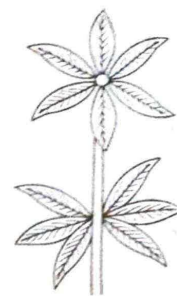


7 Human Health and Disease



7.1. Common Diseases in Humans

1. Match List I with List II:

List I	List II
(a) Common cold	(i) <i>Plasmodium</i>
(b) Haemozoin	(ii) Typhoid
(c) Widal test	(iii) Rhinoviruses
(d) Allergy	(iv) Dust mites

Choose the correct answer from the options given below:

- (a) (b) (c) (d)
 (A) (i) (iii) (ii) (iv)
 (B) (iii) (i) (ii) (iv)
 (C) (iv) (ii) (iii) (i)
 (D) (ii) (iv) (iii) (i)

[NEET 2024]

2. Match List I with List II:

List I	List II
(a) Typhoid	(i) Fungus
(b) Leishmaniasis	(ii) Nematode
(c) Ringworm	(iii) Protozoa
(d) Filariasis	(iv) Bacteria

Choose the correct answer from the options given below:

- (a) (b) (c) (d)
 (A) (iv) (iii) (i) (ii)
 (B) (iii) (i) (iv) (ii)
 (C) (ii) (iv) (iii) (i)
 (D) (i) (iii) (ii) (iv)

[NEET 2024]

3. Match List I with List II.

List I	List II
(a) Ringworm	(i) <i>Haemophilus influenzae</i>
(b) Filariasis	(ii) <i>Trichophyton</i>
(c) Malaria	(iii) <i>Wuchereria bancrofti</i>
(d) Pneumonia	(iv) <i>Plasmodium vivax</i>

Choose the correct answer from the options given below:

- (a) (b) (c) (d)
 (A) (iii) (ii) (i) (iv)
 (B) (iii) (ii) (iv) (i)
 (C) (ii) (iii) (iv) (i)
 (D) (ii) (iii) (i) (iv)

[NEET 2023]

4. Match List-I with List-II

List-I	List-II
(a) Filariasis	(i) <i>Haemophilus influenzae</i>
(b) Amoebiasis	(ii) <i>Trichophyton</i>
(c) Pneumonia	(iii) <i>Wuchereria bancrofti</i>
(d) Ringworm	(iv) <i>Entamoeba histolytica</i>

Choose the correct answer from the options given below:

- (a) (b) (c) (d)
 (A) (iv) (i) (iii) (ii)
 (B) (iii) (iv) (i) (ii)
 (C) (i) (ii) (iv) (iii)
 (D) (ii) (iii) (i) (iv)

[NEET 2021]

5. Match the following columns and select the correct option from the codes given below.

Column I	Column II
(a) Typhoid	(i) <i>Haemophilus influenzae</i>
(b) Malaria	(ii) <i>Wuchereria bancrofti</i>
(c) Pneumonia	(iii) <i>Plasmodium vivax</i>
(d) Filariasis	(iv) <i>Salmonella typhi</i>

Select the correct option.

- (a) (b) (c) (d)
 (A) (iv) (iii) (i) (ii)
 (B) (iii) (iv) (ii) (i)
 (C) (i) (iii) (ii) (iv)
 (D) (i) (ii) (iv) (iii)

[NEET Oct. 2020]

6. The infectious stage of *Plasmodium* that enters the human body is:

- (A) sporozoites (B) female gametocytes
 (C) male gametocytes (D) trophozoites.

[NEET Sept. 2020, AIPMT 1989]

7. Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid:

- (A) *Plasmodium vivax* / UTI test.
 (B) *Salmonella typhi* / Widal test
 (C) *Salmonella typhi* / Anthrone test
 (D) *Streptococcus pneumoniae* / Widal test.

[NEET National 2019]

8. In which disease does mosquito transmitted pathogen cause chronic inflammation of lymphatic vessels?

- (A) Ringworm disease (B) Ascariasis
(C) Elephantiasis (D) Amoebiasis

[NEET 2018]

9. Which of the following sets of diseases is caused by bacteria?

- (A) Cholera and tetanus
(B) Typhoid and smallpox
(C) Tetanus and mumps
(D) Herpes and influenza

[NEET Phase-II 2016]

10. The active form of *Entamoeba histolytica* feed upon:

- (A) erythrocytes mucosa and submucosa of colon
(B) mucosa and submucosa of colon only
(C) food in intestine
(D) blood only.

[AIPMT Cancelled 2015]

11. Infection of *Ascaris* usually occurs by:

- (A) drinking water containing egg of *Ascaris*
(B) eating imperfectly cooked pork
(C) tsetse fly
(D) mosquito bite.

[NEET 2013]

12. Identify the site where *Wuchereria bancrofti* is normally found in human body.

- (A) Muscles of the legs
(B) Blood vessels of the thigh region
(C) Skin between the fingers
(D) Lymphatic vessels of the lower limbs

[NEET Karnataka 2013]

13. Motile zygote of *Plasmodium* occurs in:

- (A) gut of female *Anopheles*
(B) salivary glands of *Anopheles*
(C) human RBCs
(D) human liver.

[AIPMT Screening 2012]

14. Widal test is carried out to test:

- (A) malaria (B) diabetes mellitus
(C) HIV/AIDS (D) typhoid fever.

[AIPMT Screening 2012]

15. Which one of the following sets of items in the options given below are correctly categorised with one exception in it?

	Items	Category	Exception
(A)	UAA, UAG, UGA	Stop codons	UAG
(B)	Kangaroo, Koala, Wombat	Australian marsupials	Wombat

(C)	<i>Plasmodium</i> , <i>Cuscuta</i> , <i>Trypanosoma</i>	Protozoan parasites	<i>Cuscuta</i>
(D)	Typhoid, Pneumonia, Diphtheria	Bacterial diseases	Diphtheria

[AIPMT Mains 2012]

16. Where will you look for the sporozoites of the malarial parasite?

- (A) Red blood corpuscles of humans suffering from malaria
(B) Spleen of infected humans
(C) Salivary glands of freshly moulted female *Anopheles* mosquito
(D) Saliva of infected female *Anopheles* mosquito

[AIPMT Screening 2011]

17. The pathogen *Microsporium* responsible for ringworm disease in humans belongs to the same kingdom of organisms as that of:

- (A) *Taenia*, a tapeworm
(B) *Wuchereria*, a filarial worm
(C) *Rhizopus*, a mould
(D) *Ascaris*, a round worm.

[AIPMT Mains 2011]

18. Which one of the following option gives the correct matching of a disease with its causative organism and mode of infection?

	Disease	Causative Organisms	Mode of Infection
(A)	Typhoid	<i>Salmonella typhi</i>	With inspired air
(B)	Pneumonia	<i>Streptococcus pneumoniae</i>	Droplet infection
(C)	Elephantiasis	<i>Wuchereria bancrofti</i>	Infected water and food
(D)	Malaria	<i>Plasmodium vivax</i>	Bite of male <i>Anopheles</i> mosquito

[AIPMT Mains 2011]

19. Common cold is not cured by antibiotics because it is:

- (A) caused by a virus
(B) caused by a Gram-positive bacterium
(C) caused by a Gram-negative bacterium
(D) not an infectious disease.

[AIPMT Mains 2011]

20. Ringworm in humans is caused by:

- (A) bacteria (B) fungi
(C) nematodes (D) viruses.

[AIPMT Screening 2010]

21. Which of the following is a pair of viral diseases?
 (A) Ringworm, AIDS
 (B) Common cold, AIDS
 (C) Dysentery, common cold
 (D) Typhoid, tuberculosis [AIPMT Screening 2009]

22. Match the disease in Column-I with the appropriate items (pathogen/prevention/treatment) in Column-II.

Column-I	Column-II
(a) Amoebiasis	(i) <i>Treponema pallidum</i>
(b) Diphtheria	(ii) Use only sterilized food and water
(c) Cholera	(iii) DPT vaccine
(d) Syphilis	(iv) Use oral rehydration therapy

Select the correct option:

- (a) (b) (c) (d)
 (A) (i) (ii) (iii) (iv)
 (B) (ii) (iv) (i) (iii)
 (C) (ii) (i) (iii) (iv)
 (D) (ii) (iii) (iv) (i)

[AIPMT Screening 2008]

23. Which one of the following is not correctly matched?

- (A) *Glossina palpalis* — Sleeping sickness
 (B) *Culex pipiens* — Filariasis
 (C) *Aedes aegypti* — Yellow fever
 (D) *Anopheles culicifacies* — Leishmaniasis.

[AIPMT 2004]

24. *Salmonella* is related with:

- (A) TB (B) Typhoid
 (C) Tetanus (D) Polio

[AIPMT 2001]

25. A patient suffering from cholera is given saline drip because:

- (A) Cl^- ions help in the formation of HCl in stomach for digestion
 (B) Cl^- ions are important component of blood plasma
 (C) Na^+ ions help to retain water in the body
 (D) Na^+ ions are important in transport of substances across membrane

[AIPMT 2000, 1996]

26. Botulism caused by *Clostridium botulinum* affects the:

- (A) spleen
 (B) intestine
 (C) lymph glands
 (D) neuromuscular junction.

[AIPMT 1998]

27. Typhoid fever is caused by:

- (A) *Salmonella* (B) *Shigella*
 (C) *Giardia* (D) *Escherichia*

[AIPMT 1998]

28. Which the following disease is now considered nearly eradicated from India?

- (A) Kala-azar (B) Small pox
 (C) Polio myelitis (D) Plaque [AIPMT 1997]

29. Which of the following pair of diseases is caused by virus?

- (A) Rabies, mumps (B) Cholera, tuberculosis
 (C) Typhoid, tetanus (D) AIDS, syphilis

[AIPMT 1996]

30. Schizogont stage of *Plasmodium* occurs in human cells:

- (A) erythrocytes
 (B) liver cells
 (C) erythrocytes and liver cells
 (D) erythrocytes, liver cells and spleen cells

[AIPMT 1993]

31. If ponds and puddles are destroyed, the organism likely to be destroyed is:

- (A) *Ascaris* (B) *Leishmania*
 (C) *Trypanosoma* (D) *Plasmodium*

[AIPMT 1993]

32. Give the correct matching of causative agent/germ and disease:

- (A) *Anopheles* — malaria
 (B) *Leishmania* — sleeping sickness
 (C) *Glossina* — kala-azar
 (D) *Wuchereria* — filariasis

[AIPMT 1993]

33. The part of life cycle of malarial parasite *Plasmodium vivax*, that is passed in female *Anopheles* is:

- (A) sexual cycle
 (B) pre-erythrocytic schizogony
 (C) exo-erythrocytic schizogony
 (D) post-erythrocytic schizogony

[AIPMT 1992]

34. Who discovered *Plasmodium* in RBCs of human beings?

- (A) Laveran (B) Ronald Ross
 (C) Stephen (D) Mendel

[AIPMT 1991]

35. Malignant tertian malaria is caused by:

- (A) *Plasmodium malariae*
 (B) *P. ovale*
 (C) *P. falciparum*
 (D) *P. vivax*

[AIPMT 1991]

36. Amoebiasis is prevented by:

- (A) drinking boiled water
 (B) eating balanced food
 (C) eating plenty of fruits
 (D) using mosquito nets

[AIPMT 1990]

37. Malaria fever coincides with liberation of:

- (A) merozoites
- (B) cryptomerozoites
- (C) metacryptomerozoites
- (D) trophozoites

[AIPMT 1989]

7.2. Immunity

38. Given below are two statements:

Statement I: Antibiotics are chemicals produced by microbes that kill other microbes.

Statement II: Antibodies are chemicals formed in body that eliminate microbes.

In the light of the above statements, choose the most appropriate answer from the options given below.

- (A) Statement I is correct but Statement II is incorrect.
- (B) Statement I is incorrect but Statement II is correct.
- (C) Both Statement I and Statement II are correct.
- (D) Both Statement I and Statement II are incorrect.

[Re-NEET 2024]

39. Match List-I with List-II:

List-I	List-II
(a) Malignant tumors	(i) Destroy tumors
(b) MALT	(ii) AIDS
(c) NACC	(iii) Metastasis
(d) α -Interferons	(iv) Lymphoid tissue

Choose the correct answer from the options given below:

- | | | | |
|-----------|-------|------|------|
| (a) | (b) | (c) | (d) |
| (A) (iii) | (iv) | (ii) | (i) |
| (B) (iv) | (iii) | (ii) | (i) |
| (C) (iii) | (iv) | (i) | (ii) |
| (D) (iii) | (i) | (iv) | (ii) |

[Re-NEET 2024]

40. Match List-I with List-II:

List-I	List-II
(a) B-Lymphocytes	(i) Passive immunity
(b) Interferons	(ii) Cell mediated immunity
(c) T-Lymphocytes	(iii) Produce an army of proteins in response to pathogens
(d) Colostrum	(iv) Innate immunity

Choose the correct answer from the options given below:

- | | | | |
|-----------|------|-------|-------|
| (a) | (b) | (c) | (d) |
| (A) (i) | (iv) | (ii) | (iii) |
| (B) (iv) | (ii) | (iii) | (i) |
| (C) (iii) | (iv) | (ii) | (i) |
| (D) (ii) | (iv) | (i) | (iii) |

[Re-NEET 2024]

41. Which of the following are Autoimmune disorders?

- (I) Myasthenia gravis
- (II) Rheumatoid arthritis

(III) Gout

(IV) Muscular dystrophy

(V) Systemic Lupus Erythematosus (SLE)

Choose the most appropriate answer from options given below:

- (A) (I), (II) and (V) only
- (B) (II), (III) and (V) only
- (C) (III), (IV) and (V) only
- (D) (I), (II) and (IV) only

[NEET 2024]

42. Given below are two statements.

Statement I: Autoimmune disorder is a condition where body defence mechanism recognises its own cells as foreign bodies.

Statement II: Rheumatoid arthritis is a condition where body does not attack self cells.

In the light of the above statements, choose the most appropriate answer from the options given below.

- (A) Both statement I and statement II are correct.
- (B) Both statement I and statement II are incorrect.
- (C) Statement I is correct, but statement II is incorrect.
- (D) Statement I is incorrect, but statement II is correct.

[NEET 2022]

43. Select the incorrect statement with respect to acquired immunity.

- (A) Acquired immunity is non-specific type of defense present at the time of birth.
- (B) Anamnestic response is elicited on subsequent encounters with the same pathogen.
- (C) Anamnestic response is due to memory of first encounter.
- (D) Primary response is produced when our body encounters a pathogen for the first time.

[NEET 2022]

44. Chronic auto-immune disorder affecting neuromuscular junction leading to fatigue, weakening and paralysis of skeletal muscle is called is:

- (A) arthritis
- (B) muscular dystrophy
- (C) myasthenia gravis
- (D) gout.

[NEET 2021]

45. The Adenosine deaminase deficiency results into:

- (A) Dysfunction of Immune system
- (B) Parkinson's disease
- (C) Digestive disorder
- (D) Addison's disease.

[NEET 2021]

46. The yellowish fluid 'colostrum' secreted by mammary glands of mother during the initial days of lactation has abundant antibodies (IgA) to protect the infant. This type of immunity is called as:

- (A) passive immunity
- (B) active immunity
- (C) acquired immunity
- (D) autoimmunity.

[NEET Oct. 2020]

47. Identify the wrong statement with reference to immunity.
- When readymade antibodies are directly given, it is called 'passive immunity'.
 - Active immunity is quick and gives full response.
 - Foetus receives some antibodies from mother, it is an example for passive immunity.
 - When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called 'active immunity'.

[NEET Sept. 2020]

48. Colostrum, the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the new born infants because it contains:
- monocytes
 - macrophages
 - immunoglobulin A
 - natural killer cells.

[NEET National 2019]

49. Humans have acquired immune-system that produces antibodies to neutralise pathogens. Still innate immune system is present at the time of birth because it:
- is very specific and uses different macrophages
 - produces memory cells for mounting fast secondary response
 - has natural killer cells which can phagocytose and destroy microbes
 - provides passive immunity.

[NEET Odisha 2019]

50. Which of the following diseases is an autoimmune disorder?
- Myasthenia gravis
 - Arthritis
 - Osteoporosis
 - Gout

[NEET Odisha 2019]

51. Rejection of kidney graft occurs due to which of the following immune responses?
- Auto-immune response
 - Cell-mediated immune response
 - Humoral immune response
 - Inflammatory immune response

[NEET National 2019, 15]

52. Which of the following is not an autoimmune disease?

- Alzheimer's disease
- Rheumatoid arthritis
- Psoriasis
- Vitiligo

[NEET 2018]

53. Transplantation of tissues/organs fails often due to non-acceptance by the patient's body. Which type of immune-response is responsible for such rejections?

- Autoimmune response
- Cell-mediated immune response
- Humoral immune response
- Physiological immune response

[NEET 2017]

54. In higher vertebrates, the immune system can distinguish self-cells and non-self. If this property is lost due to genetic abnormality and it attacks self-cells, then it leads to:

- graft rejection
- auto-immune disease
- active immunity
- allergic response.

[NEET Phase-I 2016]

55. Asthma may be attributed to:

- accumulation of fluid in the lungs
- bacterial infection of the lungs
- allergic reaction of the mast cells in the lungs
- inflammation of the trachea

[NEET Phase-I 2016]

56. Match each disease with its correct type of vaccine.

Column I	Column II
(a) Tuberculosis	(i) Harmless virus
(b) Whooping cough	(ii) Inactivated toxin
(c) Diphtheria	(iii) Killed bacteria
(d) Polio	(iv) Harmless bacteria

Codes:

- | | | | |
|-----------|-------|-------|-------|
| (a) | (b) | (c) | (d) |
| (A) (ii) | (i) | (iii) | (iv) |
| (B) (iii) | (ii) | (iv) | (i) |
| (C) (iv) | (iii) | (ii) | (i) |
| (D) (i) | (ii) | (iv) | (iii) |

[AIPMT Cancelled 2015]

57. Which of the following immunoglobulins does constitute the largest percentage in human milk?

- IgD
- IgM
- IgA
- IgG

[AIPMT Latest July 2015]

58. If you suspect major deficiency of antibodies in a person, to which of the following would you look for confirmatory evidence?

- Serum globulins
- Fibrinogen in the plasma
- Haemocytes
- Serum albumins.

[AIPMT Latest July 2015, 07]

59. The cell-mediated immunity inside the human body is carried out by:

- T-lymphocytes
- B-lymphocytes
- thrombocytes
- erythrocytes

[NEET 2013]

60. In which one of the following options the two examples are correctly matched with their particular type of immunity?

Examples	Type of Immunity
(A) Polymorphonuclear leucocytes and monocytes	Cellular barriers
(B) Anti-tetanus and anti-snake bite injections	Active immunity
(C) Saliva in mouth and tears in eyes	Physical barriers
(D) Mucus coating of epithelium lining the urogenital tract and the HCl in stomach	Physiological barriers

[AIPMT Screening 2012]

61. Read the following four statements:

- (I) Colostrum is recommended for the new born because it is rich in antigens.
- (II) Chikungunya is caused by a Gram-negative bacterium.
- (III) Tissue culture has proved useful in obtaining virus-free plants.
- (IV) Beer is manufactured by distillation of fermented grape juice.

How many of the above statements are wrong?

- (A) Two
- (B) Three
- (C) Four
- (D) One

[AIPMT Mains 2012]

62. Which one of the following statements is correct with respect to immunity?

- (A) Preformed antibodies need to be injected to treat the bite by a viper snake.
- (B) The antibodies against small pox pathogen are produced by T-lymphocytes.
- (C) Antibodies are protein molecules, each of which has four light chains.
- (D) Rejection of a kidney graft is the function of B-lymphocytes.

[AIPMT Mains 2012]

63. Select the correct statements with respect to diseases and immunisation.

- (A) If due to some reason B and T-lymphocytes are damaged, the body will not produce antibodies against a pathogen.
- (B) Injection of dead/inactivated pathogens causes passive immunity.
- (C) Certain protozoans have been used to mass produce hepatitis B vaccine.
- (D) Injection of snake antivenom against snake bite is an example of active immunisation.

[AIPMT Mains 2011]

64. Which one of the following cannot be used for preparation of vaccines against plague?

- (A) Formalin inactivated suspensions of virulent bacteria
- (B) A virulent live bacteria
- (C) Synthetic capsular polysaccharide material
- (D) Heat-killed suspensions of virulent bacteria

[AIPMT Mains 2010]

65. Use of anti-histamines and steroids give a quick relief from:

- (A) allergy
- (B) nausea
- (C) cough
- (D) headache.

[AIPMT Screening 2009]

66. A person likely to develop tetanus is immunised by administering:

- (A) dead germs
- (B) preformed antibodies
- (C) wide spectrum antibiotics
- (D) weakened germs.

[AIPMT Screening 2009]

67. Globulins contained in human blood plasma are primarily involved in:

- (A) clotting of blood
- (B) oxygen transport in the blood
- (C) defence mechanisms of body
- (D) osmotic balance of body fluids

[AIPMT 2009]

68. To which type of barriers under innate immunity, do the saliva in the mouth and the tears from the eyes, belong?

- (A) Cytokine barriers
- (B) Cellular barriers
- (C) Physiological barriers
- (D) Physical barriers

[AIPMT Screening 2008]

69. In certain seasons, asthmatic attacks increase due to:

- (A) eating fruits preserved in tin containers
- (B) low temperature
- (C) hot and humid environment
- (D) inhalation of seasonal pollen

[AIPMT 2007]

70. Antibodies in our body are complex:

- (A) glycoproteins
- (B) lipoproteins
- (C) steroids
- (D) prostaglandins

[AIPMT 2006]

71. Damage to thymus in a child may lead to:

- (A) loss of antibody mediated immunity
- (B) loss of cell mediated immunity
- (C) a reduction in stem cell production
- (D) a reduction in haemoglobin content of blood

[AIPMT 2005]

72. Short-lived immunity acquired from mother to foetus across placenta or through mother's milk to the infant is categorised as:

- (A) active immunity
(B) passive immunity
(C) cellular immunity
(D) innate non-specific immunity. [AIPMT 2003]
73. What is true about T-lymphocytes in mammals?
(A) There are three main types cytotoxic T-cells, helper T-cells and suppressor T-cells.
(B) These originate in lymphoid tissues.
(C) They scavenge damaged cells and cellular debris.
(D) These are produced in thyroid. [AIPMT 2003]
74. Which of these is most infectious disease?
(A) Cough and cold (B) Malaria
(C) AIDS (D) Hepatitis-B [AIPMT 2001]
75. Small proteins produced by vertebrate cells naturally in response to viral infections and which inhibit multiplication of viruses are called:
(A) Interferons (B) Immunoglobulins
(C) Lipoproteins (D) Anti-toxins [AIPMT 2000, 1999, 96]
76. Vaccines are:
(A) monoclonal antibodies
(B) curative medicines
(C) treated bacteria or viruses or one of their proteins
(D) MHC (major histocompatibility complex) proteins [AIPMT 1999]
77. During blood typing, agglutination indicates that the:
(A) RBC carry certain antigens
(B) RBC carry certain antibodies
(C) Plasma contains certain antigens
(D) Plasma contains certain antibodies [AIPMT 1999]
78. In mammals, histamine is secreted by:
(A) Mast cells (B) Lymphocytes
(C) Fibroblasts (D) Histocytes [AIPMT 1998]
79. If a person shows production of interferons in his body, the chances are that he has got an infection of:
(A) Tetanus (B) Typhoid
(C) Malaria (D) Measles [AIPMT 1997]
80. Interferons are:
(A) Complex proteins (B) Antibacterial proteins
(C) Antiviral proteins (D) Anticancer proteins [AIPMT 1996]
81. Passive immunity was discovered by:
(A) Robert Koch (B) Emil von Behring
(C) Edward Jenner (D) Louis Pasteur [AIPMT 1996]
82. Hypersensitivity to an allergen is associated with:
(A) aberrant functioning of the immune mechanism
(B) increase in ambient temperature
(C) age of the individual
(D) food habits [AIPMT 1996]
83. The disease caused due to an allergic reaction is:
(A) Enteric fever (B) Hay fever
(C) Goitre (D) Skin cancer [AIPMT 1995]
84. A cell coded protein formed in response to infection with most animal viruses is:
(A) Histone (B) Antibody
(C) Antigen (D) Interferon [AIPMT 1994]
85. Obstacle to large scale transplantation of organs is:
(A) lack of effective surgical techniques
(B) religious or ethnic considerations
(C) immunological rejection of foreign bodies
(D) insufficiency of organ donors [AIPMT 1994]
86. Cells involved in immune mechanism are:
(A) Erythrocytes (B) Lymphocytes
(C) Eosinophils (D) Thrombocytes [AIPMT 1993]
87. The antibodies are:
(A) germs (B) carbohydrates
(C) proteins (D) lipids [AIPMT 1991]

7.3. AIDS

88. Which of the following is correct regarding AIDS causative agent HIV?
(A) HIV is an enveloped virus containing one molecule of single-stranded RNA and one molecule of reverse transcriptase.
(B) HIV is an enveloped virus that contains two identical molecules of single-stranded RNA and two molecules of reverse transcriptase.
(C) HIV is an unenveloped retrovirus.
(D) HIV does not escape but attacks the acquired immune response. [NEET Phase-II 2016]
89. Which of the following virus is not transferred through semen of an infected male?
(A) Hepatitis-B virus
(B) Human immunodeficiency virus
(C) Chikungunya virus
(D) Ebola virus [AIPMT Cancelled 2015]
90. HIV that causes AIDS, first starts destroying:
(A) B-lymphocytes
(B) leucocytes
(C) helper T-lymphocytes
(D) thrombocytes. [AIPMT Cancelled 2015]

91. At which stage of HIV infection does one usually show symptoms of AIDS?

- (A) Within 15 days of sexual contact with an infected person.
- (B) When the infected retrovirus enters host cells.
- (C) When HIV damages large number of helper T-lymphocytes.
- (D) When the viral DNA is produced by reverse transcriptase. [AIPMT 2014, Screening 2011]

92. A certain patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome. Which diagnostic technique will you recommend for its detection?

- (A) MRI (B) Ultrasound
- (C) WIDAL (D) ELISA

[AIPMT Screening 2011]

93. Which one of the following statement is correct with respect to AIDS?

- (A) The HIV can be transmitted through eating food together with an infected person.
- (B) Drug addicts are least susceptible to HIV infection.
- (C) AIDS patients are being fully cured cent per cent with proper care and nutrition.
- (D) The causative HIV retrovirus enters helper T-lymphocytes thus reducing their numbers.

[AIPMT Screening 2010]

94. The cells in the human body invaded by the Human Immuno-Deficiency Virus (HIV) is:

- (A) B-cell (B) T-helper cells
- (C) Macrophage (D) Erythrocyte

[AIPMT 2006, 1999]

95. AIDS is caused by HIV that principally infects:

- (A) all lymphocytes (B) activator B-cells
- (C) cytotoxic T-cells (D) T₄ lymphocytes.

[AIPMT 2005]

96. ELISA is used to detect viruses where the key reagent is:

- (A) RNase (B) Catalase
- (C) DNA probe (D) Alkaline phosphatase

[AIPMT 2003]

97. Human Immunodeficiency Virus (HIV) has a protein coat and a genetic material which is:

- (A) Single stranded DNA
- (B) Single stranded RNA
- (C) Double stranded RNA
- (D) Double stranded DNA

[AIPMT 1998]

7.4. Cancer

98. Now-a-days it is possible to detect the mutated gene causing cancer by allowing radioactive probe to hybridise its complimentary DNA in a clone of cells, followed by its detection using autoradiography because:

- (A) mutated gene partially appears on a photographic film.
- (B) mutated gene completely and clearly appears on a photographic film.
- (C) mutated gene does not appear on a photographic film as the probe has no complementarity with it.
- (D) mutated gene does not appear on photographic film as the probe has complementarity with it.

[NEET 2021]

99. Which one of the following is not a property of cancerous cells, whereas the remaining three are?

- (A) They compete with normal cells for vital nutrients.
- (B) They do not remain confined in the area of formation.
- (C) They divide in an uncontrolled manner.
- (D) They show contact inhibition.

[AIPMT Screening 2012]

100. Which one of the following technique is safest for the detection of cancer?

- (A) Magnetic Resonance Imaging (MRI)
- (B) Radiography (X-ray)
- (C) Computed Tomography (CT)
- (D) Histopathological Studies

[AIPMT Mains 2010]

101. Which one of the following statements is correct?

- (A) Patients, who had undergone surgery are given cannabinoids to relieve pain.
- (B) Benign tumours show the property of metastasis.
- (C) Heroin accelerates body functions.
- (D) Malignant tumours may exhibit metastasis.

[AIPMT Screening 2009]

102. Which of the following statement is not true for retroviruses?

- (A) Retroviruses carry genes for RNA-dependent DNA polymerase.
- (B) Retroviruses are causative agents for certain kinds of cancer in man.
- (C) The genetic material in mature retroviruses is RNA.
- (D) DNA is not present at any stage in the life cycle of retroviruses.

[AIPMT 2004]

103. Cancer cells are more easily damaged by radiation than normal cells because they are:

- (A) starved of mutation
- (B) undergoing rapid division
- (C) different in structure
- (D) non-dividing.

[AIPMT 2004]

104. Carcinoma refers to:

- (A) malignant tumours of the connective tissue
- (B) malignant tumours of the skin or mucous membrane
- (C) malignant tumours of the colon
- (D) benign tumours of the connective tissue.

[AIPMT 2003]

105. Which of the following is used in the treatment of thyroid cancer?

- (A) I_{131}
- (B) U_{238}
- (C) Ra_{224}
- (D) C_{14}

[AIPMT 2002]

106. Reason of lung cancer is:

- (A) cement factory
- (B) coal mining
- (C) calcium fluoride
- (D) bauxite mining

[AIPMT 2001]

107. Which of the following will be curable in next two decades?

- (A) Poliomyelitis
- (B) Cancer
- (C) Tuberculosis
- (D) None of these

[AIPMT 1997]

108. Retroviruses are implicated as a cause for cancer in humans because they:

- (A) carry gene for reverse transcriptase
- (B) may carry cellular proto-oncogenes in their genome
- (C) may carry v-oncogenes in their genome
- (D) carry single stranded RNA as their genetic material

[AIPMT 1996]

109. Sarcoma is a cancer of:

- (A) Epithelial tissue
- (B) Endodermal tissues
- (C) Mesodermal tissue
- (D) Blood

[AIPMT 1994]

7.5. Drugs and Alcohol Abuse

110. Match List I with List II:

List I	List II
(a) Cocaine	(i) Effective sedative in surgery
(b) Heroin	(ii) <i>Cannabis sativa</i>
(c) Morphine	(iii) <i>Erythroxylum</i>
(d) Marijuana	(iv) <i>Papaver somniferum</i>

Choose the correct answer from the options given below:

- | | | | |
|-----------|-------|-------|------|
| (a) | (b) | (c) | (d) |
| (A) (i) | (iii) | (ii) | (iv) |
| (B) (ii) | (i) | (iii) | (iv) |
| (C) (iii) | (iv) | (i) | (ii) |
| (D) (iv) | (iii) | (i) | (ii) |

[NEET 2024]

111. Match List I with List II.

List I	List II
(a) Heroin	(i) Effect on cardiovascular system

(b) Marijuana	(ii) Slow down body function
(c) Cocaine	(iii) Painkiller
(d) Morphine	(iv) Interfere with transport of dopamine

Choose the correct answer from the options given below:

- | | | | |
|-----------|-------|-------|-------|
| (a) | (b) | (c) | (d) |
| (A) (iv) | (iii) | (ii) | (i) |
| (B) (iii) | (iv) | (i) | (ii) |
| (C) (ii) | (i) | (iv) | (iii) |
| (D) (i) | (ii) | (iii) | (iv) |

[NEET 2023]

112. Identify the incorrect pair.

- (A) Alkaloids — Codeine
- (B) Toxin — Abrin
- (C) Lectins — Concanavalin A
- (D) Drugs — Ricin

[NEET 2021]

113. Coca alkaloid or cocaine is obtained from:

- (A) *Atropa belladonna*
- (B) *Datura*
- (C) *Papaver somniferum*
- (D) *Erythroxylum coca*

[NEET Odisha 2019]

114. Drug called 'Heroin' is synthesised by:

- (A) Acetylation of morphine
- (B) Glycosylation of morphine
- (C) Nitration of morphine
- (D) Methylation of morphine

[NEET National 2019]

115. Which part of poppy plant is used to obtain the drug Smack?

- (A) Roots
- (B) Latex
- (C) Flowers
- (D) Leaves

[NEET 2018]

116. Which one of the following fungi contains hallucinogens?

- (A) *Morchella esculenta*
- (B) *Amantia muscaria*
- (C) *Neurospora sp.*
- (D) *Ustilago sp.*

[AIPMT 2014]

117. Which is the particular type of drug that is obtained from the plant whose one flowering branch is shown below?



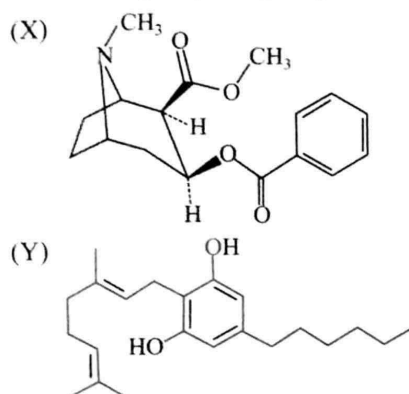
- (A) Hallucinogen
- (B) Depressant
- (C) Stimulant
- (D) Pain-killer

[AIPMT 2014]

118. Which one of the following is a hallucinogenic drug?
 (A) Caffeine
 (B) Morphine
 (C) Lysergic acid diethylamide
 (D) Opium [NEET Karnataka 2013]

119. Cirrhosis of liver is caused by the chronic intake of:
 (A) opium (B) alcohol
 (C) tobacco (chewing) (D) cocaine.
 [AIPMT Screening 2012]

120. Identify the molecules (X) and (Y) shown below and select the right option giving their source and use:



	Molecule	Source	Use
(A)	X : Cocaine	<i>Erythroxylum coca</i>	Accelerates the transport of dopamine
(B)	Y : Heroin	<i>Cannabis sativa</i>	Depressant and slows down body functions
(C)	Y : Cannabinoid	<i>Atropa belladonna</i>	Produces hallucinations
(D)	X : Morphine	<i>Papaver somniferum</i>	Sedative and pain killer

[AIPMT Mains 2012]

121. Select the correct statement from the ones given below.
 (A) Barbiturates when given to criminals make them tell the truth.
 (B) Morphine is often given to persons who have undergone surgery as a pain killer.
 (C) Chewing tobacco lowers blood pressure and heart rate.
 (D) Cocaine is given to patients after surgery as it stimulates recovery. [AIPMT Screening 2010]

122. Which one of the following depresses brain activity and produces feelings of calmness, relaxation and drowsiness?

- (A) Morphine (B) Valium
 (C) Amphetamines (D) Hashish. [AIPMT 2005]

123. Which one of the following pair is not correctly matched?

- (A) *Streptomyces* – Antibiotic
 (B) *Serratia* – Drug addiction
 (C) *Spirulina* – Single cell protein
 (D) *Rhizobium* – Biofertiliser [AIPMT 2004]

124. Which one of the following is a correct match?

- (A) Cocaine – Opiate narcotic
 (B) Reserpine – Tranquilizer
 (C) Bhang – Analgesic
 (D) Morphine – Hallucinogenic [AIPMT 2001]

125. L.S.D. is:

- (A) Stimulant
 (B) Hallucinogenic
 (C) Tranquilizer
 (D) Sedative [AIPMT 2001]

126. The use of *Cannabis* products (bhang, ganja, charas, marijuana or hashish) causes:

- (A) stimulates the nervous system and increases alertness and activity
 (B) depression of brain activity and feeling of calmness
 (C) suppresses brain function and relieves pain
 (D) alter thoughts, perceptions and feelings

[AIPMT 1997]

127. The alkaloid ajmalicine is obtained from:

- (A) *Papaver* (B) Sarpagandha
 (C) *Atropa* (D) *Curcuma* [AIPMT 1995]

128. Opiate narcotic is:

- (A) bhang (B) charas
 (C) heroin (D) nicotine. [AIPMT 1993]

129. Analgesic drugs:

- (A) Relieve pain (B) Relieve fatigue
 (C) Cause pain (D) Form tissues

[AIPMT 1990]

SOLUTIONS

1. (B) Common cold is caused by a group of viruses called rhinoviruses. They infect the nose and respiratory passage but not the lungs. *Plasmodium* parasites reproduce asexually in the RBCs, bursting it. The

rupture of RBCs is associated with release of a toxic substance, haemozoin, which is responsible for the chills and high fever recurring every three to four days. Widal test is a quick procedure to diagnose the

typhoid fever caused by bacterium *Salmonella typhi*. Dust mites are allergens, which are responsible for producing an immune response to certain antigens present in the environment.

2. (A) Typhoid is caused by bacterium *Salmonella typhi*. Leishmaniasis (Kala azar) is caused by protozoan parasites from the genus *Leishmania*. Ringworm is caused by many fungi belonging to the genera *Microsporium*, *Trichophyton* and *Epidermophyton*. Elephantiasis or filariasis is caused by the nematode *Wuchereria* (*W. bancrofti* and *W. malayi*).
3. (C) Ringworm is a fungal infection of the skin caused by species of *Trichophyton*. Filariasis is a parasitic disease caused by the thread-like filarial nematode worm, *Wuchereria bancrofti*. Malaria is a parasitic disease caused by *Plasmodium* parasites and transmitted by the *Anopheles* mosquito. Pneumonia is an infection that inflames the air sacs in one or both lungs and can be caused by various microorganisms, including bacteria such as *Haemophilus influenzae*.
4. (B) Filariasis – *Wuchereria bancrofti*
Amoebiasis – *Entamoeba histolytica*
Pneumonia – *Haemophilus influenzae*
Ringworm – *Trichophyton*
5. (A) Filariasis is caused by *Wuchereria bancrofti*. Typhoid is caused by *Salmonella typhi*. Malaria is caused by *Plasmodium vivax*.
6. (A) The infectious stage of *Plasmodium* that enters the human body is sporozoites, present in salivary glands of *Anopheles* mosquito. The sporozoites grow and multiply in the liver to become merozoites, which invade the erythrocytes to form trophozoites, schizonts and gametocytes and hence the symptoms of malaria are produced.
7. (B) *Salmonella typhi* is the causative agent for typhoid fever. It is a bacterial infection that leads to high fever, diarrhoea and vomiting. Typhoid or enteric fever has the incubation period for 1 to 2 weeks and is mainly transmitted through contaminated food and water. Widal test is the confirmatory test for typhoid. It is based on antigen-antibody reaction. Widal test was developed by Georges Ferdinand Widal in 1896. It helps to detect the presence of *Salmonella* antibodies in the patient's serum.
8. (C) The disease filariasis is caused by filarial worms *Filaria bancrofti* or *Wuchereria bancrofti* and *Wuchereria malayi*. It is transmitted by mosquitoes. The adult worms obstruct the lymph vessels and cause inflammation. This causes increased amount of protein to enter the area and excessive growth of connective tissue. These cause enlargement of arms, legs, scrotum, epididymis, etc. Extreme

enlargement of legs is known as elephantiasis. Ringworm is a common fungal skin infection and can cause a circular rash (shaped like a ring) that is usually red and itchy. Ascariasis is an infection of the small intestine caused by *Ascaris lumbricoides*. Amoebiasis or amoebic dysentery, is an infection caused by *Entamoeba histolytica*.



Related Theory

→ *Filaria bancrofti* is digenetic involving two hosts, man and female *Culex* mosquito. In the mosquito gut the microfilariae larvae undergo two moulting. It is the infective stage which requires two week's time for development. Then they migrate to the labium of mosquito when the infected mosquito bites a healthy person the microfilariae get under the skin and later migrate into the lymphatic system of man.

9. (A) Cholera is caused by bacteria *Vibrio cholerae* and tetanus is caused by bacteria *Clostridium tetani*. Typhoid is caused by *Salmonella typhi* bacteria. Small pox is caused by Variola virus. Mumps is caused by paramyxovirus. Herpes is caused by Herpes simplex virus (HSV). Influenza or flu is caused by influenza viruses.



Related Theory

→ Tetanus is an infection caused by bacteria called *Clostridium tetani*. When the bacteria invade the body, they produce a poison (toxin) that causes painful muscle contractions. It is often called as Lockjaw as it causes a person's neck and jaw muscles to lock, making it hard to open the mouth or swallow.

10. (A) Once the trophozoites of *Entamoeba histolytica* are excysted in the terminal ileum region, they colonize the large intestine bowel, remaining on the surface of the mucus layer and feeding on bacteria and food particles.
11. (A) Ascariasis is caused by contaminated water, fruits, vegetable, etc. Consumption of uncooked pork causes trichinosis. Mosquito bite causes malaria, due to *Plasmodium vivax*. Tse tse fly causes trypanosomiasis.
12. (D) *Wuchereria bancrofti* is a dreadful endoparasite of man; adults worms obstruct the lymphatic vessels and lymph nodes in human, usually occurs in lower extremities.



Related Theory

→ *Wuchereria bancrofti*'s life history is digenetic, as it involves a primary host- humans and secondary host- the blood-sucking female mosquitoes, *Culex*, *Aedes* or *Anopheles*. During heavy infection they block the lymphatic vessels and glands causing lymphatic obstruction so that lymph cannot get back to the circulatory system. Thus, accumulation of lymph in the affected organs swell abnormally leading to lymphoedema.

13. (A) During sporogonic cycle in female mosquito gut, the microgametes penetrate the macrogametes generating zygotes. The zygotes in turn become motile and elongated and are called ookinets which

invade the midgut wall of the mosquito to form oocysts. The oocysts grow, rupture, and release sporozoites in salivary glands. Sporozoites, schizont and merozoite stages are found in liver of humans, while Merozoites infect red blood cells to form trophozoites which mature to form more merozoites. Some parasites differentiate into sexual erythrocytic stages i.e., microgametocytes and macrogametocytes stages.



Related Theory

- When the red blood cells are destroyed by the merozoites, it releases a toxin that causes bone-shaking chills and fever. Extreme cold chills and fever are classic symptoms of malaria in human beings.



Caution

- Students should remember that the asexual reproduction in *Plasmodium* life cycle occurs in humans, while sexual reproduction occurs in *Anopheles* gut.

- (D) Widal test is the diagnostic serological test for typhoid fever. Malaria test include microscopic examination of blood smears for the presence of parasites. Diabetes mellitus test includes blood sugar test. HIV/AIDS is assessed by ELISA (Enzyme Linked Immuno Sorbent Assay).



Related Theory

- ELISA works on the principle that specific antibodies bind the target antigen and detect the presence and quantity of antigens binding (similar to blood grouping).

- (C) *Plasmodium* and *Trypanosoma* are protozoan parasite while *Cuscuta* is angiosperm parasite.
- (D) When mature oocysts rupture, the sporozoites are liberated into the haemocoel of the mosquito. Being motile, the sporozoites penetrate the salivary glands of the mosquito. When the female *Anopheles* mosquito bites a healthy person, the sporozoites are injected into his/her blood along with saliva.



Related Theory

- When the *Anopheles* mosquito takes a blood meal on another human, anticoagulant saliva is injected together with the sporozoites, which migrate to the liver, thereby beginning a new cycle.
- (C) The pathogen *Microsporium* responsible for ringworm disease in humans belongs to the same kingdom of organisms as that of *Rhizopus* which is a mould, because both *Microsporium* and *Rhizopus* belong to kingdom Fungi. The rest of the pathogens which belong to the group of helminthes.
 - (B) *Streptococcus pneumoniae* is a Gram-positive coccus and causes pneumococcal pneumonia. The route of infection is in the form of aerosol droplets. Typhoid is caused by *Salmonella typhi* and is spread through contaminated food and water. Elephantiasis

(or lymphatic filariasis) is caused by *Wuchereria bancrofti* and is spread by *Culex* mosquito bite. Malaria is caused by *Plasmodium vivax* and spread through female *Anopheles* mosquito.



Mnemonics

- The Bacterial diseases can be easily remember by this mnemonic:
Bachelor of Physio Therapy
B – Bacterial
P – Pneumonia
T – Typhoid

- (A) Antibiotics are substances which inhibits the growth or destroys bacteria. Common cold is caused by influenza viruses. Antibiotics don't treat viral infections, but there are a few antiviral drugs used to treat certain viral infections.



Related Theory

- Anti-bacterial action generally falls within one of the four mechanisms- which involve the inhibition or regulation of enzymes involved in cell wall biosynthesis, nucleic acid metabolism and repair, or protein synthesis, and disruption of membrane structure.

- (B) Ringworm is a contagious fungal infection caused by common mould-like parasites that live on the cells in the outer layer of the skin. It is often spread by direct skin-to-skin contact with an infected person. Ringworm is typically scaly and may be red and itchy. The treatment of Ringworm includes antifungal medication.
- (B) Common cold is caused by *Rhinovirus* and AIDS is caused by HIV virus. Ringworm is a fungal infection. Dysentery is caused by bacteria called *Shigella*. Typhoid fever is caused by *Salmonella typhi* bacteria. Tuberculosis is caused by a bacterium called *Mycobacterium tuberculosis*.



Related Theory

- Paratyphoid fever is a life-threatening illness caused by *Salmonella paratyphi* bacteria.

- (D) Amoebiasis is caused by *Entamoeba histolytica*. Their prevention include use of only sterilized food and water.
Diphtheria is caused by *Corynebacterium diphtheriae*. The symptoms are fever, sore throat, severe damage to heart, nerve cell and adrenal glands. The vaccine DPT is used for diphtheria, pertussis and tetanus. Cholera is caused by *Vibrio cholerae*, a Gram-negative bacterium. It spreads by faecal contamination. The dehydration and loss of mineral salts can cause death. It is treated by use of oral rehydration therapy. Syphilis is a STD, caused by *Treponema pallidum*.
- (D) Leishmaniasis is a vector borne disease that is transmitted by sand flies and caused by *Leishmania donovani*.

24. (B) *Salmonella typhi* causes typhoid fever. It is a bacterial infection that leads to high fever, continuous headache, diarrhoea and vomiting. The incubation period is about two weeks. TB or Tuberculosis is caused by *Mycobacterium tuberculosis*. The causative agent for tetanus is *Clostridium tetani*. Polio is caused by polio virus. Polio is being eradicated by polio vaccine. TB and tetanus are bacterial diseases and can be treated by antibiotics.

25. (C) Cholera results in severe diarrhoea, vomiting and watery stool. This condition leads to dehydration of the body. Toxins secreted by *Vibrio cholera* causes continuous activation of enzyme adenylate cyclase of intestinal epithelial cells. The increase in cAMP leads to continuous secretion of chloride ions, bicarbonate ions and water into the intestinal lumen. It requires immediate attention and treatment otherwise it could lead to death in a few hours due to severe dehydration causing electrolyte imbalance. Saline administration aids in sodium potassium pump through which water in the cells is restored. Saline drip also symport glucose along with sodium inside the cells, which will give energy.

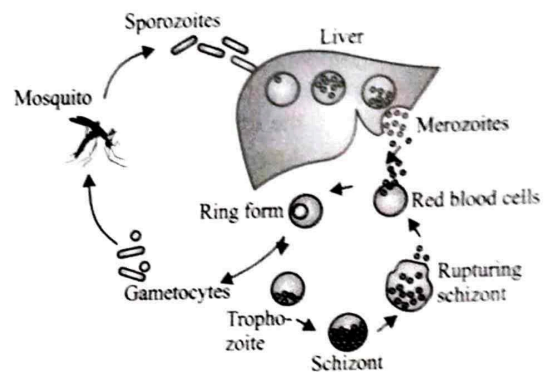
26. (D) *Clostridium botulinum* is an anaerobic soil living bacteria. Botulism is an uncommon and possibly deadly disease brought about by a toxin botulinum created by the bacterium *Clostridium botulinum*. The blood stream takes toxin in the body and it blocks the release of acetylcholine at the neuromuscular junction.

27. (A) Typhoid or enteric fever is caused by *Salmonella typhi*. The symptoms are constantly high fever with severe headache due to the infection of the intestine. *Shigella* is a bacterial genus that causes shigellosis or bacillary dysentery. *Escherichia coli* is a facultative anaerobe found in the intestine of human beings. *Giardia* is a flagellate protozoan that causes giardiasis, a prolonged diarrhoeal disease in humans.

28. (B) Small pox caused by Variola virus, is an acute, highly communicable disease which has been eradicated not only from India but from the whole world. Mass vaccination campaign undertaken by the government of India helped to eradicate the disease.

29. (A) Rabies and mumps are viral diseases. Rabies is caused by rabies virus and is a deadly disease. Mumps is an infectious disease causing fever, painful swelling of the parotid glands that lies just below the ear lobe and difficulty in opening the mouth. It is caused by paramyxovirus. Cholera, tuberculosis, typhoid and tetanus are bacterial diseases. AIDS is a viral disease. Syphilis is caused by bacteria.

30. (C) Schizogont is the asexual phase in the life cycle of a *Plasmodium* that occurs in human erythrocytes and liver cells. The sexual phase of life cycle of *Plasmodium* occurs in the mosquito vector. Sporozoites enter the human body through the bite of an infected female *Anopheles* mosquito. They reach the liver cells through the blood stream and divide asexually in the liver cells, producing thousands of merozoites which burst the cells and are released into the blood and penetrates the erythrocytes. Inside the erythrocytes, the merozoites grow and are now known as trophozoites. Trophozoites undergo asexual reproduction in RBCs to produce schizonts, bursting the RBCs and causing the cycles of fever and chills.



31. (D) *Plasmodium* is transmitted through female *Anopheles* mosquito to human. The most famous dwelling place for the mosquito female *Anopheles* is water or moist places like ponds and puddles. Ponds and puddles are the breeding places of the mosquito larva. Destruction of ponds and puddles will cause destruction in the number of malarial pathogens and the vector.

32. (D) *Wuchereria bancrofti* causes filariasis or elephantiasis. It is a parasitic filarial nematode worm. The disease is spread by a mosquito vector. The causative agent for malaria is *Plasmodium*, while *Anopheles* is the causative agent for the transmission of the disease. Sleeping sickness is a parasitic disease in humans and animals caused by *Trypanosoma* and transmitted by the vector tsetse fly. Kala-azar or leishmaniasis is caused by *Leishmania* and is transmitted by sand fly. *Glossina* is a genus which includes all the species of the tsetse flies.

33. (A) *Plasmodium* (malarial parasite) has two hosts. The first host is female *Anopheles* mosquito: Here the sexual phase of the malarial parasite occurs and it is considered the definitive host of malarial parasite. The second host is human beings: Here the asexual phase of malarial parasite occurs. It is considered as the intermediate host.

34. (A) Charles Laveran (1880) discovered *Plasmodium* in RBC's of human beings and concluded that malaria is caused by *Plasmodium vivax*.

54. (B) Autoimmune response occurs when the immune system is unable to distinguish between self and non-self cells. Graft rejection occurs by immune cells, which identify the foreign graft cell and hence attacks them. Active immunity occurs when our own immune system is responsible for protecting us from a pathogen. Allergic response occurs due to hypersensitive immune reaction to a substance that normally is harmless or would not cause an immune response in everyone.

55. (C) Asthma is an allergic reaction characterised by spasm in the bronchi muscles because of the effect of histamine released by mast cells. The symptoms include coughing, wheezing, tightness of chest. Mast cells secrete the autocoid mediators histamine, prostaglandin and leukotriene, which induces bronchoconstriction, mucus secretion and mucosal edema.



Related Theory

→ Prostaglandin and leukotrienes are potent eicosanoid lipid mediators derived from phospholipase-released arachidonic acid that are involved in various homeostatic biological functions and inflammations.

56. (C) Tuberculosis – Attenuated a harmless strain of *Mycobacterium*
 Whooping cough – Killed strain of bacteria *Bordetella pertussis*.
 Diphtheria – Inactivated toxin
 Polio – Attenuated strain of harmless virus.

57. (C) The most abundant immunoglobulin in human milk is IgA, which represents over 90% of milk antibodies. However, IgG and IgM are also present, but in much lower concentrations.



Related Theory

→ The primary immunoglobulin in cow milk is IgG, whereas the primary immunoglobulin in human (colostrum) is IgA. Colostrum (or first milk), produced by all mammals during pregnancy is higher in both fat and protein than regular milk. Its composition is similar to that of blood and differs significantly from milk.

58. (A) Chemically, antibodies are globular proteins, belong to a class of serum proteins, which are called gamma globulins. Thus, the antibodies are also known as immunoglobulins and are produced by the lymphocytes. Hence, to confirm the deficiency of antibodies in a person, serum globulins will be tested.



Related Theory

→ Blood proteins, also termed plasma proteins, are proteins present in blood plasma. 90-92% of plasma is water and proteins contribute 6-8% of it. Fibrinogen, globulins and

albumins are the major proteins. Fibrinogens are needed for clotting or coagulation of blood. Globulins primarily are involved in defense mechanisms of the body and the albumins help in osmotic balance.

59. (A) T-lymphocytes mediate cell-mediated immunity, while B-lymphocytes mediate humoral immunity. Erythrocytes are red blood cells, which function in carrying oxygen. Thrombocytes or platelets functions in blood clotting at the site of injury.

60. (A) Certain types of leucocytes (WBC) in our body like Polymorpho-nuclear leucocytes (PMNL-neutrophils) and monocytes are example of cellular barriers. Anti-tetanus and anti-snake bite injections – passive immunity.

Saliva in mouth and tears in eyes – physiological barriers.

Mucus coating of epithelium, lining the urogenital tract and HCl in the stomach – physical barriers.

61. (B) Colostrum is recommended for new born because it is rich in antibodies. Chikungunya is caused by a virus, not bacterium. Beer is manufactured by the fermentation of barley.



Related Theory

→ Colostrum contains bioactive components with immune enhancing properties: Immunoglobulins, lactoferrin, lysozyme, lactoperoxidase, α -lactalbumin, β -lactoglobulin, or fat that carries important vitamins and polyunsaturated fatty acids. It provide the newborn with immune protection against pathogens and to boost its physiological performance, growth, and development.

62. (A) In artificially acquired passive immunity, preformed antibody in an immune serum is introduced into the body by injection in the case of anti-venom used to treat snake bites. The body does not produce any antibodies. Antibody is a protein molecule having two light chain and two heavy chain. B-cells recognize and bind antigens and may differentiate to memory cell or plasma cells (produce antibody). T-cells causes transplant rejection.

63. (A) B and T-lymphocytes function in coordination against pathogen, and produce antibodies. If functioning of any one of them is damaged, then antibodies production will be hampered. Active immunity is caused by vaccination (which includes injection of dead/inactivated/attenuated pathogens into the body). Injection of antivenom against snake bite cause passive immunisation. Hepatitis B vaccine prepared from yeast (*Saccharomyces cerevisiae*), using recombinant DNA technology.

64. (C) Synthetic capsular polysaccharide material are available for treatment of pneumonia caused by *Streptococcus pneumoniae*, *Hemophilus influenzae* and for meningitis caused by *Neisseria meningitidis*. They are not available for plague.

65. (A) Histamine is mostly responsible for allergic reactions. Anti-histamines block the action of histamines. Steroids such as corticosteroids are used in the treatment of allergic reactions by reducing inflammation associated with allergies. They prevent and treat nasal stuffiness, sneezing, and itchy, runny nose due to seasonal or year-round allergies. They can also decrease inflammation and swelling from other types of allergic reactions.

Related Theory

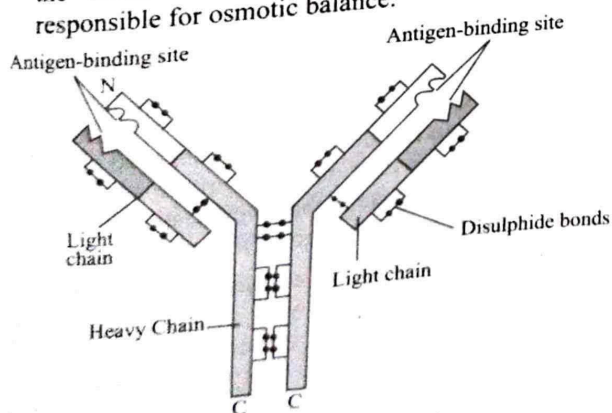
— An allergy is an immunological hypersensitivity mediated by immunoglobulin E antibody (IgE). It is not related to any disease or infections. Allergies can be seen in many organs, but most commonly, they affect the skin and mucous membranes.

66. (D) Tetanus toxoid is a vaccine consisting of growth products of *Clostridium tetani* with formaldehyde serving as an active immunising agent. Hence is a weakened germ.

Related Theory

— Tetanus is a disease caused by the toxin from bacteria *Clostridium tetani*. The toxin makes its way into the nervous system and causes muscle spasms and rigid muscles.

67. (C) Globulins contained in human blood plasma are primarily involved in the defence mechanisms of the body. Globulins are proteins found in the blood plasma. When an antigen attacks the body, an antibody is produced by the immunoglobulins. These antibodies fight against the antigen. Different types of antibodies are produced in our body by different immunoglobulins like IgA, IgM, IgE and IgG. Each antibody molecule has two small light chains and two large heavy chains in a Y-shaped structure. Anti-coagulants are blood thinners, they prevent the formation of blood clots. Haemoglobin is responsible for the transport of oxygen in the blood. Electrolytes and non-electrolytes are responsible for osmotic balance.



Structure of an Antibody Molecule

68. (C) **Physiological barriers:** Mucus, low stomach pH and bacteriolytic lysozyme in tears, saliva and other secretions.

Cellular barriers: Phagocytes such as neutrophils, monocytes, macrophages; and T-cells, NK-cells, etc.

Cytokine barriers: Virus-infected cells secrete proteins cell interferons which protect non-infected cells from further viral infection.

Physical barriers: Tight junctions in the skin, epithelial and mucous membrane surfaces, mucus itself.

69. (D) Asthma is a respiratory disease that occurs due to allergy. It is caused by foreign allergens or dust particles, pollen grains or animal dander present in the environment. In certain seasons, pollens are present in the air in large amount. Pollen grains of many species are responsible for severe allergies and bronchial affliction. In some people it often leads to chronic respiratory disorders like asthma and bronchitis.

70. (A) Antibodies, also referred to as immunoglobulins, are glycoproteins naturally produced in response to invading foreign particles (antigens) such as microorganisms and viruses. They play a critical role in the immune system's defense against infection and disease.

71. (B) Damage to thymus in a child may lead to loss of cell mediated immunity. The thymus is the major gland of the immune system. It is responsible for the production of T-lymphocytes, a type of white blood cell (WBC) responsible for cell mediated immunity. Cell mediated immune response is very essential to fight against microbial infections. It is also very important to fight against cancer and for protection against auto-immune diseases like allergies and rheumatoid arthritis.

72. (B) Passive immunity can occur naturally, such as when an infant receives a mother's antibodies through the placenta or breast milk, or artificially, such as when a person receives antibodies in the form of an injection (gamma globulin injection).

Related Theory

— A vaccine may also confer passive immunity by providing antibodies or lymphocytes already made by an animal or human donor. Vaccines are usually administered by injection (parenteral administration), but some are given orally or even nasally (in the case of flu vaccine).

73. (A) T-cells originate in the bone marrow and mature in the thymus. In the thymus, T-cells multiply and differentiate into helper, regulatory, or cytotoxic T-cells or become memory T-cells. T-cells are responsible for cell-mediated immunity. B-cells, which mature in the bone marrow, are responsible for antibody-mediated immunity.

- 74. (D)** Hepatitis-B is the most infectious disease. It affects people of all age group and has many means of transmission via blood transfusion, contaminated equipments, unsterile needles used by drug addicts or via contact or any body secretions like saliva, sweat, semen, breast milk, urine, faeces. Infection is severe, often fatal affecting the liver and is accompanied by loss of appetite, nausea, whitish stool due to lack of bile and jaundice. However, infection to a healthy person is prevented by proper vaccinations of Hepatitis-B.
- 75. (A)** Interferons are virus induced small proteins produced by cells infected with viruses. They are anti-viral in nature. It is a special defence mechanism against the viral infections. Interferons are a group of three vertebral glycoproteins (α , β and γ). Among these three, only α and β are produced within virally infected cells. These interferons synthesize an enzyme, which further inhibits the growth of viruses. Immunoglobulins are the constituents of antibodies. Lipoproteins are conjugated proteins having polypeptides in association with the lipids.
- 76. (C)** Vaccines are the preparation of antigenic proteins of pathogens or inactivated or weakened pathogens or dead attenuated form of pathogens. The antibodies produced in the body against these antigens would neutralise the pathogens causing infection. Monoclonal antibodies are man-made proteins that act like human antibodies in the immune system.
- 77. (A)** Agglutination is the process where antibodies bind to specific antigens to produce large insoluble complexes which render them harmless and facilitate their destruction by other cells of the immune system. Here, antibodies on one RBC bind to antigen on other RBCs, forming an insoluble complex.
- 78. (A)** Histamine is a nitrogenous chemical compound involved in allergic reactions. It is secreted by mast cells. Mast cells are the special cells found in the connective tissue of the skin, respiratory tract and the surrounding blood vessels.



Related Theory

→ Mast cells are directly involved in histamine secretion, but B-cells secrete antibodies that trigger the mast cell to release histamine. Mast cells also release histamine when an allergen triggers it.

- 79. (D)** Measles is a viral disease, caused by paramyxovirus (RNA virus). Hence, if a person shows production of interferons in his body, the chances are that he has got an infection of measles. Tetanus and typhoid are bacterial diseases, while malaria is a protozoan disease.

- 80. (C)** Interferons are antiviral proteins. They are virus induced proteins produced by cells infected with viruses for their defense. These interferons induce the formation of certain enzymes which inhibit viral multiplication in the host cell and protect the healthy cells from further viral infection.
- 81. (C)** Edward Jenner discovered passive immunity against chickenpox. In passive immunity, readymade antibodies (γ -globulins) are directly given to protect the body against foreign agents. These readymade antibodies are obtained from the human or animal serum, who have already recovered from an infectious disease and are injected into the human body to develop immunity. Robert Koch gave body to develop immunity. Robert Koch's postulates that helps in determining whether a given microorganism is pathogenic or not. Emil von Behring, a German physiologist received Noble Prize in 1901 in physiology or medicine. Louis Pasteur gave Pasteurization effect. He experimentally proved that all life originated from pre-existing life.
- 82. (A)** Allergy is the exaggerated response of the immune system to certain antigens present in the environment. It means all kinds of unwanted reactions or manifested in the body due to the hypersensitivity of the allergens (the substance against which the immune response is produced). So, allergy is the aberrant functioning of the immune mechanism. Allergic reactions occur due to the release of chemicals like histamine and serotonin from the mast cells.
- 83. (B)** Hay fever, also known as allergic rhinitis, is an allergic reaction, which occurs due to the hypersensitivity of some fungal spores, dust, animal fur, etc. It has symptoms similar to bronchial asthma along with running nose, sneezing, watery and itchy eyes, skin rash and also with increase in eosinophils (white cells) of blood.
- 84. (D)** A cell coded protein formed in response to infection with most animal viruses is an interferon. Interferon is an anti-viral protein secreted by the virus infected cells. The latter is released from the infected cell and reaches the nearby non-infected cells and makes them resistant to viral infections. It is a special defence system that works specially against viral infections. It has no effect on other microorganisms.
- 85. (C)** The major obstacle to large scale transplantation of organs is that the body is able to differentiate 'self' and 'non-self' i.e., the recipient body does not accept the donor's organ. Cell mediated immune response is responsible for graft rejection. The body's defence mechanism rejects the transplanted organ, and treat it as a foreign object and reacts actively. Tissue matching or blood group matching are essential before any organ transplant yet the patient has to take immune-suppressants throughout his life.

86. (B) Cells involved in immune mechanism are lymphocytes. They are the types of WBC in the vertebrate's immune system. Lymphocytes include natural killer cells, which are the cellular barriers, having a role in cell-mediated, cytotoxic innate immunity. T-cells responsible for cell mediated immunity and B-cells responsible for humoral immunity. The B lymphocytes produce an army of proteins in response to pathogens into our blood to fight with them. These proteins are called antibodies. T-cells do not secrete antibodies but help B-cells to produce them.

87. (C) Antibodies are specialized, Y-shaped proteins which bind to foreign invaders to destroy them. They bind to pathogens whether they are viruses, bacteria, fungi or parasites like a lock-and-key. They are also called the "search" battalion of the immune system as they search an enemy and marking it for destruction.

88. (B) HIV (Human Immunodeficiency Virus) is a retrovirus composed of two single-stranded RNA, 15 types of viral proteins, and along with two molecules of reverse transcriptase, all surrounded by a protein coat. HIV escapes immune system of the host, by attacking helper T-cells.

Related Theory

Human Immunodeficiency Virus (HIV) specifically attacks Helper T-cells. Without an adequate supply of Helper T-cells, the immune system cannot signal B-cells to produce antibodies or Cytotoxic T-cells to kill infected cells. When HIV has critically depleted the Helper T-cell population, the body becomes susceptible to many opportunistic infections. Recent work shows that the CD₄ and CCR₅ membrane proteins are targets for HIV infection. Thus, our memory cells are rapidly infected and destroyed in the mucus membranes of our tissues.

89. (C) Chikungunya is caused by the bite of *Aedes aegypti* mosquito, while Hepatitis-B, HIV and Ebola are STDs, transferred by the exchange of fluids like semen during sexual contact.

Caution

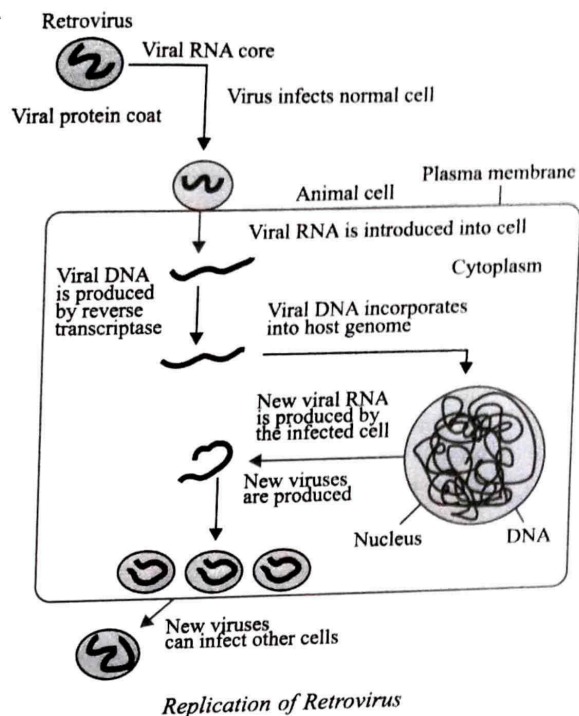
Viruses such as HIV, genital herpes, Human Papilloma Virus (HPV), Hepatitis cause STDs that cannot be cured.

90. (C) HIV infects a type of white blood cell in the body's immune system called a T-helper cell (also called a CD₄ cell).

91. (C) In AIDS, symptoms occur when HIV attacks helper T-cells, which regulate humoral and cellular immunity. The decrease in the number of helper T-cells degrades the immune system efficiency of the body.



Related Theory



Replication of Retrovirus

92. (D) The ELISA was the first screening test widely used for HIV because of its high sensitivity. ELISA (Enzyme-Linked Immunosorbent Assay) is a plate-based assay technique designed for detecting and quantifying soluble substances such as peptides, proteins, antibodies, and hormones. Other names, such as Enzyme Immuno Assay (EIA), are also used to describe the same technology.

93. (D) Human Immunodeficiency Virus (HIV) specifically attacks the CD₄ helper cell or Helper T-cells. Without an adequate supply of Helper T-cells, the immune system cannot signal B-cells to produce antibodies or Cytotoxic T-cells to kill infected cells. HIV is transmitted only by exchanging of fluids of infected person. It is never transmitted by eating together or handshakes. Drug addicts, who share needles are more susceptible to AIDS. AIDS is a incurable STD.



Related Theory

Out of the 8 Sexually transmitted infections, 4 are currently curable: syphilis, gonorrhoea, chlamydia and trichomoniasis. The other 4 are viral infections which are incurable: hepatitis B, herpes simplex virus, HIV, and human papilloma virus (HPV).

94. (B) The cells in the human body invaded by the Human Immuno-deficiency Virus (HIV) are T-helper cells or T-lymphocytes. They are affected by HIV infection, which reduces the number of helper T-lymphocytes and subsequently, reduces the immunity of the body.

by suppressing the human immune system. This leads to death caused by any secondary infection in the body because T-lymphocytes are the main cells of immune system.

95. (D) Acquired Immunodeficiency Syndrome (AIDS) is caused by Human Immunodeficiency Virus (HIV). T₄ lymphocytes are the principal target cells of HIV.

96. (D) ELISA is the Enzyme-Linked Immunosorbent Assay or Enzyme Immune Assay (EIA). The commonly used enzymes in this technique are alkaline phosphatase, β -galactosidase, horse radish peroxidase, lactoperoxidase, etc.

Catalase is not involved in ELISA. It is one of the most important anti-oxidant enzyme. It is used as a therapeutic agent in many oxidative stress-related diseases. DNA probes are used in molecular analysis of DNA and in Southern blotting. RNase or ribonucleases are RNA-degrading enzymes. They are used in molecular biology to cleave RNA within DNA and protein samples.

97. (B) HIV is a spherical, enveloped virus, which has a nucleocapsid and the genetic material is single stranded RNA. Single stranded DNA is found in Canine parovirus. The example of virus whose genetic material is double stranded DNA molecule is Cytomegalovirus and the example of virus whose genetic material is double stranded RNA molecule is Rotaviruses.

98. (C) A single stranded DNA or RNA, tagged with a radioactive molecule (probe) is allowed to hybridise to its complementary DNA in a clone of cells followed by detection using autoradiography. The clone having the mutated gene will hence not appear on the photographic film, because the probe will not have complementarity with the mutated gene.

99. (D) Contact inhibition is a powerful anticancer mechanism that is lost in cancer cells is a process of arresting cell growth when cells come in contact with each other. As a result, normal cells stop proliferating when they form a monolayer in a culture dish.

Related Theory

Cancer cells grow and divide at an abnormally rapid rate, are poorly differentiated, and have abnormal membranes, cytoskeletal proteins, and morphology. The abnormality in cells can be progressive with a slow transition from normal cells to benign tumors to malignant tumors.

100. (A) Magnetic Resonance Imaging (MRI) is a non-invasive technique that uses strong magnetic field and provides information about chemistry, metabolic and biochemical data of a tissue, without time-consuming chemical analysis can be done. Histopathological study is the invasive technique. Radiography and CT involves X-rays which are harmful.

101. (D) Malignant tumours are cancerous tumours that spread to distant sites through body fluids to develop secondary tumour by a phenomenon called metastasis. Heroin is a depressant and slows down body functions. Cannabinoids are hallucinogens. Morphine is given to patients who have undergone surgery. Benign tumors normally remain confined to their original location and do not spread to other body parts.

Related Theory

Malignant tumour first grows slowly, called the latent stage. It later grows quickly. The cancer cells go beyond adjacent tissue and enter the blood and lymph. Once this happens, they migrate to many other sites in the body, where the cancer cells continue to divide. It is metastasis. Only malignant tumours are properly designated as cancer.

102. (D) Retroviruses have an envelope enclosing the RNA genome as the genetic material. They have reverse transcriptase as an enzyme which synthesises DNA on the RNA template. Hence, they exhibit reverse transcription.

103. (B) Cancer cells multiply faster than normal cells in the body. As radiation is most harmful to quickly growing cells, radiation therapy damages cancer cells more than normal cells. This prevents the cancer cells from growing and dividing, and leads to cell death.

Related Theory

Characteristics of cancer cells:

- (1) Uncontrolled potential to divide and do not response to programmed cell death, or apoptosis.
- (2) Show metastasis i.e., they can migrate and spread to other organs and tissues by travelling through the bloodstream.
- (3) Angiogenesis is the formation of new blood vessels from existing blood vessels to meet their high oxygen demand.
- (4) Shows chromosomal abnormalities.

104. (B) Carcinoma refers to a malignant neoplasm of epithelial origin or cancer of the internal or external lining of the body. Carcinomas, malignancies of epithelial tissue, account for 80 to 90 percent of all cancer cases.

Related Theory

Carcinomas originate in the skin, lungs, breasts, pancreas, and other organs and glands. Lymphomas are cancers of lymphocytes. Leukaemia is cancer of the blood. It does not usually form solid tumours.

105. (A) External radiation therapy and radioactive iodine therapy are used to treat thyroid cancer. Radioactive iodine treatment uses a form of iodine that is radioactive to kill thyroid cells.



Related Theory

Radiation therapy may be given after surgery to kill any thyroid cancer cells that were not removed. Follicular and papillary thyroid cancers are sometimes treated with radioactive iodine (RAI) therapy. RAI is taken by mouth and collects in any remaining thyroid tissue, including thyroid cancer cells that have spread to other places in the body. Since only thyroid tissue takes up iodine, the RAI destroys thyroid tissue and thyroid cancer cells without harming other tissue.

106. (A) Lung cancer is the cancer of the epithelial tissue of lungs. The most popular cause of lung cancer is smoking. However, dry cement powder, released from the cement factories contains certain chemicals. These chemicals causes allergies of the eyes, nostrils and skin as these chemicals interact with the mucous membrane of eyes, lungs and nostrils, etc. Continuous allergy results in long term inflammation of the mucous membrane of the lungs leading to the development of cancer.
107. (B) Cancer is one of the most deadly disease in human beings. It is the major cause of death all over the world. Cell growth and differentiation in our body is highly regulated and controlled. The property of contact inhibition among the cells, regulate and control the cell growth and differentiation process. All these aspects make us hopeful that cancer may be curable in the next two decades. In case of tuberculosis and polio, mass scale government programmes are already going on to eradicate the diseases. Vaccines against polio and TB are already available in the market in the form of polio vaccine and BCG, respectively.
108. (B) Retrovirus contains single stranded RNA as their genetic material. They undergo reverse transcription with the help of enzyme, reverse transcriptase. As a result viral DNA is produced from the RNA template, after entering the host cell. Cancer is caused by an oncogenic virus; that is the acutely transforming retrovirus. Retrovirus is the cause of cancer in humans because they may carry cellular proto-oncogenes in their genome, which gets transformed into oncogenes due to some physical, chemical or biological agents that cause cancer.
109. (C) Sarcoma is a cancer of connective tissue or mesodermal tissue including bones, cartilage, fat, muscles, blood vessels and soft organs. In contrast to malignant tumors that originate from the epithelial cells and are termed as carcinoma. Sarcomas are rare in adults, accounting for about 1% of all adult cancers, but is common in children. Osteogenic sarcoma or osteosarcoma is one of the most common childhood bone cancer. Soft tissue sarcomas are more common in adults than in children.

110. (C) Coca alkaloid, or cocaine, is obtained from the coca plant *Erythroxylum coca*, native to South America. It interferes with the transport of the neurotransmitter dopamine. Heroin, commonly called smack, is chemically diacetylmorphine obtained by acetylation of morphine, extracted from the latex of the poppy plant *Papaver somniferum*. Morphine is a very effective sedative and painkiller and is very useful in patients who have undergone surgery. The flower tops, leaves, and resin of the *Cannabis sativa* plant are used in various combinations to produce marijuana.

111. (C) The correct matching of drugs and their effects are:

- (a) Heroin - (ii) Slow down body function
- (b) Marijuana - (i) Effect on cardio-vascular system
- (c) Cocaine - (iv) Interfere with transport of dopamine
- (d) Morphine - (iii) Painkiller

112. (D) Ricin and abrin are potent biological toxins that are derived from plant sources (castor beans and rosary peas, respectively).



Related Theory

Ricin is a heterodimeric type II ribosome inactivating protein (RIP). It inhibits protein synthesis by specifically and irreversibly inactivating eukaryotic 28S ribosomes.

113. (D) Coca alkaloid or cocaine is obtained from coca plant, *Erythroxylum coca*. It is a native of South America. It interferes with the transport of neuro-transmitter dopamine. Cocaine, commonly called coke or crack is a potent stimulant. It produces a sense of euphoria and increased energy. It may also cause hallucination if taken in excess. Opioids are obtained from *Papaver somniferum*, *Atropa belladonna* and *Datura* which possess hallucinogenic property.

114. (A) Heroin is synthesised by acetylation of morphine. Heroin commonly called smack is chemically diacetylmorphine, which is a white, odourless, bitter crystalline compound. This is obtained by acetylation of morphine, which is extracted from the latex of the poppy plant, *Papaver somniferum*. It is an opioid derivative, which is used as a medicine, but excessive use may cause addiction.

115. (B) The latex of poppy plant *Papaver somniferum* is used to obtain smack. It is a white crystalline odourless, bitter compound. It act as a depressant and slows down the body functions.



Related Theory

Opium poppy is a flowering plant of the family *Papaveraceae*. Opium, morphine, codeine, and heroin are derived from the milky latex found in its unripe seed capsule. It is also grown

for its tiny non-narcotic ripe seeds, which are kidney-shaped and greyish blue to dark blue. These seeds are used in bakery products and for seasoning, oil, and bird seed.

116. (B) *Amantia muscaria* produces psychoactive compound called muscimol, which contains hallucinogen.
117. (A) The given figure represent the *Datura* plant. It has hallucinogenic properties and also known as psychedelics. Benzodiazepines are depressants. Stimulants include amphetamines and cocaine. Pain killer includes opium (from poppy plant *Papaver somniferum*).
118. (C) LSD is a psychedelic drug causing optical and auditory hallucination and induces behavioural abnormalities. Opium and morphine are opiate narcotics and acts as depressants and analgesic. Caffeine is a stimulant.



Related Theory

Drug addiction can be due to - stress, curiosity, peer pressure, to overcome frustration and depression, etc.

119. (B) During metabolism of alcohol in liver, the increased redox potential inhibits fatty acid oxidation and gluconeogenesis, promoting fat accumulation in the liver. This ultimately leads to liver cirrhosis.
120. (D) Cocaine is natural alkaloid obtained from the leaves of coca i.e., *Erythroxylon coca*. It is a powerful CNS stimulant which induce a sense of well being, pleasure and delays fatigue. Morphine is extracted from *Papaver somniferum* and relieve pain. Heroin is semi-synthetic opiate. It is about three times more potent than morphine. Cannabinoid molecules are obtained from the inflorescence of the plant *Cannabis sativa*, it has an effect on the cardiovascular system of the body. *Atropa belladonna* has hallucinogenic properties.



Related Theory

Opium is a plant containing opioids which reduce pain by binding to opioid receptors. Cannabis is a plant containing cannabinoids which produces a diverse range of effects by acting on cannabinoid receptors.

Heroin is the diacetyl derivative of morphine.

121. (B) Morphine is a narcotic drug. It is a good sedative, as well as a pain killer, given to patients after surgery. Barbiturates are sedative-hypnotics (CNS depressant) and are used to treat insomnia, seizures, and headaches. They are also used as anaesthetics. Smoking cigarettes and chewing tobacco cause an immediate and temporary rise in blood pressure and heart rate. It can damage the lining of artery walls, causing arteries to narrow and increasing

blood pressure. Cocaine was earlier used as local anaesthetics. It is a highly addictive drug that levels up alertness, attention, and energy.

122. (B) Valium depresses brain activity and produces feeling of calmness, relaxation and drowsiness. Morphine is an anaesthetic. Hashish is a cannabinoid, causes euphoria. Amphetamine is a stimulant.



Related Theory

Diazepam is also known by its brand name, Valium. It is a benzodiazepine that is FDA approved to treat anxiety, alcohol withdrawal syndrome, and muscle spasms.

123. (B) *Serratia* is a harmful human pathogen causing urinary tract infection (UTI), wound infections and pneumonia.
124. (B) Reserpine derived from *Rauwolfia serpentina* is used as a tranquilizer. Morphine extracted from poppy plant (*Papaver somniferum*) is an opiate narcotic. Cocaine obtained from coca plant (*Erythroxylum coca*) has a potent stimulating action on CNS (central nervous system). Bhang obtained from *Cannabis sativa* is a hallucinogen.
125. (B) LSD is Lysergic acid diethylamide. It is obtained from the ergot fungus *Claviceps purpurea*. It is the most powerful hallucinogen.
126. (D) Cannabinoids obtained from *Cannabis sativa* are known for their cardiovascular effects on the body. The products obtained from *Cannabis* plants such as bhang, charas, ganja and hashish are obtained from different parts of the plant and show hallucinogenic effect. Thus, they alter thoughts, perceptions and feelings. Tranquilizers calm the brain. Stimulants stimulate the nervous system and increases energy, alertness and activity. Opioids suppresses brain function and relieves pain.
127. (B) *Rauwolfia serpentina*, commonly called Sarpagandha belongs to the family Apocynaceae. The alkaloid ajmalicine is obtained from its tuberous root, which are used as medicine. *Atropa belladonna* is a plant belonging to family Solanaceae, is used for the production of an alkaloid, atropine. *Papaver somniferum* produces opioid drugs, which are narcotic or pain relievers. Curcumin is obtained from *Curcuma sp.*
128. (C) Opium is derived from unripe seeds of poppy plant (*Papaver somniferum*). It creates analgesic effect and may also reduce tension and anxiety. Opium with its derivatives such as morphine, codein and heroine are drugs collectively called narcotic drugs.
129. (A) Analgesic drugs are the drugs that relieve pain. They act on the peripheral and central nervous system and reduce the sensation of pain.

