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HUMAN HEALTH AND DISEASES PROBLEM SOLVING

qqq

MALT constitutes about.....per cent of the lymphoid tissue in human body. **NEET-2017**

- ☒ (A) 50% (B) 20%
- (C) 70% (D) 10%

MALT: Mucosa Associated Lymphoid tissue

SSS

Ans [A]

50%

MALT or Mucosa Associated Lymphoid Tissue constitutes about 50 percent of the lymphoid tissue in human body. It is scattered along mucosal lining in the human body.

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? **NEET-2017**

- (A) Autoimmune response
- ☒ (B) Cell-mediated immune response
- (C) Hormonal immune response
- (D) Physiological immune response

SSS

Ans [B]

✓ Cell-mediated immune response

The immune response to a transplanted organ consists of both cellular (lymphocyte mediated) and humoral (antibody mediated) mechanisms. Although other cell types are also involved, the T cells are central in the rejection of grafts.

qqq

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

NEET-2016

- (A) Cholera and tetanus
(B) Typhoid and smallpox
(C) Tetanus and mumps
(D) Herpes and influenza
- Handwritten notes:*
- ✓* (A) Cholera and tetanus → *Vibrio cholerae* and *Clostridium tetani*
 - (B) Typhoid and smallpox → *Salmonella typhi* and *Virus*
 - (C) Tetanus and mumps → *Clostridium tetani* and *Paramyxovirus*
 - (D) Herpes and influenza → *Herpes simplex virus* and *Virus*

SSS

Ans [A]

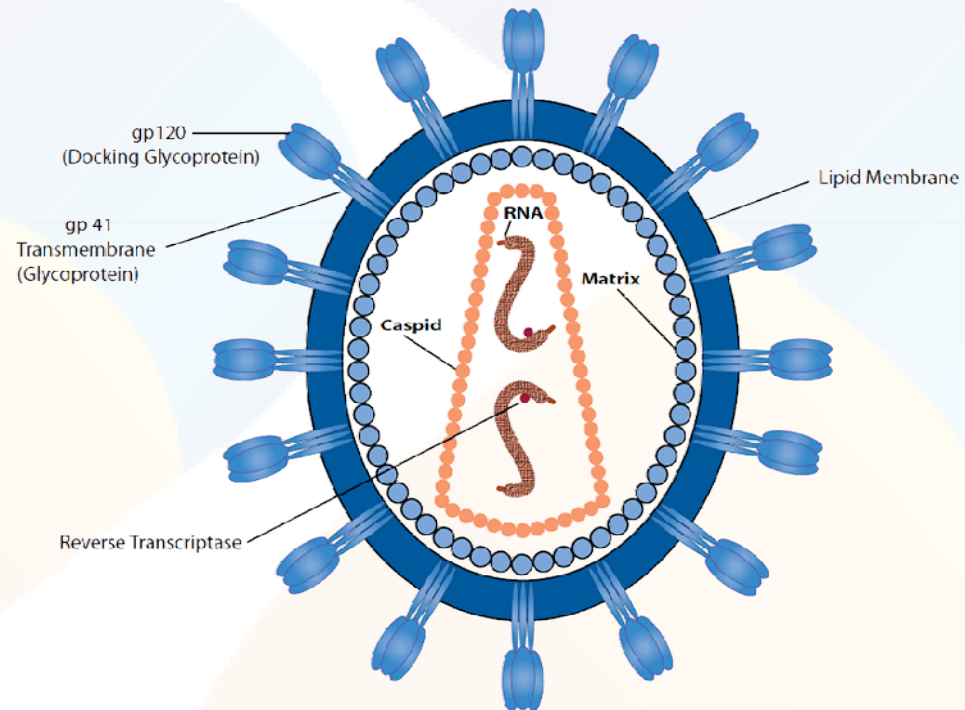
Cholera by *Vibrio cholerae* and tetanus by *Clostridium tetani* sets of diseases is caused by bacteria.

Which of the following is correct regarding AIDS causative agent HIV? **NEET-2016**

- (A) HIV is enveloped virus containing one molecule of single-stranded RNA and one molecule of reverse transcriptase ✗
- ~~(B)~~ HIV is enveloped virus that contains two identical molecules of single-stranded RNA and two molecules of reverse transcriptase
- (C) HIV is not enveloped retrovirus ✗
- (D) HIV does not escape but attacks the acquired immune response ✗

Ans [B]

HIV is enveloped virus that contains two identical molecules of single-stranded RNA and two molecules of reverse transcriptase



Asthma may be attributed to

NEET-2016

- ☒ (A) Allergic reaction of the mast cells in the lungs
- (B) Inflammation of the trachea
- (C) Accumulation of fluid in the lungs
- (D) Bacterial infection of the lungs

Allergic reaction

• exaggerated immune response
to certain substance

• IgE

• Mast cells

histamine
serotonine

Ans [A]

Asthma may be attributed to allergic reaction of the mast cells in the lungs

Asthma symptoms, which include coughing, wheezing, and chest tightness, are common in an asthma attack. Sometimes asthma is called bronchial asthma or reactive airway disease.

qqq

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.

NEET-2016

(A) Graft rejection

(C) Activate immunity

(B) Auto-immune disease

(D) Allergic response

→ Myasthenic gravis

↓
AB against Acetylcholine receptors

→ Rheumatoid arthritis

↳ Inflammⁿ of synovial membrane

→ Hashimoto's dis.: Thyroid gland

→ Multiple sclerosis → antibodies are formed against myelin sheath

↳ does not discriminate

between self & non-self antigens
& antibodies are formed against self antigens

SSS

Ans [B]

Auto-immune disease

qqq

Antivenom injection contains preformed antibodies while polio drops that are administered into the body contain

NEET-2016

- | | |
|-------------------------------------|-------------------------|
| (A) Harvested antibodies | (B) Gamma globulin |
| (C) Attenuated pathogens | (D) Activated pathogens |

Ans [C]

Oral polio vaccine consists of attenuated pathogens. Attenuated pathogens are living micro-organisms or viruses cultured under adverse condition, leading to loss of their virulence. But these organisms have the ability to induce protective immunity. The oral vaccine of polio contains three live polio strains in attenuated forms.

qqq

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

NEET-2016

(A) IgD

(B) IgM

✓ (C) IgA

(D) IgG

(Colostrum)

Crosses. Placenta

Ans [C]

All types of immunoglobulin are found in human milk. Out of these secretory IgA, a type of immunoglobulin that protects the ears, nose, throat and the gastrointestinal tract.

qqq

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

NEET-2015

- (A) Fibrinogen in plasma
- (B) Serum albumins
- (C) Haemocytes
- (D) Serum globulins

Ans [D]

An antibody is a protein molecule produced in the living body which specifically inactivates an antigen. Chemically, antibodies are globular proteins which form about 17-20% of the total protein in the blood serum. Antibodies belong to a class of serum proteins, which are called γ or 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.

Grafted kidney may be rejected in a patient due to

NEET-2015

- (A) Humoral immune response
- ☒ (B) Cell-mediated immune response
- (C) Passive immune response
- (D) Innate immune response

Ans [B]

Grafted kidney may be rejected in a patient due to the cell-mediated immune response that is mediated by T-lymphocytes. The body is able to differentiate 'self' and 'non-self'. Therefore, tissue matching, blood group matching are essential before undertaking any graft/transplant and even after this the patient has to take immune suppressants all his/her life.

qqq

Which of the following diseases is caused by a protozoan?

NEET-2015

(A) Syphilis → *treponema*

(B) Influenza → *virus*

✓ (C) Babesiosis

(D) Blastomycosis
? *fungal*

Ans [C]

✓ Babesiosis is a malaria-like parasitic disease caused by infection with *Babesia microti*, a genus of protozoa piroplasms.

Syphilis - Treponema pallidum (bacterium)

Influenza - Influenza virus

Blastomycosis - Blastomyces dermatitidis (fungus)

Which of the following viruses is not transferred through semen of an infected male?

NEET-2015

(A) Hepatitis-B virus

(B) Human immunodeficiency virus

☒ (C) Chikungunya virus

(D) Ebola virus

SSS

Ans [C]

Which of the following is not a sexually transmitted disease?

NEET-2015

- (A) Syphilis → *Treponema Pallidum*
- (B) Acquired Immuno Deficiency Syndrome (AIDS) → HIV
- (C) Trichomoniasis → *Trichomonas vaginalis*
- (D) Encephalitis

Ans [D]

Encephalitis is inflammation of the brain. The most common cause is viral infection. Encephalitis often causes only mild flu-like signs and symptoms — such as a fever or headache — or no symptoms at all.

The active form of *Entamoeba histolytica* feed upon

NEET-2015

Amoebian

- ~~(A)~~ Erythrocytes, mucosa and submucosa of colon
- (B) Mucosa and submucosa of colon only
- (C) Food in intestine
- (D) Blood only

Ans [A]

Entamoeba histolytica is a protozoan parasite responsible for a disease called amoebiasis. It occurs usually in the large intestine and causes internal inflammation. Neutrophils and non-activated macrophages may be killed and ingested by the organism, limiting the ability of the immune system to deal with the disease. E. histolytica is also capable of phagocytosing red blood cells. They feed up on erythrocytes, mucosa and submucosa of colon.

qqq

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

NEET-2014



~~(A)~~ Hallucinogen

(B) Depressant

(C) Stimulant

(D) Pain-killer

Datura

Ans [A]

This plant diagram (picture) is datura which has hallucinogens are also known as psychedelics. These drugs have a strong effect on cerebrum and sense organs and take the user to a world of fantasy giving him false and temporary happiness. Normally, these drugs are given to the patients suffering from depression, insomnia, mental illness etc.

NCERT
Excessive dosage of cocaine causes hallucinations. Other well-known plants with hallucinogenic properties are Atropa belladonna and Datura

qqq

At which stage of HIV infection does one usually show symptoms of AIDS? **NEET-2014**

- (A) Within 15 days of sexual contact with an infected person
- (B) When the infected retro virus enters host cells
- ☒ (C) When HIV damages large number of helper T-Lymphocytes
- (D) When the viral DNA is produced by reverse transcriptase

Ans [C]

AIDS symptoms appear in the most advanced stage of HIV disease. Some people show HIV symptom shortly but it usually takes more than 10 years for HIV to attack T-helper cells which regulate both humoral and cellular immunity. This causes their depletion due to which the patient's immune system becomes very weak.

$CD_4 \rightarrow < 200 \times 10^6 / \text{litre}$ } Full blown AIDS
 $> 900 \times 10^6 / \text{litre}$

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

NEET-2014

~~(A)~~ T-lymphocytes

(B) B-lymphocytes

(C) Thrombocytes

(D) Erythrocytes

Ans [A]

T-lymphocyte receptors can recognise only antigen that bound to cell membrane protein. These lymphocytes mediate CMI (cell mediated immunity). B-lymphocytes are the major effector molecules of humoral immunity. Erythrocytes are red blood cells. Thrombocytes or platelets secrete factors that are involved in vascular repair.

qqq

Motile zygote of Plasmodium occurs in

NEET-2012

- ~~(A)~~ Gut of female Anopheles (B) Salivary glands of Anopheles
(C) Human RBCs (D) Human liver

ookinete or vermicle

Ans [A]

When female Anopheles sucks the blood of an infected person, the gametocytes of Plasmodium are picked up by the mosquito. Now sexual reproduction of Plasmodium occurs inside mosquito. The outer envelope of gametocyte is dissolved and its contents are liberated into the cavity of gut. These contents then undergo gametogony, i.e., formation of microgametes and macrogamete. The nuclei of both fuse and a synkaryon or zygote is formed. This zygote is motionless and spherical for sometime but becomes motile, elongated and vermiform very soon. Now, it is called vermicle or ookinete. Ookinete pierces the stomach wall and forms a cyst (oocyst) on its outer surface which has about 10000 sporozoites. The latter pass into salivary glands of the mosquito.

Widal test is carried out to test (पुष्टि)

NEET-2012

(A) Malaria

(B) Diabetes mellitus

(C) HIV/AIDS

~~(D)~~ Typhoid fever

Ans [D]

Widal test is one of the most over utilized diagnostic tests for typhoid fever in developing countries ever since its introduction over 100 years ago. This test demonstrates the presence of somatic (O) and flagellar (H) agglutinins to *Salmonella typhi* in the patients serum using suspensions of O and H antigens. Antigens of *S. paratyphi* A and *S. paratyphi* B are included in most commercial kits.

qqq

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

NEET-2012

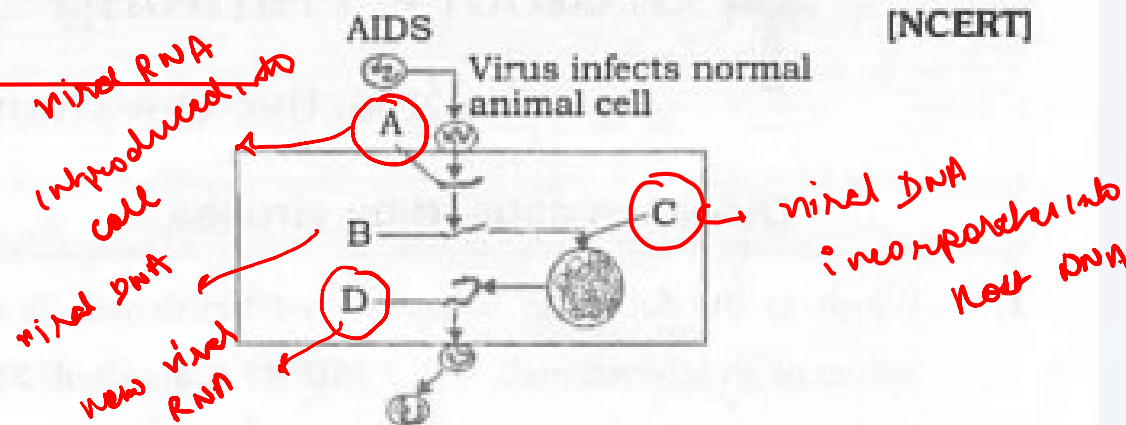
- (A) They compete with normal cells for vital nutrients.
- (B) They do not remain confined in the area of formation
- (C) They divide in an uncontrolled manner
- ☒ (D) They show contact inhibition

Ans [D]

Contact inhibition is the natural process of arresting cell growth when two or more cells come in contact with each other. It is a property of normal cells. Cancer cells divide in a controlled manner and do not show contact inhibition.

following flow chart shows the mode of action of AIDS virus. Identify the labelled sequences A, B, C and D

[NCERT]

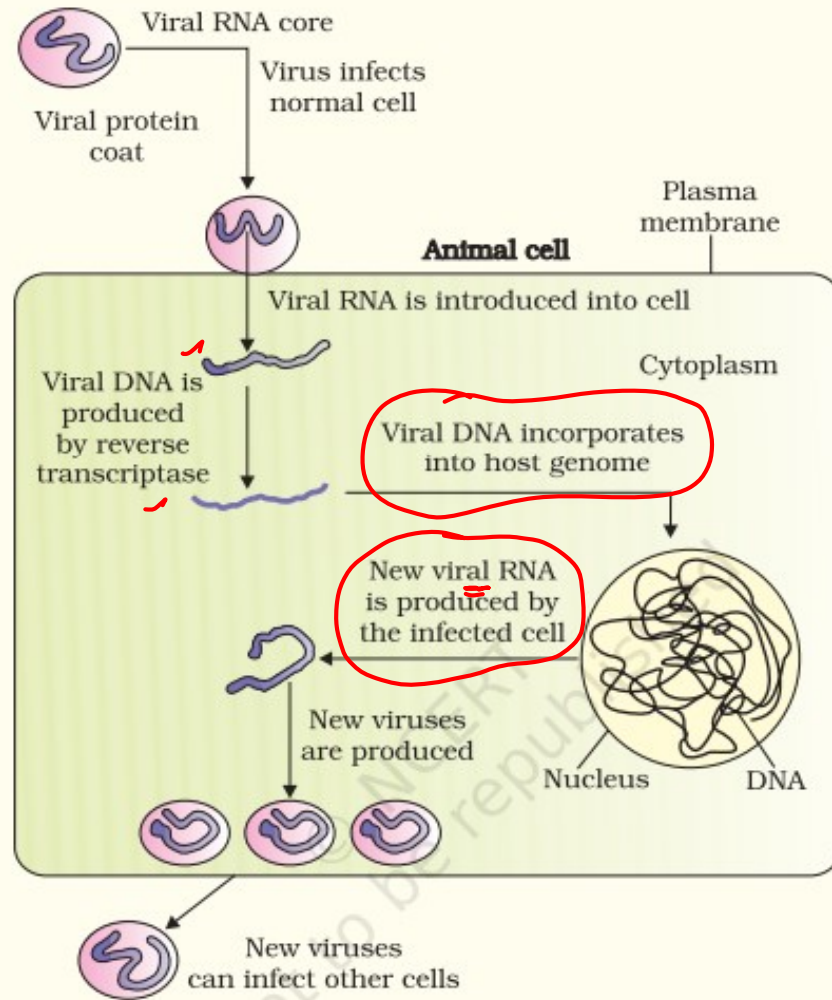


- (a) A - Viral DNA introduced into cell; B - Viral RNA; C - Viral RNA incorporates into host DNA; D - New viral DNA produced
- ☒ (b) A - Viral RNA introduced into cell; B - Viral DNA; C - Viral DNA incorporates into host DNA; D - New viral RNA produced
- (c) A - Viral RNA introduced into cell; B - Viral RNA; C - Viral DNA incorporates into host DNA; D - New viral DNA produced
- (d) A - Viral DNA introduced into cell; B - Viral DNA; C - Viral DNA incorporates into host RNA; D - New viral RNA produced

Ans : B

NCERT

Retrovirus



Which one of the following options gives the correct matching of a disease with its causative organism and mode of infection
[CBSE PMT (Mains) 2011]

Disease	Causative Organisms	Mode of Infection
(a) Elephantiasis	<i>Wuchereria bancrofti</i>	With infected water and food ✗
(b) Malaria	<i>Plasmodium vivax</i>	Bite of male <i>Anopheles</i> mosquito ✗
(c) Typhoid	<i>Salmonella typhi</i>	With inspired air
<u>(d) Pneumonia</u>	<i>Streptococcus pneumoniae</i>	<u>Droplet infection</u>

Which one of the following contains bacterial diseases

[NCERT; CBSE PMT 1998; Pb PMT 2000;

MP PMT 2000; BHU 2008; DUMET 2010]

- (a) Cholera, typhoid, pneumonia, Diphtheria, leprosy,
- (b) Malaria, AIDS, cholera, mumps
- (c) Typhoid, tuberculosis, influenza, mumps
- (d) Diabetes, malaria, syphilis, mumps

→
virus

→ paramyxovirus

Match the following bacteria with the diseases and choose the correct option

Column I		Column II	
A.	<i>Treponema pallidum</i>	1.	Plague
B.	<i>Yersinia pestis</i>	2.	Anthrax
C.	<i>Bacillus anthracis</i>	3.	Syphilis
D.	<i>Vibrio</i>	4.	Cholera

[CBSE PMT 1995; AFMC 1996; Kerala PMT 2004]

- (a) A-1, B-3, C-2, D-4 ~~(b) A-3, B-1, C-2, D-4~~
(c) A-2, B-3, C-1, D-4 (d) A-4, B-3, C-1, D-2

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Diphtheria is caused by

[AIIMS 2007]

- ☒ (a) Poisons released by living bacterial cells into the host tissue
- (b) Poisons released from dead bacterial cells into the host tissue
- (c) Poisons released by virus into the host tissues x
- (d) Excessive immune response by the host's body

'Amoebiasis' (amoebic dysentery) is caused by [NCERT;
CBSE PMT 1992; MP PMT 1993, 95; Odisha JEE 1995;
RPMT 1995; CPMT 1995; BVP 2004]

- (a) *Plasmodium vivax*
- (b) *Entamoeba gingivalis*
- ✓ (c) *Entamoeba histolytica*
- (d) *Trypanosoma gambiense*

Kala azar is caused and transmitted respectively by

[MP PMT 1994, 2002, 03, 04, 10; AFMC 2001;
CPMT 2002; AIIMS 2003; RPMT 2005, 06;
WB JEE 2008, 16]

- ☒ (a) *Leishmania* and *Phlebotomus*
- (b) *Trypanosoma* and sand fly ✗
- (c) *Leishmania* and tse-tse fly
- (d) *Trypanosoma* and *Glossina palpalis* ✗



Which of the following is the infective stage of the malarial parasite (*Plasmodium*)

[Manipal 1995; Bihar PMT 1996; BHU 1996;
CPMT 1998; MP PMT 2001; JIPMER 2002; RPMT 2006;
Odisha JEE 2010; WB JEE 2011]

[RPMT 2002]

- | | |
|----------------|-----------------|
| (a) Gametocyte | (b) Merozoite |
| (c) Sporozoite | (d) Trophozoite |

Diabetes mellitus takes place only when

[DPMT 2004]

- (a) α -cells of pancreas are in excess
- (b) β -cells of pancreas are in excess
- (c) α -cells of pancreas are in hypo
- ☒ (d) β -cells of pancreas are in hypo


Diabetes insipidus

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) Ultra Sound
- (c) WIDAL
- ☒ (d) ELISA



Which one of the following acts as a physiological barrier to the entry of microorganisms in human body?

- ☒ (a) Tears
 - ☐ (b) Monocytes
 - ☐ (c) Skin
 - ☐ (d) Epithelium of urogenital tract
- 

In malignant tumors, the cells proliferate, grow rapidly and move to other parts of the body to form new tumors. This stage of disease is called [NCERT]

- (a) Metagenesis
- (b) ☒ Metastasis
- (c) Teratogenesis
- (d) Mitosis

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

Column I

A. Amoebiasis

B. Diphtheria

C. Cholera

D. Syphilis

Column II

(i) *Treponema pallidum*

(ii) Use only sterilized food and water

(iii) DPT Vaccine

(iv) Use oral rehydration

[CBSE PMT 2008]

(a) A-(ii), B-(i), C-(iii), D-(iv)

☒ (b) A-(ii), B-(iii), C-(iv), D-(i)

(c) A-(i), B-(ii), C-(iii), D-(iv)

(d) A-(ii), B-(iv), C-(i), D-(iii)

Match the causative organisms with their diseases

A.	<i>Haemophilus influenzae</i>	1.	Malignant malaria
B.	<i>Entamoeba histolytica</i>	2.	Elephantiasis / Filariasis
C.	<i>Plasmodium falciparum</i>	3.	Pneumonia
D.	<i>Wuchereria bancrofti</i>	4.	Typhoid
E.	<i>Salmonella typhi</i>	5.	Amoebiasis

[NCERT; Kerala PMT 2011; MH CET 2015]

(a) A-1, B-5, C-3, D-2, E-4

☒ (b) A-3, B-5, C-1, D-2, E-4

(c) A-5, B-1, C-3, D-4, E-2 ✗

(d) A-1, B-3, C-2, D-5, E-4 ✗

(e) A-1, B-3, C-5, D-2, E-4