Time : 60 Mins **29 HUMAN HEALTH AND DISEASES 1** **Marks : 240**

1. The substance given to cancer patients in order to activate their immune system and destroy the tumour is
   a) histamine b) interleukin **c) α-interferon** d) morphine

   Solution : -
   Cancer patients are given substances called biological response modifiers like a-interferon which activate their immune system and help in destroying the tumours.

2. An auto-immune disease is
   a) SCID b) rheumatoid arthritis c) myasthenia gravis **d) both (b) and (c)**

   Solution : -
   If the immune system fails to recognise 'self' from 'non-self' and starts destroying the body's own cells, this leads to some malfunctions, which are termed as auto-immune diseases. Both rheumatoid arthritis and myasthenia gravis are autoimmune diseases. In rheumatoid arthritis, inflammation of the synovial membrane in synovial joints occurs. When this membrane, which is the source of synovial fluid, becomes inflamed, it produces too much fluid. Thus, the joints swell and become extremely painful. Myasthenia gravis is a chronic disease marked by abnormal fatigability and weakness of selected muscles. The degree of fatigue is so extreme that these muscles are temporarily paralysed.

3. Which of the following viruses is not transferred through semen of an infected male?
   a) Human immunodeficiency virus **b) Chikungunya virus** c) Ebolavirus d) Hepatitis B virus

   Solution : -
   Chikungunya virus is not transferred through semen ρ an infected male. It spreads by the bite of Aedes aegypti mosquito. No direct contact with body fluids like blood, semen or saliva is needed for its transmission. Others (HIV, Hepatitis-B and Ebola virus) spread through direct contact between individuals.

4. Read the following statements and select the correct option.
   Statement 1: Many fungi belonging to genera Microsporum, Trichophyton and Epidermophyton are responsible for the disease ringworm.
   Statement 2: Ringworm infection is generally acquired from soil or by using towels, clothes, comb, etc. of infected individuals.
   a) Both statements 1 and 2 are correct b) Statement 1 is correct but statement 2 is incorrect
   c) Statement 1 is incorrect but statement 2 is correct d) Both statements 1 and 2 are incorrect

5. Which one of the following is a mismatched pair of the drug and its effect?
   a) Amphetamines - CNS stimulants b) Lysergic acid diethylamide (LSD) - Psychedelic (hallucinogen)
   c) Heroin - Depressant, slows down body functions **d) Barbiturates - Tranquilliser**

   Solution : -
   Barbiturates are synthetic drugs which are derived from barbituric acid and are general depressants for all excitable cells. The human CNS is most sensitive to these drugs.

6. A substance produced by the host in response to an infection of foreign structure is

a) Antigen b) Phytotoxin **c) Antibody** d) Hormone

7. Use of vaccines and immunisation programmes have controlled which of the following infectious diseases?
   a) Polio and tetanus b) Diphtheria and pneumonia c) Cancer and AIDS **d) Both (a) and (b)**

8. AIDS spreads due to
   a) Unprotected sexual contact b) Infected needles and syringes c) Infected mother to foetus
   d) All of these

9. Which one of the following is categorised as a parasite in true sense ?
   a) The female Anopheles bites and sucks blood from humans
   b) Human foetus developing inside the uterus draws nourishment from the mother
   c) Head louse living on the human scalp as well as laying eggs on human hair
   d) The cuckoo (koel) lays its cggs in crow's nest

   Solution : -
   Head louse living on the human scalp as well as laying eggs on human hair is categorised as parasite in true sense.

10. Carcinoma refers to____
    a) benign tumours of the connective tissue b) malignant tumours of the connective tissue
    c) malignant tumours of the skin or mucous membrane d) malignant tumours of the colon

    Solution : -
    Carcinomas are malignant growth of the epithelial tissue that cover or line body organs

11. Typhoid fever is caused by_____ .
    a) Giardia **b) Salmonella** c) Shigella d) Escherichia

    Solution : -
    Salmonella typhi causes typhoid fever in human beings. It is characterised by constant fever due to the infection of intestine. Giardia is a flagellate protozoan, lamblia species of this protozoan causes disease giardiasis, a prolonged diarrhoeal disease of humans.
    Bacterial genus Shigella causes shigellosis or bacillary dysentery. Escherichia coli is a facultative anaerobes, found in the intestine of human beings.

12. Which of the following diseases is caused by a protozoan?
    a) Influenza **b) Babesiosis** c) Blastomycosis d) Syphilis

    Solution : -
    Babesiosis is caused by a protozoan. Babesia bigemina belongs to genus piroplasms of protozoa is causative agent of this disease.
    Syphilis is caused by Treponema pallidum (bacterium), influenza is caused by Influenza virus and Blastomycosis is caused by Blastsomyces dermatitidis (fugus).

13. Which one of the following pairs of diseases is viral as well as transmitted by mosquitoes?
    a) Encephalitis and sleeping sickness b) Yellow fever and sleeping sickness c) Elephantiasis and dengue
    d) Yellow fever and dengue

    Solution : -
    Yellow fever is caused by flavivirus and dengue is caused by arbovirus. Both are transmitted by the bite of mosquito, Aedes aegypti.

14. One of the following is not the causal organism for ringworm.
    a) Microsporum b) Trichophyton c) Epidermophyton **d) Macrosporum**

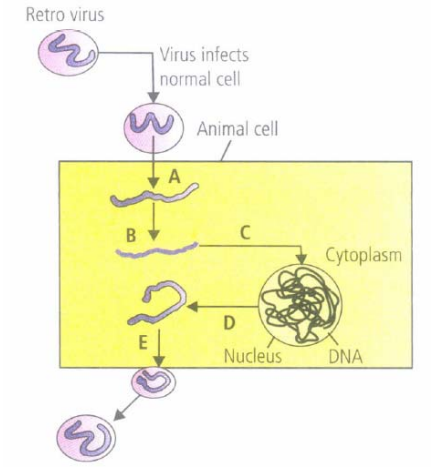
15. Hepatitis B is transmitted through
    a) sneezing b) female Anopheles c) coughing **d) blood transfusion**

Solution : -

Hepatitis B is a viral disease, transmitted through both blood transfusion and sexual intercourse.

16. **Assertion :** All immunoglobulin molecules have a basic structure composed of four polypeptide chains.
Reason : The polypeptide chains consists two identical heavy and light chain connected by disulphide bonds.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

17. The figure given below shows mode of action of AIDS virus. Identify steps A, B, C, D and E labelled in it.



a)
A-New viral DNA introduced into cell, B-Viral RNA produced, C-Viral DNA incorporated into host genome, D-New viral DNA, E-New viruses produced
b)
A-Viral DNA incorporated into host genome, B-Viral DNA, C-New viral RNA introduced, D-Viral RNA produced, E-New viruses produced
c)
A-Viral RNA introduced, B-Viral DNA, C-Viral DNA incorporated into host genome, D-New viral RNA produced, E-New viruses produced
d)
A-Viral DNA introduced, B-Viral RNA, C-Viral RNA incorporated into host genome, D-New viral DNA produced, E-New viruses produced

18. Read the following statements and select the correct option.
Statement 1: The exaggerated response of the immune system to certain antigens present in the environment is called as allergy.
Statement 2: The allergic tendency is genetically passed from the parent to the offspring and is characterised by the presence of large quantities of IgG antibodies in the blood.
a) Both statements 1 and 2 are correct **b) Statement 1 is correct but statement 2 is incorrect**
c) Statement 1 is incorrect but statement 2 is correct d) Both statements 1 and 2 are incorrect

19. ELISA is used to detect viruses where the key reagent is_____ .
a) RNase **b) alkaline phosphatase** c) catalase d) DNA probe

Solution : -

Under ELISA test any amount of an antibody or antigen with the help of an enzyme is detected the commonly used enzymes are alkaline phosphatase and peroxidase.

20. HIV is a retrovirus that attacks
a) helper T-cells b) cytotoxin T-cells c) B-cells d) neutrophils

21. A person suffering from leukaemia has
    a) tumors in adipose tissue b) increased number of plasma cells c) increased number of melanocytes
    d) increased number of WBCs

    Solution : -
    A person suffering from leukaemia has abnormal increase in the number of WBCs due to their increased formation in the bone marrow.

22. AIDS is caused by HIV that principally infects____
    a) all lymphocytes b) activator B cells c) cytotoxic T cells **d) T_4 lymphocytes**

    Solution : -
    AIDS viruss infects T_4 lymphocytes also known as Helper cells. Cytotoxic T Cells known as T_8 lymphocytes.

23. A protein or polysaccharide molecule that stimulates antibody formation
    a) antigen b) antibiotics c) exotoxin d) endotoxins

24. Which of the following is not a cause of transmission of HIV?
    a) Multiple sexual partners b) Sharing infected needles **c) Mosquito bite**
    d) Transfusion of contaminated blood

25. Which of the following is the bacterial disease in humans?
    a) Pneumonia b) Malaria c) Plague **d) Both (a) and (c)**

    Solution : -
    Pneumonia is a bacterial disease caused by Streptococcus pneumoniae and Haemophilus influenzae Plague is a bacterial disease caused by Yersinia pestis.

26. **Assertion :** Opioids help to enhance respiratory activity.
    Reason : Opioids are the drugs which binds to specific opioid receptors present in respiratory tract.
    a) If both assertion and reason are true and reason is the correct explanation of assertion.
    b) If both assertion and reason are true but reason is not the correct explanation of assertion.
    c) If assertion is true but reason is false. **d) If assertion is true but reason is false.**

    Solution : -
    Opioids are the drugs, which bind to specific opioid receptors present in our central nervous system and gastrointestinal tract. Opiates have narotic, analgesic, astringent (that causescontraction of body parts), and sedative effect. They slow down respiratory activity, cause constriction of pupil of eye, decrease glandular secretions, impair the digestion, produce nausea, vomiting and sterility.

27. Each immunoglobin has two heavy chains and two light chains. The antigen binding site is found in
    a) Variable region of heavy chain b) Variable region of light chain c) Constant region of light chain
    d) Variable region of both heavy and light chain

28. Antivenom against snake poison contains
    a) antigens b) antigen-antibody complexes **c) antibodies** d) enzymes

    Solution : -
    In case of snakebite, the injection which is given to a patient, contains preformed antibodies against the snake venom. This type of immunisation is called passive immunisation.

29. Which one of the following immunoglobulins does constitute the largest percentage in human milk?
    a) IgM **b) IgA** c) IgG d) IgD

    Solution : -
    IgA constitutes the largest percentage in human milk. It is a type of immunoglobulin which provides immunity to human body.

30. Damage to thymus in a child may lead to____
    a) a reduction in haemoglobin content of blood b) a reduction in stem cell production
    c) loss of antibody mediated immunity **d) loss of cell mediated immunity**

    Solution : -
    The thymus is a major gland of our immune system. It is responsible for production of T (thymus derived) lymphocytes from immature lymphocytes, a type of white blood cells responsible for cell mediated immunity, Cell mediated immunity is very significant for raising immune response against bacteria, yeast, fungi, parasites and virus. It is also critical in protecting against cancer, autoimmune disorders like rheumatoid arthritis, allergies etc.

31. A certain patient is suspected to be suffering from acquired immune deficiency syndrome. Which diagnostic technique will you recommend for its detection?
    a) ELISA b) MRI c) Ultrasound d) WIDAL

    Solution : -
    ELISA (Enzyme linked Immunosorbent Assay) is used to detect HIV due to its high sensitivity. It is used to detect the presence of antibody or antigen in a sample.

32. The cell-mediated immunity inside the human body is carried out by___
    a) B-lymphocytes b) Thrombocytes c) Erythrocytes **d) T-lymphocytes**

    Solution : -
    The cell mediated immunity inside the human body is carried out by T-lymphocytes. B-lymphocytes provide humoral immunity also called AMI (Antibody mediated immunity). Erythrocytes are red blood cells (RBC), Thrombocytes also called platelets secretes platelet factors take part in vascular repair.

33. Match the following diseases with the causative organism and select the correct option.

Column-I	**Column-II**
(a) Typhoid	(i) Wuchereria
(b) Pneumonia	(ii) Plasmodium
(c) Filariasis	(iii) Salmonella
(d) Malaria	(iv) Haemophilus

    a) (ii) (i) (iii) (iv) b) (iv) (i) (ii) (iii) c) (i) (iii) (ii) (iv) **d) (iii) (iv) (i) (ii)**

    Solution : -
    Salmonella typhi is a pathogenic bacterium which causes typhoid fever in human beings. Bacteria like Streptococcus pneumoniae and Haemophilus influenzae are responsible for the disease pneumonia in humans which infects the alveoli (air filled sacs) of the lungs. Whehereria the filarial worms cause a slowly developing chronic inflammation Plasmodium are responsible for different types of malaria.

34. Which of the following diseases is due to an allergic reaction?
    a) Goitre **b) Hay fever** c) Skin cancer d) Enteric fever

    Solution : -
    Allergy also known as hypersensitivity, is an inappropriate over-reaction of the immune system. Hay fever is an allergic reaction, antigens for such response are pollens grains, dust and SPM in the polluted air.
    Symptoms of hay fever includes closure of bronchial tubes that results in difficulty in normal breathing, skin rashes and eosinophilia.

35. Which one of the following is the correct statement regarding the particular psychotropic drug specified?
    a) Barbiturates cause relaxation and temporary euphoria
    b) Hashish causes after thought perceptions and hallucinations
    c) Opium stimulates nervous system and causes hallucinations
    d) Morphine leads to delusions and disturbed emotions

    Solution : -
    Barbiturates are sedative and hypnotic drugs

36. The cell in the human body invaded by the (human immuno-deficiency virus (HIV) is____
a) T-helpercell b) Erythrocyte c) B-cell d) Macrophage

Solution : -
In AIDS there is a reduction in the number of helper T-lymphocytes due to HIV infection. It suppresses human immune system following to which any secondary infection may lead to death. T-lymphocytes are main cells of immune system.

37. Recurrent high fever in malaria is due to completion of
a) Erythrocytic schizogony b) Sporogony c) Gamogony d) Exoerythrocytic schizogony

38. **Assertion :** Proto-oncogenes are cellular genes required for normal growth.
Reason : Under normal conditions they could lead to the oncogenic transformation of the cell.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If assertion is true but reason is false.

Solution : -
Proto-oncogenes are cellular genes required for normal growth. If they are muted or overexpressed, they may become oncogenes that contribute to the malignant transformation of the cell.

39. The primary lymphoid organs are
a) spleen and thymus **b) bone marrow and thymus** c) bone marrow and lymph node
d) thymus and MALT

Solution : -
Bone marrow and thymus are primary lymphoid organs where differentiation and proliferation of immature lymphocytes occurs.

40. The injection given against the snake venom contains
a) antigenic proteins **b) preformed antibodies** c) attenuated pathogen d) all of these

41. Read the following statements regarding the various techniques used in cancer detection.
(i) Cancer detection is based on biopsy and histopathological studies of the tissue, and blood and bone marrow tests for increased cell counts in case of leukaemia. (ii) In biopsy, a piece of the suspected tissue cut into thin sections is stained and examined under microscope by a pathologist.
(iii) Techniques like radiography (use of x-rays), CT (computed tomography) and MRI (magnetic resonance imaging) are very useful to detect cancers of the internal organs.
(iv) Computed tomography uses strong magnetic fields and non-ionising radiations to detect physiological changes in living tissues.
(v) MRI uses X-rays and ionising radiation to generate a 3-D image of the internal structure of an object.
Which of the above statements are incorrect?
a) (i) and (iii) b) (ii) and (iv) c) (iii) and (iv) **d) (iv) and (v)**

Solution : -
Computed tomography uses X-rays to generate a three -dimensional image of the internal structure of an object. MRI uses strong magnetic fields and non-ionising radiations to accurately detect pathological and physiological changes in the living tissues.

42. Passive immunity can be conferred directly by
a) vaccines b) antitoxins c) colostrum **d) both (b) and (c)**

Solution : -

Transfer of immune products like antibodies and immunoglobulins to a recipient is called passive immunity. Colostrum, a yellowish milk secreted by mother during the initial days of lactation has abundant antibodies to protect the infant. In tetanus, we need to directly inject the preformed antibodies or antitoxin (a preparation containing antibodies to the toxin). These both are examples of passive immunity.

43. Which of the following pair of diseases is caused by virus?
a) Rabies, mumps b) Cholera, tuberculosis c) Typhoid, tetanus d) AIDS, syphilis

Solution : -
Rabies (hydrophobia) is caused by a virus named as rabies virus. It is a lethal disease. Mumps is an infectious disease causing fever, difficulty in opening the mouth and painful swelling of the parotid glands which lie just below the lobe of the ear. It is caused by a paramyxovirus.

44. **Assertion :** Morphine is very effective and sedative painkiller.
Reason : It is very useful for the patients who have depression.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If assertion is true but reason is false.

Solution : -
Morphine is a very effective sedative and painkiller, and is very useful in patients who have undergone surgery.

45. Primary response produced due to first time encounter with a pathogen is of
a) high intensity **b) low intensity** c) intermediate intensity d) no intensity

Solution : -
Primary immune response is produced by the initial contact of an animal with an antigen. It takes relatively longer time, is of low intensity and declines rapidly.

46. Match column I with column II and select the correct option from codes given below.

Column I	**Column II**
A. Allergy	(i) Activation of B-cells
B. Helper T - cells	(ii) Immunotherapy
C. AIDS virus	(iii) Carcinogens
D. X-rays	(iv) IgE
E. Treatment of cancer	(v) Single stranded RNA

a) A-(iv), B-(i), C-M D-(iii), E-(ii) b) A-(ii), B-(i), C-(v), D-(iii), E-(iv) c) A-(iv), B-(v), C-(iii), D-(ii), E-(i)
d) A-(ii), B-(v), C-(iii), D-(i), E-(iv)

47. An antibody consists of
a) two light peptide chains and two heavy peptide chains
b) two light peptide chains and one heavy peptide chain
c) one light peptide chain and one heavy peptide chain
d) one light peptide chain and two heavy peptide chains

Solution : -
Antibodies are immunoglobulins produced in response to antigenic stimulation. An antibody is made up of four peptide chains. Of the four chains, there are two long chains, called heavy chains and two short chains called light chains.

48. The genetic material of HIV is
a) dsDNA b) dsRNA c) ssDNA **d) ssRNA**

Solution : -

HIV which causes AIDS is a retrovirus that contains single stranded RNA (ssRNA) as its genetic material.

49. Which of the following cancer is opportunistic disease associated with HIV?
    a) Cancer of cervix b) Liver cancer c) Burkitt's lymphoma **d) Kaposi's sarcoma**

50. Which one of the following depresses brain activity and produced feelings of caimness, relaxation and drowsiness?
    a) Hashish b) Morphine **c) Valium** d) Amphetamines

    Solution : -
    Amphetamines bring about icreased alertness and sleeplessness. Hashish is a hallucinogen. Valium is a tranquilser. Valium depresses brain activity and produces feeling of calmness, relaxation and drowsiness. Morphine is an opiate narcotic.

51. The letter T in T -lymphocyte refers to _____
    a) Thalamus b) Tonsil **c) Thymus** d) Thyroid

    Solution : -
    The letter T in T-lymphocyte refers to thymus. Thymus is primary specialised lymphoid organs. It is haemopoietic as well as an endocrine gland. It is the site where cells formed in bone marrow mature and differentiate here. It also secretes hormone called thymosin. This hormone is responsible for development of T-lymphocytes. Thyroid is largest endocrine gland. Thalamus is the part of forebrain in vertebrates located above the hypothalamus. Tonsil is a mass of lymphoid tissue which is involved in defense mechanism.

52. **Assertion :** Virus-infected cells secrete proteins known as interferons.
    Reason : Interferons protect the non-infected cells from bacterial infection.
    a) If both assertion and reason are true and reason is the correct explanation of assertion.

    b) If both assertion and reason are true but reason is not the correct explanation of assertion.

    c) If assertion is true but reason is false. d) If both assertion and reason are false.

    Solution : -
    Virus-infected cells secrete proteins called interferons which protect non-infected cells from further viral infection.

53. **Assertion:** Benign tumours are called neoplastic cells.
    Reason: Malignant tumour remain in place to form a compact mass by a process known as metastasis.
    a) If both assertion and reason are true and reason is the correct explanation of assertion.

    b) If both assertion and reason are true but reason is not the correct explanation of assertion.

    c) If assertion is true but reason is false. **d) If assertion is true but reason is false.**

    Solution : -
    Tumours are of two types: benign and malignant. Benign tumours normally remain confined to their original location and do not spread to other parts of the body and cause little damage. The malignant tumours, on the other hand are mass of proliferating cells called neoplastic or tumour cells. These cells grow very rapidly, invading and damaging the surrounding normal tissues. As these cells actively divide and grow, they also starve the normal cells by competing for vital nutrients. Cells sloughed from such tumours reach distant sites through blood, and wherever they get lodged in the body, they start a new tumour there. This property is called metastasis which is the most feared property of malignant tumours.

54. MALT is
    a) Muscle Associated Lymphoid Tissues **b) Mucosal Associated Lymphoid Tissues**

    c) Mucosal and Lymphoid Tissue d) Memory Associated Lymphoid Tissues

    Solution : -
    MALT is located within the lining of the major tracts i.e., respiratory, urogenital and digestive tracts.

55. The site where lymphocytes interact with antigens and proliferate to become effector cells are

a) spleen and lymph nodes b) bone marrow and thymus c) Poyer's patches and tonsils

d) both (a) and (c)

Solution : -

After maturation in primary lymphoid organs, B-cells and T-cells migrate via blood and lymph to the secondary lymphoid organs where they interact with antigens and proliferate to become effector cells.

56. **Assertion :** Mucous membrane immobilises the microorganisms in the body.
Reason : Microorganisms and dust particles entering the respiratory tract are trapped in the mucus.
a) If both assertion and reason are true and reason is the correct explanation of assertion.

b) If both assertion and reason are true but reason is not the correct explanation of assertion.

c) If assertion is true but reason is false. d) If both assertion and reason are false.

Solution : -

Innate immunity is non-specific type of defence, that is accomplished by providing different types of barriers to the entry of the foreign agents into our body. Mucus coating of the epithelium lining in the respiratory, gastrointestinal and urogenital tracts traps microbes and prevents their entry in our body.

57. Which form of pathogen is used in vaccination?
a) Activated and strong pathogenic antigens **b) Inactivated and weakened pathogenic antigens**

c) Hyperactive and strong pathogen d) Preformed antibodies

Solution : -

Vaccine is a preparation or extract of an inactivated/attenuated (weakened) pathogen of a disease which on inoculation into a healthy person provides immunity by inducing antibodies production.

58. AIDS is widely diagnosed by
a) Widal test **b) ELISA** c) PCR d) Chromatography

Solution : -

AIDS is diagnosed by ELISA (Enzyme linked Immunosorbent Assay) test.

59. Vaccine against polio viruses is an example of
a) auto-immunisation b) passive immunisation **c) active immunisation** d) simple immunisation

Solution : -

When a host is exposed to antigens, which may be in the form of living or dead microbes or other proteins, antibodies are produced in the host body. This type of immunity is called active immunity. Injecting the microbes deliberately during immunisation/vaccination induces active immunity e.g., polio vaccine.

60. In which disease does mosquito transmitted pathogen Causes chronic inflammation of lymphatic vessels?
a) Ringworm disease b) Ascariasis **c) Elephantiasis** d) Amoebiasis

Solution : -

Elephantiasis is caused by roundworm, Wuchereria bancrofti and is transmitted by culex mosquito.