodes of man.

46. Which of the following statement is correct?

1) Hygiene is a set of practices performed to conserve good health
2) According to the World Health Organization (WHO), hygiene refers to “conditions and practices that help to maintain health and prevent the spread of diseases."
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Hygiene is a set of practices performed to conserve good health. According to the World Health Organization (WHO), hygiene refers to “conditions and practices that help to maintain health and prevent the spread of diseases." Personal hygiene refers to maintaining one’s body clean by bathing, washing hands, trimming fingernails, wearing clean clothes and also includes attention to keeping surfaces in the home and workplace, including toilets, bathroom facilities, clean and pathogen-free.

47. Which of the following diseases are transmitted through contaminated food and water?

a) Typhoid
b) Amoebiasis
c) Ascariasis
d) All the above

Explanation

Our public places teem with infection, contamination and germs. It seems that every surface we touch and the air we breathe are with pollutants and microbes. It's not just the public places that are unclean, but we might be amazed at the number of people who do not wash their hands before taking food, after visiting the restroom, or who sneeze without covering their faces. **Many infectious diseases such as typhoid, amoebiasis and ascariasis are transmitted through contaminated food and water.**

48. Which of the following diseases can be controlled by vaccination?

a) Polio
b) Diphtheria
c) Tetanus
d) All the above

Explanation

Advancement in science and technology provide effective controlling measures for many infectious and non-infectious diseases. The use of vaccines and adopted immunization programmes have helped to eradicate small pox in India. Moreover a large number of infectious diseases like polio, diphtheria, pneumonia and tetanus have been controlled by the use of vaccines and by creating awareness among the people.

49. Which of the following statement is incorrect?

1) Immunology is the study of immune system.
2) It refers to all the mechanisms used by the body for protection from environmental agents that are foreign to the body
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Immunology is the study of immune system. This system protects an individual from various infective agents. It refers to all the mechanisms used by the body for protection from environmental agents that are foreign to the body.

50. Which of the following statement is correct?

1) When the immune system does not function efficiently in an individual, it leads to infection causing disease

2) The overall ability of body to fight against the disease causing pathogen is called immunity.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

When the immune system does not function efficiently in an individual, it leads to infection causing disease. The overall ability of body to fight against the disease causing pathogen is called immunity. It is also called disease resistance and the lack of immunity is known as susceptibility. Immunity is highly specific.

51. Which of the following can induce immune response?

1) Pollen grain
2) RBC
3) Nucleic acid
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Almost all the macromolecules e.g. proteins, polysaccharides, nucleic acids, etc., as long as they are foreign to recipient organism can induce immune response. Any substance capable of eliciting immune response is called an ANTIGEN

52. Which of the following statement is correct?

1) Innate immunity is the artificial phenomenon of resistance to infection
2) The innate defense mechanisms are non-specific in the sense that they are effective against a wide range of potentially infectious agents
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Innate immunity is the natural phenomenon of resistance to infection which an individual possesses right from the birth. The innate defense mechanisms are non-specific in the sense that they are effective against a wide range of potentially infectious agents. It is otherwise known as non-specific immunity or natural immunity.

53. Which of the following are anatomical barrier?

1) Skin
2) Bones

3) Mucus membrane
   a) 1, 2
   b) 1, 3
   c) 2, 3
   d) All the above

Explanation

1. Anatomical barriers	
Skin	Prevents the entry of microbes. Its acidic environment (pH 3-5) retards the growth of microbes.
Mucus membrane	Mucus entraps foreign microorganisms and competes with microbes for attachment.

54. Which acid is secreted by gastric system?

a) H_2SO_4
b) HCl
c) HNO_3
d) Ethanoic acid

Explanation

Temperature	Normal body temperature inhibits the growth of pathogens. Fever also inhibits the growth of pathogens.
Low pH	Acidity of gastric secretions (HCl) kills most ingested microbes.
Chemical mediators	Lysozyme acts as antibacterial agent and cleaves the bacterial cell wall. Interferons induce antiviral state in the uninfected cells. Complementary substances produced from leucocytes lyse the pathogenic microbes or facilitate phagocytosis.

55. Which of the following are phagocytes?

1) Monocytes
2) Neutrophils
3) Esonophils
4) Tissue macrophages
   a) 1, 2, 4
   b) 2, 3, 4
   c) 1, 3, 4
   d) All the above

Explanation

Phagocytic barriers	Specialized cells (Monocytes, neutrophils, tissue macrophages) phagocytose, and digest whole microorganisms.

56. Which of the following are the chemotic signals of tissue damage?

a) Serotonin
b) Histamine
c) Prostaglandins
d) All the above

Explanation

. **Inflammatory barriers**	Tissue damage and infection induce leakage of vascular fluid, containing chemotactic signals like serotonin, histamine and prostaglandins. They influx the phagocytic cells into the affected area. This phenomenon is called diapedesis.

57. Which of the following are the unique features of acquired immunity?

1) Antigenic specificity
2) Diversity
3) Immunological memory
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

The immunity that an individual acquires after birth is known as acquired immunity. It is the body's resistance to a specific pathogen. **The unique features of acquired immunity are antigenic specificity, diversity, recognition of self and non-self and immunological memory**.

58. Which of the following statement is incorrect?

1) When pathogens are destroyed by cells without producing antibodies, then it is known Cell mediated immunity
2) This is brought about by T cells, macrophages and natural killer cells
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Acquired immunity has two components – cell mediated immunity (CMI) and antibody mediated immunity or humoral immunity. When pathogens are destroyed by cells without producing antibodies, then it is known as cell mediated immune response or cell mediated immunity. This is brought about by T cells, macrophages and natural killer cells.

59. Antibody mediated immunity is brought about by____

a) B-cells
b) T-cells

c) Antigen presenting cells
d) All the above

Explanation

When pathogens are destroyed by the production of antibodies, then it is known as antibody mediated or humoral immunity. This is brought about by B cells with the help of antigen presenting cells and T helper cells. Antibody production is the characteristic feature of vertebrates only.

60. Which of the following statement about passive immunity is correct?

1) It retains memory
2) Passive immunity is received passively and there is no active host participation
3) It is transient and less effective

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Passive Immunity
Passive immunity is received passively and there is no active host participation.
It is produced due to antibodies obtained from outside.
It is transient and less effective.
No memory.
Subsequent dose is less effective.
Immunity develops immediately.

61. Which of the following statement about active immunity is correct?

1) Active immunity is produced actively by host's immune system
2) Immunological memory is absent
3) Immunity is effective only after a short period.

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Active Immunity
Active immunity is produced actively by host's immune system.
It is produced due to contact with pathogen or by its antigen.
It is durable and effective in protection.
Immunological memory is present.
Booster effect on subsequent dose is possible.
Immunity is effective only after a short period.

62. The process of production of blood cells in the bone marrow is called____

a) Haematosis
b) Haematopoiesis
c) Haematoporosis
d) None

Explanation

The immune responses may be primary or secondary. The process of production of blood cells in the bone marrow is called **haematopoiesis**.

63. Which of the following statement about Primary Immune Response is correct?

1) It occurs as a result of primary contact with an antigen
2) Antibody level reaches peak in 7 to 10 weeks
3) There is rapid decline in antibody level

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Primary Immune Response
It occurs as a result of primary contact with an antigen.
Antibody level reaches peak in 7 to 10 days.
Prolonged period is required to establish immunity.
There is rapid decline in antibody level.
It appears mainly in the lymph nodes and spleen.

64. Which of the following statement is correct about secondary immune response?

1) It occurs as a result of second and subsequent contacts with the same antigen.
2) Antibody level reaches peak in 3 to 5 days
3) It appears mainly in the bone marrow, followed by the spleen and lymph nodes.

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Secondary Immune Response
It occurs as a result of second and subsequent contacts with the same antigen.
Antibody level reaches peak in 3 to 5 days.
It establishes immunity in a short time.
Antibody level remains high for longer period.
It appears mainly in the bone marrow, followed by the spleen and lymph nodes.

65. Which of the following statement is correct?

1) Immune system of an organism consists of several structurally and functionally different organs and tissues that are widely dispersed in the body.
2) Based on their functions, they are classified into primary or central lymphoid organs and secondary or peripheral lymphoid organs.

3) The secondary lymphoid organs trap antigens and make it available for mature lymphocytes, which can effectively fight against these antigens
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Immune system of an organism consists of several structurally and functionally different organs and tissues that are widely dispersed in the body. The organs involved in the origin, maturation and proliferation of lymphocytes are called lymphoid organs. **Based on their functions, they are classified into primary or central lymphoid organs and secondary or peripheral lymphoid organs**. The primary lymphoid organs provide appropriate environment for lymphocytic maturation. The secondary lymphoid organs trap antigens and make it available for mature lymphocytes, which can effectively fight against these antigens.

66. Which of the following constitutes Primary lymphoid organs?

1) Bursa of Fabricius
2) Bone marrow
3) Thymus gland
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Bursa of Fabricius of birds, bone marrow and thymus gland of mammals constitute the primary lymphoid organs involved in the production and early selection of lymphocytes. These lymphocytes become dedicated to a particular antigenic specificity.

67. In mammals, B cell maturation occurs in____

a) Bone marrow
b) Thymus
c) Bursa of fabricius
d) All the above

Explanation

Only when the lymphocytes mature in the primary lymphoidal organs, they become immunocompetent cells. In mammals, **B cell maturation occurs in the bone marrow** and T cells maturation occurs in the thymus.

68. Thymus is located_____

a) Above heart
b) Below heart

c) Above lungs
d) Parallel to spleen

Explanation

The **thymus is a flat and bilobed organ located behind the sternun, above the heart**. Each lobe of the thymus contains numerous lobules, separated from each other by connective tissue called septa.

69. Which of the following statement about thymus is correct?

1) One of its main secretions is the hormone thymosin
2) It stimulates the B cell to become mature and immunocompetent
3) Thymus is most active during the neonatal and pre-adolescent periods

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

One of thymus main secretions is the hormone thymosin. It stimulates the T cell to become mature and immunocompetent. By the early teens, the thymus begins to atrophy and is replaced by adipose tissue. Thus, thymus is most active during the neonatal and pre-adolescent periods.

70. Which of the following statement about bone marrow is correct?

1) Bone marrow is a lymphoid tissue found within the spongy portion of the bone
2) Bone marrow contains stem cells known as haematopoietic cells.
3) These cells have the potential to multiply through cell division

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

Bone marrow is a lymphoid tissue found within the spongy portion of the bone. Bone marrow contains stem cells known as haematopoietic cells. These cells have the potential to multiply through cell division and either remain as stem cells or differentiate and mature into different kinds of blood cells.

71. Which of the following statement about Peyer's patches is incorrect?

1) Peyer's patches are oval-shaped areas of thickened tissue that are embedded in the mucus-secreting lining of the small intestine of humans and other vertebrate animals
2) Peyer's patches contain a variety of immune cells, including macrophages, dendritic cells, T cells, and B cells

a) 1 alone
b) 2 alone
c) 1, 2

d) None

Explanation

Peyer's patches are oval-shaped areas of thickened tissue that are embedded in the mucus-secreting lining of the small intestine of humans and other vertebrate animals. Peyer's patches contain a variety of immune cells, including macrophages, dendritic cells, T cells, and B cells.

72. The tonsils are present at____ region

a) Lumbar
b) Pharynx
c) Larynx
d) All the above

Explanation

The tonsils (palatine tonsils) are a pair of soft tissue masses located at the back of the throat (pharynx). The tonsils are part of the lymphatic system, which help to fight infections. They stop invading germs including bacteria and viruses.

73. Which of the following statement is correct?

1) The adenoids are glands located in the roof of the mouth
2) Adenoids shrink during adulthood and may disappear by adolescence.

a) 1 alone
b) 2 alone
c) 1, 2
d) None

Explanation

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**.

74. Which of the following is the first one to encounter the antigen that enters the tissue spaces?

a) Spleen
b) Lymph node
c) Nissels granules
d) Stomach acid

Explanation

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**. Lymph nodes filter and trap substances that travel through the lymphatic fluid.

75. Which of the following are the characteristics of lymph fluid?

1) Transparent
2) Immobile

3) Colourless
4) Extracellular
    a) 1, 2, 4
    b) 2, 3, 4
    c) 1, 3, 4
    d) All the above

Explanation

Lymph is a clear, transparent, colourless, mobile and extracellular fluid connective tissue. As the lymph percolates through the lymph node, the particulate antigen brought in by the lymph will be trapped by the phagocytic cells, follicular and interdigitating dendritic cells

76. Which of the following statement is correct?

1) Lymph node has four zones
2) They are the cortex, paracortex and medulla.
3) The outer most layer of the lymph node is called cortex, which consists of B-lymphocytes, macrophages, and follicular dendritic cells.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Lymph node has three zones. They are the cortex, paracortex and medulla. The outer most layer of the lymph node is called cortex, 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. The inner most zone is called the medulla which is sparsely populated by lymphocytes, but many of them are plasma cells, which actively secrete antibody molecules.

77. Visible swelling of lymph node occurs during____

a) Passive immune response
b) Active immune response
c) Both a and b
d) None

Explanation

The lymph leaving a node carries enriched antibodies secreted by the medullary plasma cells against the antigens that enter the lymph node. **Sometimes visible swelling of lymph nodes occurs due to active immune response** and increased concentration of lymphocytes.

78. Which of the following statement is correct?

1) The mucosa-associated lymphoid tissue (MALT) is a diffuse system of small concentrations of lymphoid tissue in the alimentary, respiratory and urino-genital tracts

2) MALT is populated by lymphocytes such as T and B cells
3) It also possesses IgM antibodies.

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

The mucosa-associated lymphoid tissue (MALT) 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. **It also possesses IgA antibodies**.

79. Which of the following statement is correct?

1) Gut-associated lymphoid tissue (GALT) is a component of the mucosaassociated lymphoid tissue (MALT) which works in the immune system to protect the body from invasion in the gut.
2) Bronchus Associated Lymphoid Tissues (BALT) also a component of MALT is made of lymphoid tissue (tonsils, lymph nodes, lymph follicles) is found in the respiratory mucosae from the nasal cavities to the lungs

a) 1 alone
b) 2 alone
c) 1, 2
d) None

Explanation

Gut-associated lymphoid tissue (GALT) is a component of the mucosa-associated lymphoid tissue (MALT) which works in the immune system to protect the body from invasion in the gut. Bronchus Associated Lymphoid Tissues (BALT) also a component of MALT is made of lymphoid tissue (tonsils, lymph nodes, lymph follicles) is found in the respiratory mucosae from the nasal cavities to the lungs.

80. Which of the following can be produced by stem cells?

1) RBC
2) Platelets
3) WBC

a) 1, 2
b) 1, 3
c) 2, 3
d) All the above

Explanation

All these cells are derived from pluripotent haematopoetic stem cells. **Each stem cell has the capacity to produce RBC, WBC and platelets.** The only cells capable of specifically recognising and producing an immune response are the lymphocytes. The other types of white blood cells play an important role in non-specific immune response, antigen presentation and cytokine production.

81. Match the following

I.	Red blood cells	1. 2000-7000
II.	Lymphocytes	2. 4200,000 - 6500,000
III.	Neutrophils	3. 1500 - 4000
IV.	Basophils	4. 50- 100

a) 1, 2, 4, 3
b) 2, 3, 1, 4
c) 3, 2, 1, 4
d) 4, 1, 2, 3

Explanation

Cell type	Number of cells per µl	Approximate percentage
Red blood cells	4200,000 - 6500,000	-
White blood cells		
Agranulocytes		
Lymphocytes	1500 - 4000	20-30
Monocytes	200 - 950	2-7
Granulocytes		
Neutrophils	2000-7000	50-70
Basophils	50-100	<1
Eosinophils	40-500	2-5
Platelets	150,000-500,000	-

82. Which of the following statement is correct?

1) About 40-60% of the white blood cells are lymphocytes.
2) The two main types of lymphocytes are B and T lymphocytes
3) Some remain in the blood, while others accumulate in the lymph nodes and spleen.

a) 1, 2
b) 1, 3
c) 2, 3

d) All the above

Explanation

About 20-30% of the white blood cells are lymphocytes. They have a large nucleus filling most of the cell, surrounded by a little cytoplasm. The two main types of lymphocytes are B and T lymphocytes. Both these are produced in the bone marrow. B lymphocytes (B cells) stay in the bone marrow until they are mature. Then they circulate around the body. Some remain in the blood, while others accumulate in the lymph nodes and spleen. T lymphocytes leave the bone marrow and mature in the thymus gland.

83. Lymphocytes have receptor____ on their surface

a) Vitamins
b) Proteins
c) Carbohydrates
d) None

Explanation

T lymphocytes leave the bone marrow and mature in the thymus gland. Once mature, T cells also accumulate in the same areas of the body as B cells. **Lymphocytes have receptor proteins on their surface.** When receptors on a B cell bind with an antigen, the B cell becomes activated and divides rapidly to produce plasma cells. The plasma cells produce antibodies. Some B cells do not produce antibodies but become memory cells. These cells are responsible for secondary immune response. T lymphocytes do not produce antibodies.

84. _____types of dendritic cells are known

a) 3
b) 5
c) 4
d) 2

Explanation

Dendritic cells are called so because its covered with long, thin membrane extensions that resemble dendrites of nerve cells. These cells present the antigen to T-helper cells. **Four types of dendritic cells are known**. They are langerhans, interstitial cells, myeloid and lymphoid cells.

85. Which of the following statement is incorrect?

1) The term antigen (Ag) is used in two senses, the first to describe a molecule which generates an immune response and the second, a molecule which reacts with antibodies
2) Antigen is a substance that is specific to an antibody or a T-cell receptor and is often used as a synonym for immunogen
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

The term antigen (Ag) is used in two senses, the first to describe a molecule which generates an immune response and the second, a molecule which reacts with antibodies. In general antigens are large, complex molecular substances that can induce a detectable immune response. Thus an antigen is a substance that is specific to an antibody or a T-cell receptor and is often used as a synonym for immunogen.

86.Which of the following statement is correct?

1) An immunogen is a substance capable of initiating an immune response
2) Substances that can enhance the immune response to an antigen are called adjuvants. Epitope is an antigenic determinant and is the active part of an antigen
3) A paratope is the antigen – binding site and is a part of an antibody which recognizes and binds to an antigen
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

An immunogen is a substance capable of initiating an immune response. Haptens are substance that are non-immunogenic but can react with the products of a specific immune response. Substances that can enhance the immune response to an antigen are called adjuvants. 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.

87. How many types of antibodies are there?

a) 6
b) 4
c) 3
d) 5

Explanation

The antibodies are classified into five major categories, based on their physiological and biochemical properties. They are IgG (gamma), IgM (mu), IgA (alpha), IgD (delta) and IgE (epsilon).

88. An antibody molecule is___ shaped structure

a) Z
b) Y
c) C
d) X

Explanation

In the 1950s, experiments by Porter and Edelman revealed the basic structure of the immunoglobulin. **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 50,000 Da (approximately 450 amino acids).

89. The polypeptide chains are linked together by_____

a) C – C
b) P – P
c) S – S
d) K – K

Explanation

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 is represented by H2 L2. The heavy chains have a flexible hinge region at their approximate middles.

90. Which of the following statement is correct?

1) The reaction between an antigen and antibody is the basis for humoral immunity or antibody mediated immunity
2) The reaction between antigen and antibody occurs in four stages.
   a) 1 alone
   b) 2 alone
   c) 1, 2
   d) None

Explanation

The reaction between an antigen and antibody is the basis for humoral immunity or antibody mediated immunity. **The reaction between antigen and antibody occurs in three stages**. During the first stage, the reaction involves the formation of antigen - antibody complex. The next stage leads to visible events like precipitation, agglutination, etc., The final stage includes destruction of antigen or its neutralization.

91. The binding force between antigen and antibody is due to____ factors

a) 5
b) 4
c) 3
d) 2

Explanation

The binding force between antigen and antibody is due to three factors. They are closeness between antigen and antibody, noncovalent bonds or intermolecular forces and affinity of antibody.

92. Which of the following statement is correct?

1) When antigen and antibody are closely fitted, the strength of binding is great.
2) The bonds that hold the antigen to the antibody combining site are all covalent in nature

3) These include hydrogen bonds, electrostatic bonds, Van der Waals forces and hydrophobic bonds
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

When antigen and antibody are closely fitted, the strength of binding is great. When they are apart binding strength is low. **The bonds that hold the antigen to the antibody combining site are all non-covalent in nature**. These include hydrogen bonds, electrostatic bonds, Van der Waals forces and hydrophobic bonds. Antibody affinity is the strength of the reaction between a single antigenic determinant and a single combining site on the antibody.

93. _____ is the process by which a pathogen is marked of ingestion and destruction by a phagocyte.

a) Opsonisation
b) Agglutination
c) Phagocytosis
d) All the above

Explanation

Opsonisation or enhanced attachment is the process by which a pathogen is marked of ingestion and destruction by a phagocyte. Opsonisation involves the binding of an opsonin i.e., antibody, to a receptor on the pathogen's cell membrane.

94. Which of the following statement is incorrect?

1) A vaccine is a biological preparation that provides active acquired immunity to a particular disease and resembles a disease-causing microorganism and is often made from weakened or attenuated or killed forms of the microbes, their toxins, or one of its surface proteins
2) Vaccines "teach" our body how to defend itself when viruses or bacteria, invade it.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

A vaccine is a biological preparation that provides active acquired immunity to a particular disease and resembles a disease-causing microorganism and is often made from weakened or attenuated or killed forms of the microbes, their toxins, or one of its surface proteins. Vaccines "teach" our body how to defend itself when viruses or bacteria, invade it. Vaccines deliver only very little amounts of inactivated or weakened viruses or bacteria, or parts of them.

95. The vaccines are classified into____ types

a) 4
b) 3
c) 2
d) 5

Explanation

Vaccine initiates the immunization process. **The vaccines are classified as first, second and third generation vaccine**

96. Which of the following is not a 1st generation vaccine?

a) MMR
b) Hepatitis- B
c) Varicella
d) Salk's Polio

Explanation

First generation vaccine is further subdivided into live attenuated vaccine, killed vaccine and toxoids (Fig. 8.9). Live attenuated vaccines use the weakened (attenuated), aged, less virulent form of the virus. E.g. **Measles, mumps and rubella (MMR) vaccine and the Varicella** (chickenpox) vaccine, Killed (inactivated) vaccines are killed or inactivated by heat and other methods. E.g. **Salk's polio** vaccine. Toxoid 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. E.g. DPT vaccine (Diphtheria, Pertussis and Tetanus).

97. Which of the following statement is correct?

1) Second generation vaccine contains the pure surface antigen of the pathogen
2) Hepatitis- B vaccine is a 3rd generation vaccine
3) Third generation vaccine contains the purest and the highest potency vaccines which are synthetic in generation.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Second generation vaccine contains the pure surface antigen of the pathogen. E.g. **Hepatitis-B vaccine.** Third generation vaccine contains the purest and the highest potency vaccines which are synthetic in generation. The latest revolution in vaccine is DNA vaccine or recombinant vaccine.

98. Who prepared first vaccine for small pox?

a) Stuart Jenner
b) Edward Jenner
c) Malies Jenner
d) Stephen Hawkins

Explanation

Vaccino therapy is the method of use of vaccine for treatment of disease. **Dr. Edward Jenner prepared first vaccine for small pox in 1796**.

99. Polio vaccine was developed by____ (vaccine consists of inactivated microorganism)

a) Dr. Edward Jenner
b) Dr. Jonas Salk
c) Dr. Albert Sabin
d) Louis Pasteur

Explanation

P**olio vaccine was developed by Dr. Jonas Salk (vaccine consists of inactivated microorganism)** and Dr. Albert Sabin (live attenuated oral polio vaccine). Louis Pasteur (1885) discovered vaccine against rabies, anthrax and cholera. BCG vaccine was developed by Calmette and Guerin against tuberculosis in France in the year 1908.

100. Which of the following statement is correct?

1) Vaccination is the process of administrating a vaccine into the body or the act of introducing a vaccine into the body to produce immunity to a specific disease
2) Immunization is the process of the body building up immunity to a particular disease.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

"Vaccination is the process of administrating a vaccine into the body or the act of introducing a vaccine into the body to produce immunity to a specific disease." Immunization is the process of the body building up immunity to a particular disease. Immunization describes the actual changes in the body after receiving a vaccine. Vaccines work by fighting the pathogen and then recording it in their memory system.

101. Allergy is a form of over active immune response mediated by___

a) IgG
b) IgM
c) IgA
d) IgE

Explanation

Allergy is a form of over active immune response mediated by IgE and mast cells. It can also be due to the release of chemicals like histamine and serotonin from the mast cells.

102. ____ is the classical immediate hypersensitivity reaction

a) Anaphylaxis

b) Inaphylaxis
c) Aniophylaxis
d) None

Explanation

Anaphylaxis is the classical immediate hypersensitivity reaction. It is a sudden, systematic, severe and immediate hypersensitivity reaction occurring as a result of rapid generalized mast-cell degranulation.

103. Which of the following statement is correct?

1) Immunodeficiency results from the failure of one or more components of the immune system.
2) Primary immune deficiencies are caused by genetic developmental defects.
3) AIDS is an acronym for Acquired Immuno- Deficiency Syndrome
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Immunodeficiency results from the failure of one or more components of the immune system. Primary immune deficiencies are caused by genetic developmental defects. Secondary immune deficiencies arise due to various reasons like radiation, use of cytolytic and immunosuppressive drugs and infections. **AIDS is an acronym for Acquired Immuno- Deficiency Syndrome**. It is the deficiency of immune system, acquired during the life time of an individual indicating that it is not a congenital disease.

104. Which of the following statement is correct?

1) AIDS is caused by Human Immuno- Deficiency Virus
2) It selectively infects helper B cells
3) HIV is classified into the types 1 and 2 (HIV-1, HIV-2)
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

AIDS is an acronym for Acquired Immuno- Deficiency Syndrome. It is the deficiency of immune system, acquired during the life time of an individual indicating that it is not a congenital disease. AIDS is caused by Human Immuno- Deficiency Virus (HIV). **It selectively infects helper T cells**. The infected helper T cells will not stimulate antibody production by B-cells resulting in loss of natural defence against viral infection. On the basis of genetic characteristics and differences in the viral antigens, HIV is classified into the types 1 and 2 (HIV-1, HIV-2).

105. Which of the following statement is correct?

1) The human immunodeficiency virus belongs to the genus Varicella virus
2) HIV is seen as a spherical virus, 100-120 nm in diameter, containing a dense core surrounded by a lipoprotein envelope
3) The core is covered by a capsid made of proteins.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

The **human immunodeficiency virus belongs to the genus Lentivirus**. When observed under the electron microscope, **HIV is seen as a spherical virus, 100-120 nm in diameter, containing a dense core surrounded by a lipoprotein envelope**. The envelope has glycoprotein (gp) spikes termed gp 41 and gp 120. At the core, there are two large single stranded RNA. Attached to the RNA are molecules of reverse transcriptase. It also contains enzymes like protease and ribonuclease. The core is covered by a capsid made of proteins. This is followed by another layer of matrix proteins.

106. HIV can survive for____ days inside a cell

a) 3
b) 1
c) 1.5
d) 2

Explanation

The HIV is often located within the cells especially in macrophages. **HIV can survive for 1.5 days inside a cell but only about 6 hours outside a cell**. Routes of HIV transmission include unsafe sexual contact, blood-contaminated needles, organ transplants, blood transfusion and vertical transmission from HIV infected mother to child. HIV is not transmitted by insects or by casual contact.

107. Which of the following statement is correct?

1) After getting into the body of the person, the virus enters into macrophages where RNA genome
2) There where the virus replicates to form viral DNA with the help of the enzyme reverse transcriptase.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

After getting into the body of the person, the virus enters into macrophages where RNA genome of the virus replicates to form viral DNA with the help of the enzyme reverse transcriptase. This viral DNA gets incorporated into the DNA of host cells and directs the infected cells to produce viral particles.

108. Which of the following statement is correct?

1) A simple blood test is available that can determine whether the person has been infected with HIV
2) Western blot test is more reliable and a confirmatory test
3) ELISA is preliminary test.
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

A simple blood test is available that can determine whether the person has been infected with HIV. 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.

109. Which of the following are the features of cancer cells?

1) Large cytoplasmic volume compared to nuclei
2) Variation in cell shape and size
3) Large number of dividing cells
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Normal Cells	Cancer cells
Small, uniformly shaped nuclei Relatively large cytoplasmic volume	Large, variable shaped nuclei Relatively small cytoplasmic volume
Conformity in cell size and shape Cells arranged into discrete tissues	Variation in cell size and shape Disorganised arrangement of cells
May possess differentiated cell structures Normal presentation of cell surface markers	Loss of normal specialised features Elevated expression of certain cell markers
Lower levels of dividing cells Cell tissues clearly demarcated	Large number of dividing cells Poorly defined tumor boundaries

110. Which of the following statement is incorrect?

1) Immunotherapy also called biological therapy uses substances made by the body or in a laboratory (monoclonal antibodies) to improve or to resist the immune system function
2) Different approaches have been attempted in the immunotherapy of cancer
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Immunotherapy also called biological therapy uses substances made by the body or in a laboratory (monoclonal antibodies) to improve or to resist the immune system function. Different approaches have been attempted in the immunotherapy of cancer. Immunotherapy appears to be important in getting rid of the residual malignant cells after the gross tumour has been removed.

111. Match the following

I.	Stimulants	1. Morphine
II.	Depressants	2. Alcohol
III.	Hallucinogens	3. Phencyclidine
IV.	Analgesics	4. Cocaine

a) 2, 1, 3, 4
b) 4, 2, 3, 1
c) 4, 3, 2, 1
d) 1, 3, 2, 4

Explanation

Group	Drugs	Effects
Stimulants	Amphetamines, cocaine, nicotine and tobacco	Accelerates the activity of the brain
Depressants	Alcohol, Barbiturates, Tranquilizers	Slows down the activity of the brain
Narcotic/ Analgesics	Opium, Morphine	Act as depressants on the Central Nervous System
Hallucinogens	Lysergic acid diethylamide (LSD), Phencyclidine	Distorts the way one sees, hears and feels
Stimulants, Depressants, Hallucinogens	Bhang (Marijuana), Ganja, Charas	Stimulating action on the CNS and affects the cardiovascular system

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112. Which of the following statement is correct?

1) Cocaine is a white powder that is obtained from the leaves of the coca plant, Erythroxylum coca.
2) Cocaine causes serious physical and psychological problems including hallucinations and paranoia.
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Cocaine is a white powder that is obtained from the leaves of the coca plant, **Erythroxylum coca**. It is commonly called coke or crack. Cocaine causes serious physical and psychological problems including hallucinations and paranoia. The other plants with hallucinogenic properties are Atropa belladonna and Datur

113. Which of the following are the symptoms of depression?

1) Loss of self confidence
2) Anxiety
3) Not being able to enjoy things that are usually pleasurable
    a) 1, 2
    b) 1, 3
    c) 2, 3
    d) All the above

Explanation

Signs and symptoms of mental depression:

- Loss of self confidence and self-esteem
- Anxiety
- Not being able to enjoy things that are usually pleasurable or interesting

114. Alcoholic anonymous was started in___ by a businessman and a doctor

a) 1991
b) 1935
c) 1919
d) 1945

Explanation

Alcoholic anonymous was started in 1935 by a businessman and a doctor who had been a "hopeless drunk" for many years. After the men helped each other to stop drinking and to stay sober, they then founded the alcoholic anonymous to help other alcoholics. Since that time alcoholic anonymous has spread throughout the world.

115. Which of the following statement is correct?

1) Alcoholism is the inability to control drinking due to physical and emotional dependence on alcohol.
2) Treatment involves counselling by a healthcare professional. Detoxification programme in a hospital or medical facility is an option for those who need additional assistance
    a) 1 alone
    b) 2 alone
    c) 1, 2
    d) None

Explanation

Alcoholism is the inability to control drinking due to physical and emotional dependence on alcohol. Treatment involves counselling by a healthcare professional. Detoxification programme in a hospital or medical facility is an option for those who need additional assistance. Medications are available to reduce the desire to drink and smoke.