

BIOLOGY

NEET / AIIMS

CRASH COURSE

HUMAN HEALTH AND DISEASE

HUMAN HEALTH AND DISEASE

- Health is not only the absence of disease but it is a state of complete physical, mental, social and psychological well being.
- Disease like typhoid, cholera, pneumonia, fungal infection of skin, malaria and many other disease are a major cause of distress to human beings.
- Besides personal cleanliness and hygiene, public health measures like proper disposal of waste, decontamination of drinking water, control of vector like mosquitoes and immunisation are very helpful in preventing these diseases.
- Vector borne diseases like malaria, especially one caused by *Plasmodium falciparum*, if not treated, may prove fatal.
- Our immune system plays the major role in preventing these diseases when we are exposed to disease causing agents.
- The innate defences of our body like skin, mucous membranes antimicrobial substances present in our tears, saliva and phagocytic cells help to block the entry of pathogens into our body.
- If pathogens entered in our body, specific antibodies (humoral immune response) and cells (cell mediated immune response) serve to kill these pathogens.
- Immune system has memory. On subsequent exposure to same pathogen, the immune response is rapid and more intense.
- This forms the basis of protection which is afforded by vaccination and immunisation.
- Among other diseases, AIDS and cancer kill a large number of individuals world wide, AIDS caused by human immuno-deficiency virus (HIV) is fatal but can be prevented if certain precautions are taken.
- Many cancers are curable if detected early and appropriate therapeutic measures are taken.
- Drug and alcohol abuse among youth and adolescents is becoming another cause of concern.
- Because of the addictive nature of alcohol and drugs, and their perceived benefits like relief from stress, a person may try taking these in the face of peer pressure, examinations related and competition related stresses. In doing so, he/she may get addicted to them.
- Education about their harmful effects, counselling and seeking immediate professional and medical help would totally relieve the individual from these evils, so the age-old adage of 'prevention is better than cure' holds true here also.

EXERCISE

- Q.1 Active immunity development is related to
(1) Natural killer cells (2) Memory cells
(3) Helper T cells (4) Suppressor T cells
- Q.2 Rejection of tissue of organ transplants is brought about mainly by
(1) Cytotoxic T cells (2) NK cells (3) Suppressor T cells (4) B cells
- Q.3 Colostrum provides the infant with
(1) Auto immunity (2) Passive immunity (3) Active immunity (4) Innate immunity
- Q.4 Note the following :
(A) Skin (B) Phagocytes
(C) B-cells (D) Inflammation
(E) Antibodies (F) T-cells
(G) Fever (H) Antimicrobial proteins
(I) NK-cells (J) Secretions
Identify the factors involved in 2nd line of defence
(1) B, D, G and I (2) B, C, E and I (3) D, F, H and J (4) C, E, G and H
- Q.5 Choose the wrong statement regarding AIDS
(1) AIDS is an immunodeficiency disease !
(2) It is caused by a retrovirus, HIV
(3) HIV selectively infects and kill B-lymphocytes
(4) Retroviruses have RNA genomes that replicate via DNA intermediate
- Q.6 The immune system which works against self is
(1) Self immune system (2) Autoimmunity (3) Specific immunity (4) None of the above
- Q.7 The immunity obtained after the body has recovered from a disease is
(1) Active immunity (2) Passive immunity (3) Both (4) None of these
- Q.8 Edward Jenner discovered
(1) Vaccination against polio (2) Immunization against polio
(3) Vaccination against small pox (4) Immunization against small pox
- Q.9 B.C.G. vaccine is used against
(1) T.B. (2) Leprosy (3) Food poisoning (4) None of these

- Q.10 DPT vaccine is given for
(1) Tetanus, polio, plague (2) Diphtheria, whooping cough and leprosy
(3) Diphtheria, pneumonia, tetanus (4) Diphtheria, whooping cough, tetanus
- Q.11 Expand ELISA
(1) Enzyme linked immunosorbent assay (2) Enzyme linked ion sorbent assay
(3) Enzyme linked inductive assay (4) None of the above
- Q.12 Humoral immunity is due to
(1) B-Lymphocytes (2) T-Lymphocytes (3) L-Lymphocytes (4) P-Lymphocytes
- Q.13 What is the process, in which antibody comes in contact with antigen and convert them in harmless insoluble matter, called
(1) Activation (2) Agglutination (3) Neutralization (4) Opsonization
- Q.14 AIDS virus has
(1) Single stranded RNA (2) Double stranded RNA
(3) Single stranded DNA (4) Double stranded DNA
- Q.15 The term 'active immunity' means
(1) Resistance developed after disease (2) Resistance developed before disease
(3) Resistance rate of heart beat (4) Increasing quantity of blood
- Q.16 The antibodies are
(1) Lipids (2) Germs (3) Proteins (4) Carbohydrates
- Q.17 Full form of AIDS is
(1) Anti immune deficiency syndrome (2) Auto immune deficiency syndrome
(3) Acquired immuno deficiency syndrome (4) Acquired immune disease symptom
- Q.18 The factor responsible for cirrhosis of liver is
(1) Sugar (2) Vitamins (3) Fats and oils (4) Alcoholism
- Q.19 The antibodies are
(1) Gamma-globulins (2) Albumins (3) Vitamins (4) Sugar
- Q.20 AIDS related complex (ARC) is a disease which leads to fever, swollen lymph nodes, night sweats, loss in weight etc. represents
(1) Severe form of AIDS (2) Initial form of AIDS
(3) No link with AIDS (4) None of the above

- Q.21 Allergy involves
(1) IgE (2) IgG (3) IgA (4) IgM
- Q.22 A person is injected with globulin against hepatitis. This is
(1) Artificially acquired passive immunity (2) Artificially acquired active immunity
(3) Naturally acquired active immunity (4) Naturally acquired passive immunity
- Q.23 'Polio' is caused by
(1) A bacteriophage (2) A virus with single strand RNA
(3) A virus with single strand DNA (4) A virus with double strand DNA
- Q.24 'Small pox' (Variola) disease is caused by
(1) Virus (2) Bacterium (3) Protozoan (4) Mosquito
- Q.25 Which of the following is a carrier of 'dengue fever'
(1) Anopheles (2) Culex (3) Aedes (4) Musca
- Q.26 Interferons are
(1) Antiviral proteins (2) Antibacterial proteins
(3) Anticancer proteins (4) None of above
- Q.27 Cholera, leprosy and diphtheria are
(1) Bacterial diseases (2) Viral diseases (3) Fungal diseases (4) Functional diseases
- Q.28 Tetanus disease is caused by
(1) Virus (2) Bacteria (3) Fungi (4) Mycoplasma
- Q.29 Which of the following is an STD
(1) Measles (2) Syphilis (3) Diphtheria (4) Cancer
- Q.30 'Syphilis' is a sexually transmitted disease caused by
(1) Treponema pallidum (2) Leptospira
(3) Pasteurella (4) Vibrio
- Q.31 Kala-azar disease is caused by
(1) Trypanosoma gambiense (2) Wuchereria bancrofti
(3) Tania solium (4) Leishmania donovani

- Q.32 The fish used for control of malaria is
 (1) Gambusia (2) Rohu (3) (1) and (2) both (4) None of these
- Q.33 Schuffner's dots are related to
 (1) RB.C. of man (2) Leucocytes of frog
 (3) Epithelium of stomach of mosquito (4) Entamoeba histolytica
- Q.34 Haemozoin is a toxic substance formed in case of malaria. It is produced by
 (1) Globin protein of RBC (2) Colour pigment of RBC
 (3) Dead WBC (4) Cryptozoites
- Q.35 Tse-tse fly is a vector for sleeping sickness which transmits the infective stage of which of the following parasite
 (1) Leishmania donavani (2) Plasmodium falciparum
 (3) Trypanosoma gambiense (4) Wuchereria bancrofti
- Q.36 Cancer is related to
 (1) Uncontrolled growth of tissues (2) Non-malignant tumor
 (3) Controlled division of tissues (4) None of these
- Q.37 Match column I with column II and choose the correction answer
- | Column I | Column II |
|-------------------|------------------------------------|
| (a) Neoplasm | (p) Haematopoietic cell tumours |
| (b) Benign tumour | (q) Bone, cartilage tissue cancers |
| (c) Carcinomas | (r) Malignant tumor |
| (d) Sarcomas | (s) Cancer of epithelial tissues |
| (e) Lymphomas | (t) Non-cancerous tumor |
| | (u) Initiation of new tumours |
- (1) (a) - (r), (b) - (t), (c) - (s), (d) - (q), (e) - (p)
 (2) (a) - (r), (b) - (t), (c) - (s), (d) - (p), (e) - (q)
 (3) (a) - (u), (b) - (r), (c) - (s), (d) - (q), (e) - (p)
 (4) (a) - (u), (b) - (s), (c) - (r), (d) - (q), (e) - (p)
- Q.38 When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that:
 (1) the patient was not efficient at his work
 (2) the patient was not economically prosperous
 (3) the patient shows behavioural and social maladjustment
 (4) he does not take interest in sports

AIIMS Special**Instructions for following questions (Q.39 to Q.52).**

- (1) If both Assertion & Reason are true and the reason is the correct explanation of the assertion, then mark (1).
- (2) If both Assertion & Reason are true but the reason is not the correct explanation of the assertion, then mark (2).
- (3) If Assertion is true statement but Reason is false, then mark (3).
- (4) If both Assertion and Reason are false statements, then mark (4).

- Q.39 **Assertion :** Live attenuated vaccine is better in terms of immunity provided to the recipient.
Reason : As secondary lymphoid organs, example peyer's patches are stimulated to protect the society.
- Q.40 **Assertion :** Asthma patients must never be exposed to dust.
Reason : Allergic response may cause vasoconstriction and death.
- Q.41 **Assertion :** Colostrum is a very efficient means of transferring immunity to a newborn.
Reason : IgM from mother's milk protects the baby from the respiratory infection usually affecting in young age.
- Q.42 **Assertion :** Vaccine against AIDS has not been made inspite of repeated attempts.
Reason : HIV has the ability to get mutated to form several subtypes.
- Q.43 **Assertion :** Antibiotics like penicillin can be used to treat common cold.
Reason : Penicillin causes lysis of viral cells.
- Q.44 **Assertion :** SCID is a primary immunodeficiency.
Reason : It is a serious congenital immunodeficiency.
- Q.45 **Assertion :** AIDS spreads by contact between the blood of an infected person and a healthy person.
Reason : AIDS manifests as tumours or as pathogenic infections.
- Q.46 **Assertion :** Syphilis spreads by sexual intercourse with infected persons.
Reason : Syphilis is caused by spirochaete bacterium, Treponema pallidum.
- Q.47 **Assertion :** All types of cancer result in tumours.
Reason : Cancer is easily treatable with antibiotics.
- Q.48 **Assertion :** Mother can pass on syphilis bacteria to their developing foetus.
Reason : Placenta in the later part of pregnancy becomes permeable to some pathogens.

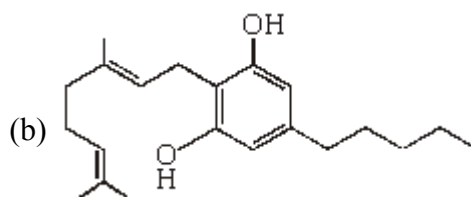
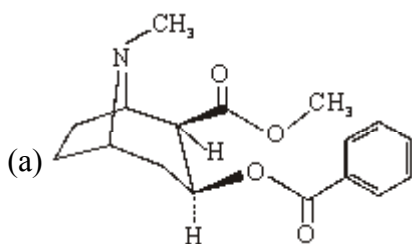
- Q.49 **Assertion :** Metastatic cancers are more serious.
Reason : These spread from one organ to other body organs and there is increased interference with metabolic functioning.
- Q.50 **Assertion :** Alcohol is called a stimulant.
Reason : Alcohol is immediately oxidised to produce large amount of energy which increases the activities of CNS.
- Q.51 **Assertion :** Sedatives are used in sleeping pills.
Reason : Sedatives contain opiates which reduce tension and anxiety.
- Q.52 **Assertion :** Heroin addicts have more chances of occurrence of AIDS, hepatitis etc.
Reason : Heroin is most dangerous and addictive opiates.

PREVIOUS YEARS QUESTIONS

- Q.1 At which stage of HIV infection does one usually show symptoms of AIDS? [Guj.CET 2011]
 (1) When the infecting retrovirus enters host cells
 (2) When viral DNA is produced by reverse transcriptase
 (3) When HIV replicates rapidly in helper T- lymphocytes and damages large number of these
 (4) Within 15 days of sexual contact with an infected person
- Q.2 A patient is suspected to be suffering from Acquired Immuno Deficiency Syndrome (AIDS). Which diagnostic technique will you recommend for its detection? [KCET 2011]
 (1) ELISA (2) MRI (3) Ultra sound (4) WIDAL
- Q.3 Common cold differs from pneumonia in that : [AIPMT Pre 2012]
 (1) Pneumonia can be prevented by a live attenuated bacterial vaccine whereas the common cold has no effective vaccine.
 (2) Pneumonia is caused by a virus while the common cold is caused by the bacterium Haemophilus influenzae
 (3) Pneumonia pathogen infects alveoli whereas the common cold affects nose and respiratory passage but not the lungs.
 (4) Pneumonia is a communicable disease whereas the common cold is a nutritional deficiency disease.
- Q.4 In which one of the following options the two examples are correctly matched with their particular type of immunity? [AIPMT Pre 2012]

Examples	Type of immunity
Anti-tetanus and	Active immunity
(1) anti-snake bite	injections
(2) Saliva in mouth and Tears in eyes	Physical barriers
(3) Mucus coating of epithelium lining	Physiological barriers
(4) Polymorphonuclear leukocytes and monocytes	Cellular barriers

- Q.5 Widal Test is carried out to test : [AIPMT Pre 2012]
 (1) Diabetes mellitus (2) HIV/AIDS (3) Typhoid fever (4) Malaira
- Q.6 A patient brought to a hospital with myocardial infarction is normally immediately given : [AIPMT Pre 2012]
 (1) Streptokinase (2) Cyclosporin-A (3) Statins (4) Penicillin
- Q.7 Read the following four statements (A - D) : [AIPMT Mains 2012]
 (A) Colostrum is recommended for the new born because it is rich in antigens.
 (B) Chikungunya is caused by a Gram negative bacterium.
 (C) Tissue culture has proved useful in obtaining virus-free plants.
 (D) Beer is manufactured by distillation of fermented grape juice.
 How many of the above statements are wrong ?
 (1) Two (2) Three (3) Four (4) One
- Q.8 Identify the molecules (a) and (b) shown below and select the right option giving their source and use. [AIPMT Mains 2012]



Options :

	Molecule	Source	Use
(1)	(a) Cocaine	Erythroxylum coca	Accelerates the transport of dopamine
(2)	(b) Heroin	Cannabis sativa	Depressant and slows down body functions
(3)	(b) Cannabinoid	Atropa belladonna	Produces hallucinations
(4)	(a) Morphine	Papaver somniferum	Sedative and pain killer

- Q.9 Which one of the following statements is correct with respect to immunity? [AIPMT Mains 2012]
 (1) Preformed antibodies need to be injected to treat the bite by a viper snake
 (2) The antibodies against small pox pathogen are produced by T - lymphocytes
 (3) Antibodies are protein molecules, each of which has four light chains
 (4) Rejection of a kidney graft is the function of B-lymphocytes
- Q.10 Which of the following cannot be detected in a developing foetus by amniocentesis? [AIPMT 2013]
 (1) Sex of the foetus (2) Down syndrome (3) Jaundice (4) Klinefelter syndrome

- Q.11 The cell-mediated immunity inside the human body is carried out by: [AIPMT 2013]
 (1) B-lymphocytes (2) Thrombocytes (3) Erythrocytes (4) T-lymphocytes
- Q.12 At which stage of HIV infection does one usually show symptoms of AIDS? [AIPMT 2014]
 (1) When HIV damages large number of helper T - Lymphocytes.
 (2) When the viral DNA is produced by reverse transcriptase.
 (3) Within 15 days of sexual contact with an infected person.
 (4) When the infected retro virus enters host cells.
- Q.13 Which is the particular type of drug that is obtained from the plant whose one flowering branch is shown below? [AIPMT 2014]



- (1) Stimulant (2) Pain - killer (3) Hallucinogen (4) Depressant
- Q.14 HIV that causes AIDS, first starts destroying: [AIPMT 2015]
 (1) Leucocytes (2) Helper T-Lymphocytes
 (3) Thrombocytes (4) B-Lymphocytes
- Q.15 Which of the following viruses is not transferred through semen of an infected male? [AIPMT 2015]
 (1) Human immunodeficiency virus (2) Chikungunya virus
 (3) Ebola virus (4) Hepatitis B virus
- Q.16 Match each disease with its correct type of vaccine : [AIPMT 2015]
 (a) tuberculosis (i) harmless virus
 (b) whooping cough (ii) inactivated toxin
 (c) diphtheria (iii) killed bacteria
 (d) polio (iv) harmless bacteria
 (1) (a) (iii), (b) (ii), (c) (iv), (d) (i) (2) (a) (iv), (b) (iii), (c) (ii), (d) (i)
 (3) (a) (i), (b) (ii), (c) (iv), (d) (iii) (4) (a) (ii), (b) (i), (c) (iii), (d) (iv)
- Q.17 Name the chronic respiratory disorder caused mainly by cigarette smoking: [AIPMT 2016]
 (1) Respiratory alkalosis (2) Emphysema
 (3) Asthma (4) Respiratory acidosis

- Q.18 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 : **[AIPMT 2016]**
 (1) Active immunity (2) Allergic response (3) Graft rejection (4) Auto-immune disease
- Q.19 Antivenom injection contains preformed antibodies while polio drops that are administered into the body contain : **[AIPMT 2016]**
 (1) Attenuated pathogens (2) Activated pathogens
 (3) Harvested antibodies (4) Gamma globulin
- Q.20 Which of the following is correct regarding AIDS causative HIV? **[AIPMT 2016]**
 (1) HIV does not escape but attacks the acquired immune response.
 (2) HIV is enveloped virus containing one molecule of single-stranded RNA and one molecule of reverse transcriptase.
 (3) HIV is enveloped virus that contains two identical molecules of single-stranded RNA and two molecules of reverse transcriptase.
 (4) HIV is unenveloped retrovirus.
- Q.21 Which of the following sets of diseases is caused by bacteria? **[AIPMT 2016]**
 (1) Herpes and influenza (2) Cholera and tetanus
 (3) Typhoid and smallpox (4) Tetanus and mumps
- Q.22 Assertion : IgM is a type of immunoglobulin which cannot cross the placenta.
 Reason : IgM is pentamer immunoglobulin, joined by J-chain. **[AIIMS 2016]**
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.
- Q.23 Match the following sexually transmitted diseases (Column -I) with their causative agent (Column - II) and select the Correct option. **[AIPMT 2017]**
- | Column - I | Column - II |
|-------------------|------------------------------|
| (a) Gonorrhea | (i) HIV |
| (b) Syphilis | (ii) Neisseria |
| (c) Genital Warts | (iii) Treponema |
| (d) AIDS | (iv) Human Papilloma - Virus |
- Options :
 (1) a-ii, b-iii, c-iv, d-i (2) a-iii, b-iv, c-i, d-ii (3) a-iv, b-ii, c-iii, d-i (4) a-iv, b-iii, c-ii, d-i
- Q.24 Transplantation of tissues / organs fails often due to non-acceptance by the patient's body. Which type of immune -response is responsible for such rejection **[AIPMT 2017]**
 (1) Autoimmune response (2) Cell- mediated immune response
 (3) Hormonal immune response (4) Physiological immune response

- Q.25 A disease caused by an autosomal primary non-disjunction is : [AIPMT 2017]
 (1) Down's Syndrome (2) Klinefelter's Syndrome
 (3) Turner's Syndrome (4) Sickle Cell Anemia
- Q.26 **Assertion:** Artificially acquired passive immunity results when antibodies or lymphocytes produced outside the host are introduced into a host.
Reason: A bone marrow transplant given to a patient with genetic immunodeficiency is an example of artificially acquired passive immunity. [AIIMS 2017]
 (1) If both assertion and reason are true and reason is the correct explanation of assertion.
 (2) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (3) If assertion is true but reason is false.
 (4) If both assertion and reason are false.
- Q.27 Human immunodeficiency virus (HIV) has a protein coat and a genetic material which is [AIIMS 2017]
 (1) Single stranded DNA. (2) Single stranded RNA.
 (3) Double stranded RNA. (4) Double stranded DNA.
- Q.28 Which one of the following pairs of diseases is viral as well as transmitted by mosquitoes? [AIIMS 2017]
 (1) Elephantiasis and dengue (2) Yellow fever and sleeping sickness
 (3) Encephalitis and sleeping sickness (4) Yellow fever and dengue

ANSWER KEY

Q.1	2	Q.2	1	Q.3	2	Q.4	1	Q.5	3	Q.6	2	Q.7	1
Q.8	3	Q.9	1	Q.10	4	Q.11	1	Q.12	1	Q.13	2	Q.14	1
Q.15	1	Q.16	3	Q.17	3	Q.18	4	Q.19	1	Q.20	2	Q.21	1
Q.22	1	Q.23	2	Q.24	1	Q.25	3	Q.26	1	Q.27	1	Q.28	2
Q.29	2	Q.30	1	Q.31	4	Q.32	1	Q.33	1	Q.34	2	Q.35	3
Q.36	1	Q.37	1	Q.38	3	Q.39	1	Q.40	4	Q.41	3	Q.42	1
Q.43	4	Q.44	1	Q.45	2	Q.46	2	Q.47	4	Q.48	1	Q.49	1
Q.50	4	Q.51	3	Q.52	2								

PREVIOUS YEAR QUESTIONS

Q.1	3	Q.2	1	Q.3	3	Q.4	4	Q.5	3	Q.6	1	Q.7	1
Q.8	4	Q.9	1	Q.10	3	Q.11	4	Q.12	1	Q.13	3	Q.14	2
Q.15	2	Q.16	2	Q.17	2	Q.18	4	Q.19	1	Q.20	1,3	Q.21	2
Q.22	1	Q.23	1	Q.24	2	Q.25	1	Q.26	2	Q.27	2	Q.28	4