

# DPP - Daily Practice Problems

## Chapter-wise Sheets

Date :

Start Time :

End Time :

# BIOLOGY

CB30

SYLLABUS : Human Health and Disease

Max. Marks : 180

Marking Scheme : + 4 for correct & (–1) for incorrect

Time : 60 min.

INSTRUCTIONS : This Daily Practice Problem Sheet contains 45 MCQs. For each question only one option is correct. Darken the correct circle/ bubble in the Response Grid provided on each page.

- A cell coded protein formed in response to infection with most animal viruses is
  - Antigen
  - Antibody
  - Interferon
  - Histone
- A sexually transmitted disease caused by bacteria is
  - Leprosy
  - AIDS
  - Syphilis
  - Pertussis
- What is true about T-lymphocytes in mammals?
  - These are produced in thyroid
  - There are of three main types — cytotoxic T-cells, helper T-cells and suppressor T-cells
  - These originate in lymphoid tissues
  - They scavenge damaged cells and cellular debris
- Obstacle to large scale transplantation of organs is
  - insufficiency of organ donors
  - immunological rejection of foreign bodies
  - religious or ethnic considerations
  - lack of effective surgical techniques
- The use of *Cannabis* products (bhang, ganja, charas, marijuana or hashish) causes
  - depression of brain activity and feeling of calmness
  - alters thoughts, perceptions and feelings
  - suppresses brain function and relieves pain
  - stimulates the nervous system and increases alertness and activity.
- Which one of the following is an Indian medicinal plant ?
  - Saccharum officinarum*
  - Rauwolfia serpentina*
  - Oryza sativa*
  - Solanum melongena*
- In which one of the following pairs of diseases both are caused by viruses ?
  - Tetanus and typhoid
  - Whooping cough and sleeping sickness
  - Syphilis and AIDS
  - Measles and Rabies
- Hypersensitivity to an allergen is associated with
  - aberrant functioning of the immune mechanism
  - increase in ambient temperature
  - age of the individual
  - food habits

RESPONSE  
GRID

1. (a)(b)(c)(d)

2. (a)(b)(c)(d)

3. (a)(b)(c)(d)

4. (a)(b)(c)(d)

5. (a)(b)(c)(d)

6. (a)(b)(c)(d)

7. (a)(b)(c)(d)

8. (a)(b)(c)(d)

Space for Rough Work

9. 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
10. Human immuno deficiency virus (HIV) has a protein coat and a genetic material which is  
 (a) single stranded DNA  
 (b) double stranded DNA  
 (c) single stranded RNA  
 (d) double stranded RNA
11. Short-lived immunity acquired from mother to foetus across placenta or through mother's milk to the infant is categorised as  
 (a) innate non-specific immunity  
 (b) active immunity  
 (c) passive immunity  
 (d) cellular immunity
12. Which one is a correctly match sexually transmitted disease with its pathogen?  
 (a) Syphilis – *Leishmania donovani*  
 (b) AIDS – *Bacillus anthracis*  
 (c) Urethritis – *Entamoeba gingivalis*  
 (d) Gonorrhoea – *Neisseria gonorrhoeae*
13. 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
14. Widal test is used for the diagnosis of  
 (a) Malaria (b) Pneumonia  
 (c) Tuberculosis (d) Typhoid
15. Which one of the following depresses brain activity and produced feelings of calmness, relaxation and drowsiness?  
 (a) Morphine (b) Valium  
 (c) Amphetamines (d) Hashish
16. Antibodies in our body are complex  
 (a) steroids (b) prostaglandins  
 (c) glycoproteins (d) lipoproteins
17. Select the correct statement 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
18. Increased asthmatic attacks in certain seasons are related to  
 (a) eating fruits preserved in tin containers  
 (b) inhalation of seasonal pollen  
 (c) low temperature  
 (d) hot and humid environment.
19. A person likely to develop tetanus is immunised by administering  
 (a) preformed antibodies  
 (b) wide spectrum antibiotics  
 (c) weakened germs  
 (d) dead germs
20. Which one of the following statements 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 with proper care and nutrition  
 (d) The causative HIV retrovirus enters helper T-lymphocytes thus reducing their numbers
21. 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

**RESPONSE  
GRID**

9. (a)(b)(c)(d) 10. (a)(b)(c)(d) 11. (a)(b)(c)(d) 12. (a)(b)(c)(d) 13. (a)(b)(c)(d)  
 14. (a)(b)(c)(d) 15. (a)(b)(c)(d) 16. (a)(b)(c)(d) 17. (a)(b)(c)(d) 18. (a)(b)(c)(d)  
 19. (a)(b)(c)(d) 20. (a)(b)(c)(d) 21. (a)(b)(c)(d)

Space for Rough Work

22. Thromboplastin is secreted by  
(a) platelets (b) lymphocytes  
(c) helper T-cells (d) mast cells
23. Which one of the following techniques is safest for the detection of cancers?  
(a) Magnetic resonance imaging (MRI)  
(b) Radiography (X-ray)  
(c) Computed tomography (CT)  
(d) Histopathological studies
24. Common cold differs from pneumonia in, that  
(a) Pneumonia is caused by a virus while the common cold is caused by the bacterium *Haemophilus influenzae*  
(b) Pneumonia pathogen infects alveoli whereas the common cold affects nose and respiratory passage but not the lungs  
(c) Pneumonia is a communicable disease whereas the common cold is a nutritional deficiency disease  
(d) Pneumonia can be prevented by a live attenuated bacterial vaccine whereas the common cold has no effective vaccine
25. 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.
26. Which of the following pairs contains an infections and a non-infectious disease respectively?  
(a) Typhoid and AIDS  
(b) AIDS and Cancer  
(c) Pneumonia and malaria  
(d) Cancer and malaria
27. The common cold is caused by  
(a) Rhino viruses  
(b) *Streptococcus pneumoniae*  
(c) *Salmonella typhimurium*  
(d) *Plasmodium vivax*
28. Elephantiasis, a chronic inflammation that results in gross deformities is caused by  
(a) *Ascaris* (b) *E.coli*  
(c) *Wuchereria* (d) *Trichophyton*
29. Match Column-I with Column-II and select the correct answer from codes given below.
- | Column-I       | Column-II               |
|----------------|-------------------------|
| A. Sporozoites | (I) Infectious form     |
| B. Filariasis  | (II) Aedes mosquitoes   |
| C. Typhoid     | (III) <i>Wuchereria</i> |
| D. Chikungunya | (IV) Widal test         |
- (a) A-(IV), B-(II), C-(I), D-(III)  
(b) A-(III), B-(IV), C-(II), D-(I)  
(c) A-(II), B-(III), C-(I), D-(IV)  
(d) A-(I), B-(III), C-(IV), D-(II)
30. Hepatitis B is transmitted through  
(a) sneezing (b) female Anopheles  
(c) coughing (d) blood transfusions
31. Which of the following is the bacterial disease in humans?  
(a) Dysentery (b) Malaria  
(c) Plague (d) Both (a) and (c)
32. The first line of defence in the immune system is provided by  
(a) skin and mucous membrane  
(b) inflammatory response  
(c) the complement system  
(d) none of these
33. The most abundant antibody produced against allergens  
(a) IgE (b) IgA  
(c) IgG (d) IgM

**RESPONSE  
GRID**

22. (a) (b) (c) (d)  
27. (a) (b) (c) (d)  
32. (a) (b) (c) (d)

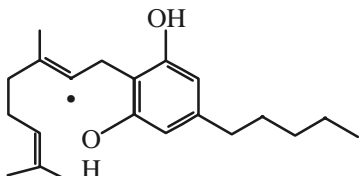
23. (a) (b) (c) (d)  
28. (a) (b) (c) (d)  
33. (a) (b) (c) (d)

24. (a) (b) (c) (d)  
29. (a) (b) (c) (d)

25. (a) (b) (c) (d)  
30. (a) (b) (c) (d)

26. (a) (b) (c) (d)  
31. (a) (b) (c) (d)

Space for Rough Work

34. An auto-immune disease is  
 (a) SCID  
 (b) rheumatoid arthritis  
 (c) myasthenia gravis  
 (d) both (b) and (c)
35. The primary lymphoid organs are  
 (a) spleen and thymus  
 (b) bone marrow and thymus  
 (c) bone marrow and lymph node  
 (d) thymus and MALT
36. Vaccine against polio viruses is an example of  
 (a) auto-immunization  
 (b) passive immunization  
 (c) active immunization  
 (d) simple immunization
37. Which of the following is celebrated as 'World AIDS Day'?  
 (a) 31st March (b) 1st March  
 (c) 1st December (d) 31st December
38. Which of the following approaches are used for the treatment of cancer?  
 (a) Gene therapy and immunotherapy  
 (b) Surgery  
 (c) Radiotherapy and Chemotherapy  
 (d) All of these
39. Which of these is a member of the group of chemicals whose chemical structure is given below?
- 
- (a) Marijuana (b) Hashish  
 (c) Ganja (d) All of these
40. Which drug is being excessively taken by some sports persons nowadays?  
 (a) Opioids  
 (b) Barbiturates  
 (c) Cannabinoids  
 (d) Lysergic acid diethyl amides (LSD)
41. Take the odd one out  
 (a) Rabies, Influenza, AIDS  
 (b) Amoebiasis, Giardiasis, Trypanosomiasis  
 (c) Taeniasis, Ascariasis, Elephantiasis  
 (d) Cancer, Tuberculosis, Tetanus
42. Small proteins produced by vertebrate cells in response to viral infections inhibiting viral multiplication are known as  
 (a) Lipoproteins (b) Immuglobulins  
 (c) Interferons (d) Antitoxins
43. Which one of the following acts as a physiological barrier to the entry of micro-organisms in human body ?  
 (a) Epithelium of urogenital tract  
 (b) Tears  
 (c) Monocytes  
 (d) Skin
44. The treatment of snake-bite by antivenine is an example of  
 (a) Artificially acquired active immunity  
 (b) Artificially acquired passive immunity  
 (c) Naturally acquired passive immunity  
 (d) Specific natural immunity
45. The drug useful to increase cardiovascular effects in human beings is  
 (a) Cocaine (b) Barbiturate  
 (c) Benzodiazepine (d) Insulin

**RESPONSE  
GRID**

34. (a) (b) (c) (d) 35. (a) (b) (c) (d) 36. (a) (b) (c) (d) 37. (a) (b) (c) (d) 38. (a) (b) (c) (d)  
 39. (a) (b) (c) (d) 40. (a) (b) (c) (d) 41. (a) (b) (c) (d) 42. (a) (b) (c) (d) 43. (a) (b) (c) (d)  
 44. (a) (b) (c) (d) 45. (a) (b) (c) (d)

Space for Rough Work

DAILY PRACTICE PROBLEM DPP CHAPTERWISE 30 - BIOLOGY			
Total Questions	45	Total Marks	180
Attempted		Correct	
Incorrect		Net Score	
Cut-off Score	48	Qualifying Score	55
Success Gap = Net Score – Qualifying Score			
Net Score = (Correct × 4) – (Incorrect × 1)			

# HINTS & SOLUTIONS

## DPP/CB30

1. (c) A special defence system works specially against viral infection. It has no effect on micro-organism. Cells invaded by a virus produce an antiviral protein called interferon (IFN). The latter is released from the infected cell and on reaching the nearby non-infected cells it makes them resistant to the virus infection.
2. (c) Syphilis is caused by bacteria *Treponema pallidum*.
3. (c) The lymphocytes which differentiate in the thymus are known as the T - lymphocytes. T-lymphocytes are responsible for the cellular immune response.
4. (b) The major obstacle in transplantation of organs is that the recipient body does not accept the donor's organ. The body defence mechanism rejects & treats the transplanted organ as a foreign particle and reacts actively.
5. (b) Tranquilizers bring about depression of brain activity and feeling of calmness. Stimulants stimulate the nervous system, and increase alertness and activity. Hallucinogens (*Cannabis* products) alters thoughts, perceptions and feelings.
6. (b) *Rauwolfia serpentina* belong to the family *Apocynaceae*, its roots yield a chemical useful for high blood pressure.
7. (d) Tetanus and typhoid are caused by bacteria. Whooping cough is caused by bacteria. Sleeping sickness is caused by parasitic flees. Syphilis is caused by bacteria while AIDS is the final stage of HIV viral disease. Measles and Rabies are caused by virus.
8. (a) Allergy means all kinds of untoward reactions manifested in the body due to hypersensitivity of substances called allergens. Allergy reactions occur due to liberation of histamine by tissue cells.
9. (c) Carcinomas are malignant growths of the epithelial tissue that cover or line the body organs.
10. (c) HIV is a spherical, enveloped virus of about 90-120 nm diameter. Its nucleocapsid is icosahedral and its genome consists of a single-stranded RNA filament segmented into two identical filaments and associated with a "reverse transcriptase enzyme".
11. (c)
12. (d) AIDS is caused by HIV virus and Gonorrhoea is caused by *Neisseria gonorrhoea*. Urethritis is inflammation of the urethra by bacteria. Syphilis is caused by *Treponema pallidum*.
13. (c) The saliva in the mouth and the tears from the eyes belong to physiological barriers.
14. (d) Widal test is used for the diagnosis of typhoid. It is an agglutination test for the presence of antibodies against the *Salmonella* organisms, which cause typhoid fever.
15. (b) Amphetamines bring about increased alertness and sleeplessness. Hashish is a hallucinogen. Valium is a tranquilizer. Valium depresses brain activity and produces feeling of calmness, relaxation and drowsiness. Morphine is an opiate narcotic.
16. (c) Whenever our body gets attacked by some foreign invaders, our body's immune system produces some chemicals to kill or to react against the invader. These chemicals are actually made up of carbohydrates & proteins i.e. glycoproteins called antibodies.
17. (a) B and T-lymphocytes produce antibodies against pathogen in the body, if due to some reason B and T-lymphocytes are damaged the body will not produce antibodies against a pathogen. Each B cell and T cell is specific for a particular antigen.
18. (b) Pollen-grains of many species are responsible for some of the severe allergies and bronchial affliction in some people often lead to chronic respiratory disorders - asthma, bronchitis.
19. (c) Tetanus toxoid is a vaccine consisting of growth products of *Clostridium tetani* treated with formaldehyde serving as an active immunising agent. Hence it is weakened germs. The first tetanus toxoid (inactivated toxin) was produced in 1924 and was used successfully to prevent tetanus in the armed services during World War II. In the mid-1940s, tetanus vaccine was combined with diphtheria toxoid and inactivated pertussis vaccine to make the combination DTP vaccine for routine childhood immunization.
20. (d) AIDS (Acquired Immune Deficiency Syndrome) is caused by HIV retrovirus. The virus destroys the helper T lymphocytes thus reducing their numbers.
21. (d) 22. (a) 23. (a) 24. (b)
25. (a) Preformed antibodies need to be injected to treat the bite by a viper snake. It is also a type of immunization which is called as passive immunization. Antibodies, produced by B-cells, are typically made of basic structural units—each with two large heavy chains and two small light chains. B cells differentiate into plasma cells that secrete antibodies. Antibodies are proteins that bind to specific antigens and mark them for destruction by, for example, making them more recognizable to phagocytic cells. Rejection of a kidney graft is not a function of B lymphocyte.
26. (b) Infectious diseases are those diseases that can spread from one person to another e.g., AIDS. Non-infectious diseases are those diseases that cannot spread from one person to another e.g., cancer.
27. (a) Common cold is caused by some 100 types of Rhino viruses. Symptoms of common cold are irritation of nasal tract, nasal congestion, flow of mucus, sore throat, sneezing, cough, headache and slight fever.
28. (c) Elephantiasis or filariasis is caused by a number of worms. However, in India only two types of worms are responsible for this disease, *Wuchereria bancrofti* and *W. malayi*. This disease is transmitted by female *Culex* mosquitoes. Elephantiasis affects lymphatic vessels of the lower limbs.
29. (d)
30. (d) Hepatitis B is a viral disease, transmitted through both blood and sexual intercourse.
31. (d) Plague is a bacterial disease caused by *Yersinia pestis*. Symptoms of this disease are high fever and a bubo in the groin or armpit. It is primarily a disease of rodents but accidentally affects man. The vector of this disease is rat fleas that carries germs of plague from rat to rat. When the rats dies of plague, the fleas leave the dead rat and if any man is nearby, they bite him and inject some plague germs into his blood. Shigellosis or bacillary dysentery, is a diarrheal illness resulting from an acute inflammatory reaction caused by *Shigella*.
32. (a) Skin and mucous membrane are the physical barriers that provide the first line of defence or the external defence. These barriers prevent the entry of micro-organisms into the body. Outer tough layer of the skin, the stratum corneum prevents the entry of bacteria and viruses. Mucus secreted by mucous membrane traps the microorganisms and immobilises them.
33. (a) The substances to which an exaggerated response of the immune system occurs are called allergens. The antibodies pro-

duced to these are of IgE type.

34. (d) If the immune system fails to recognize 'self' from 'non-self' and starts destroying the body's own cells, this leads to some malfunctions, which are termed as autoimmune 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. In this disease, antibodies bind to cholinergic receptors on muscle cells, which impairs the ability of the neurotransmitter acetylcholine to induce muscle contraction.
35. (b) 'A'-lymph nodes, 'B'-Thymus, 'C'-spleen, 'D'-Bone marrow. Thymus and bone marrow are the primary lymphoid organs where maturation of T-cells and B-cells take place respectively. Lymph nodes and spleen are the secondary lymphoid organs where T-cells and B-cells undergo proliferation and differentiation.
36. (c) 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. Infecting the microbes deliberately during immunization/vaccination induces active immunity e.g., polio vaccine.
37. (c) 38. (d)
39. (d) The given figure is of cannabinoid molecule. Cannabinoids are hallucinogenic chemicals obtained from leaves, resin and inflorescence of hemp plant, Cannabis sativa. Marijuana, hashish and ganja and cannabinoids.
40. (c) Cannabinoids bring about euphoria, excitement, sometimes uncontrolled laughter and dilation of pupil of eyes. These days cannabinoids are taken by some sports persons.
41. (d) Rabies, Influenza and AIDS are viral diseases, Amoebiasis, Ascariasis and Trypanosomiasis are caused by Protozoa; Taeniasis, Ascariasis and Elephantiasis are the diseases caused by Helminths but Cancer, Tuberculosis and Tetanus are not related diseases. Tuberculosis and Tetanus are bacterial diseases while cancer is not.
42. (c) Lipoproteins are conjugated proteins having polypeptides in association with lipids. Immunoglobulins are the constituent of antibodies. Interferons (INFs) are a group of three vertebrate glycoproteins. Interferon induces among adjacent cells, an antiviral state by inducing synthesis of the enzymes which inhibit the viral production cycle.
43. (d) 44. (b) 45. (a)