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+2 ZOOLOGY STUDY MATERIAL
UNIT III CHAPTER 7
HUMAN HEALTH AND DISEASES
FULL STUDY MATERIAL

1. Complete the following table.

Disease	Causative agent	Site of infection	Incubation period (days)
Mumps	Mumps virus (RNA virus), Paramyxovirus	Salivary glands	16 - 20
Chicken pox	Varicella-Zoster virus (DNA Virus)	Respiratory tract, skin and nervous system	13 - 17
Dengue fever	Dengue virus or Flavivirus (DENV 1-4 virus)	Skin and blood	5 - 8

2. List the causative agent, mode of transmission and symptoms of Diphtheria and Typhoid.

Disease	Causative agent	Mode of transmission	Symptoms
Diphtheria	Corynebacterium diphtheriae	Through Droplet infection	Fever, sore throat, hoarseness and difficulty in breathing
Typhoid	Salmonella typhi	Through contaminated food and water	Headache, abdominal discomfort, fever and diarrhoea

3. 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
Also called Shigellosis	Also called amoebic colitis

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4. A patient is hospitalized with fever and chills. Merozoites are observed in her blood. What is your diagnosis?

She must be suffering from malaria. Release of merozoites in the blood stream is the cause for fever and chills.

5. Write the scientific name of the filarial worm that causes filariasis.

i. Write the symptoms of filariasis.

ii. How is this disease transmitted?

The scientific name of filarial worm is Wuchereria Bancroft.

Symptoms:

The accumulation of the worms blocks the lymphatic system resulting in inflammation of the lymph nodes.

In some cases, the obstruction of lymph vessels causes elephantiasis or filariasis of the limbs, scrotum and mammary glands.

Mode of transmission:

It is transmitted through culex mosquito. The parasite, filarial worm is said to be digenic, as it completes its life cycle in two hosts, mosquito and man.

6. 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

7. Complete the given table:

Disease	Causative agent	Symptoms
Ascariasis	Ascaris	<u>Abdominal pain,</u> <u>vomiting, headache,</u> <u>anaemia, irritability</u>
<u>Ring worm</u>	Trichophyton	Appearance of dry, scaly lesions on various parts of the body.
Typhoid	<u>Salmonella typhi</u>	Headache, abdominal discomfort, fever and diarrhoea
Pneumonia	<u>Streptococcus pneumoniae</u>	Fever, cough, painful breathing and brown sputum

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8. What is Kala-azar?

Kala – azar or visceral leishmaniasis is caused by *Leishmania donovani*. It 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.

9. 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.

Additional questions:

10. What are infectious diseases? How are they caused and transmitted?

Diseases which are transmitted from one person to another are called infectious diseases or communicable diseases.

They are caused by organisms called pathogens, like bacteria, virus, fungi etc. Such diseases are transmitted through air, water, food, physical contact and vectors.

11. What are non-infectious diseases?

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).

12. What do you mean by bacterial resistance?

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. This kind of resistance developed by bacteria against antibiotics is called bacterial resistance.

13. How can the risk of bacterial resistance be reduced?

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.
- Avoid using an antibiotic to treat viral infections such as common cold or flu.
- Always follow the prescription.

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- Avoid Skipping doses, since it may allow antibiotic resistance to develop.

14. What test is done to confirm typhoid?

Widal test

15. What is the infective stage of *Entamoeba histolytica*?

Trophozoite

16. Which acts as a carrier animal for *Entamoeba histolytica*?

House fly

17. Name the stage of plasmodium in human RBC?

Trophozoite

18. What is the zygote of plasmodium called?

Ookinete

19. Name the toxin released by malarial parasite.

Haemozoin

20. Mention the types of malaria, causative agent and duration of erythrocytic cycle.

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

21. State some of the ways to control mosquito population.

- 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.
- The best protection against malaria is to avoid being bitten by mosquito.

22. 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.

23. What is athlete's foot? Name the pathogen that causes athlete's foot.

Ringworm of the foot is called athlete's foot. It is caused by a fungus

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called, *Taenia pedis*.

24. Say about ascariasis.

Ascariasis is a disease caused by the intestinal endoparasite *Ascaris lumbricoides* commonly called the round worms.

25. Define hygiene.

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."

26. What is personal hygiene?

Personal hygiene refers to maintaining one's body clean by bathing, washing hands, trimming finger nails, wearing clean clothes and also includes attention to keeping surfaces in the home and workplace, including toilets, bathroom facilities, clean and pathogen-free.

27. Name the diseases controlled by the use of vaccines and by creating awareness.

Polio, diphtheria, pneumonia and tetanus

28. 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.

29. Name the drugs which are commonly abused.

The drugs which are commonly abused include opioids, cannabinoids, coca-alkaloids, barbiturates, amphetamines and LSD.

30. Say about the effects of morphine.

It is the most widely abused narcotic drug which acts as a depressant and slows down body functions.

31. What are cannabinoids?

Cannabinoids are a group of chemicals obtained from *Cannabis sativa*, the Indian hemp plant.

32. What are the effects of cannabinoids?

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

33. Mention the effects of cocaine.

Hallucination and paranoia

34. Say about classification of drugs and their effects.

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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

35. Mention the drugs used to treat depression and insomnia that are often misused.
methamphetamine, amphetamines, barbiturates, tranquilizers, Lysergic acid diethylamide (LSD)
36. Name the chemicals present in tobacco and what are their effects on health?
Tobacco contains nicotine, carbon monoxide and tars, which cause problems in the heart, lung and nervous system. Adrenal glands are stimulated by nicotine to release adrenaline and nor adrenaline which increases blood pressure and heart beat.
37. What is euphoria?
“Euphoria” is characterized by mental and emotional preoccupation with the drug.
38. What do you mean by alcoholism?
Alcoholism is the inability to control drinking due to physical and emotional dependence on alcohol.
39. 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”
40. Name the chronic memory disorder caused by alcohol misuse.
Korsakoff syndrome
41. What is depression?
Depression is a common mental disorder that causes people to experience depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep poor appetite, low energy and poor concentration.
42. Say some of the facts that will help us understand lifestyle disorders.
Life style disorder causes cardiovascular diseases resulting in 31 percent of global deaths.
The sedentary life style also causes deficiency of vitamins such as vitamin D resulting in fatigue, tiredness, back pain, depression, bone loss, muscle pain, etc,

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Life style disorder also includes social isolation resulting in age related problems. Eating junk foods that have high caloric values, rich in carbohydrates and fat can lead to obesity and early health issues.

Consumption of processed and packaged food, which lacks in fibre may result in constipation.

Several people today complain of irritable bowel syndrome with stomach discomfort or pain and trouble with bowel movements, causing diarrhoea. The main cause of irritable bowel syndrome is stress and other illnesses.

43. Say about Nipah virus.

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.

44. Name the four types of viral diseases.

- 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).

45. Say briefly about swine flu.

Swine flu was first recognized 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.

46. Explain the life cycle of malarial parasite.

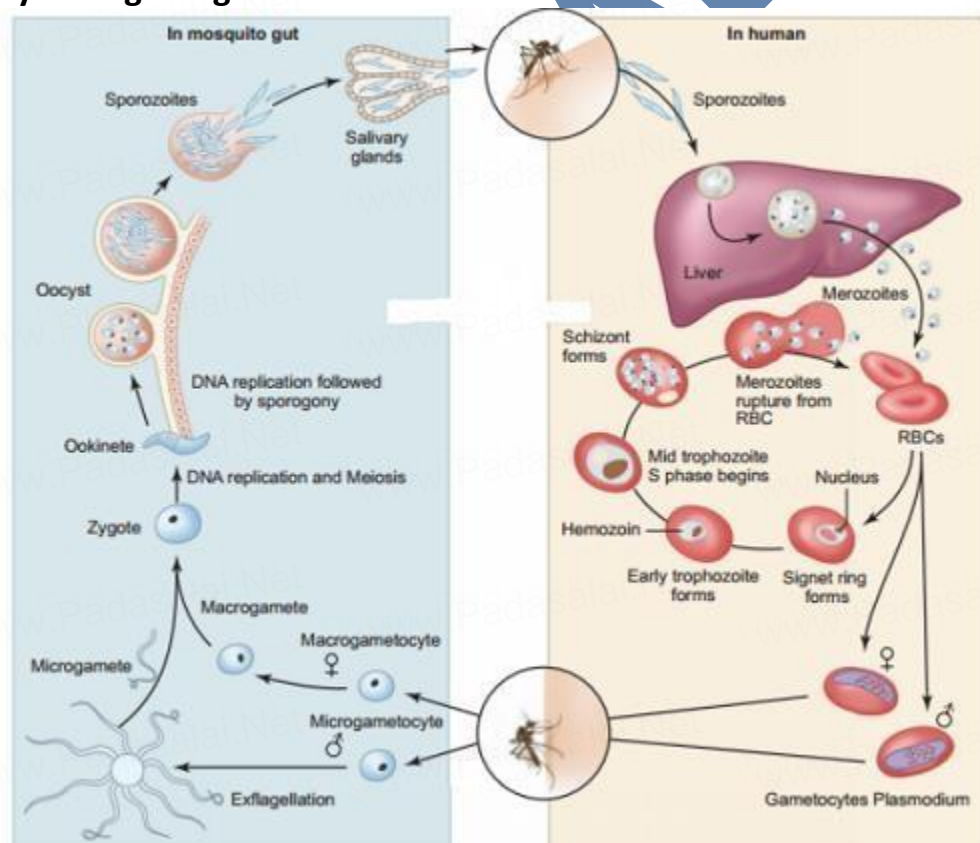
In man:

- ❖ 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 produces schizont.
- ❖ Schizont divides to produce mononucleated merozoites.
- ❖ Sometimes merozoites differentiate into mega gametocytes and micro gametocytes.

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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 oocyst.
- ❖ The oocyst 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.



47. What do you mean by withdrawal symptoms?

Withdrawal symptoms are the ones which appear, when the intake of the drug or alcohol is abruptly stopped by the user. The body systems of the person become confused and protest against the absence of the drug.

48. What causes African sleeping sickness?

African sleeping sickness is caused by Trypanosoma species.

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49. How is Trypanosoma transmitted?

Trypanosoma is transmitted by the blood sucking flies Tsetse.

50. Mention the three types of Trypanosoma.

i. T. gambiense is transmitted by Glossina palpalis. (Tsetse fly) It causes Gambian or Central African sleeping sickness.

ii. T. rhodesiense is transmitted by Glossina morsitans. It causes Rhodesian or East African sleeping sickness.

iii. T. cruzi, is transmitted by a bug called Triatoma megista. It causes Chagas disease or American trypanosomiasis.

51. Mention some natural cannabinoids.

Natural cannabinoids are the main source of marijuana, ganja, hashish and charas.

52. What is cocaine?

Cocaine is a white powder that is obtained from the leaves of the coca plant, Erythroxylon coca. It is commonly called coke or crack.

53. How does tobacco affect the oxygen content in blood?

It increases the carbon monoxide content of blood and reduces the concentration of haem bound oxygen, thus causing oxygen deficiency in the blood and body tissues.

54. 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.

55. 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.

56. What are the positive attitudes developed by participating in exercise programme?

Participating in an exercise programme can:

- ✓ Increase self-esteem
- ✓ Boost self-confidence
- ✓ Create a sense of empowerment
- ✓ Enhance social connections and relationships