

● Drugs

- Up to 19th century, plant based natural drugs were used in crude form e.g. powder or boiled drink of bark, roots and leaves of tree etc.
- The bark of **Cinchona** tree and **quinine** obtained from it, were used for **Malaria**.
- Treatment of diseases in which parasites live (virus, fungi, yeast, bacteria, protozoa worm) are killed and their growth is inhibited by chemical in body is called **chemotherapy**.
- German chemist **Paul Ehrlich** is known as **father** of chemotherapy.
- Ehrlich synthesized arsenic containing compounds (**salvarsan** and **neo salvarsan**) for **skin diseases** like **syphilis** and for **sleeping sickness**.

● Classification of Drugs

● On the basis of pharmacological effect :

- useful for doctors.
- body pain relieving drugs can be classified as **analgesic drugs**.
- Drugs, killing or inhibiting the growth of micro organisms that cause harmful effect on wound or injury can be classified as **antiseptic drugs**.

● On the basis of drug action :

- Some problems occur in body due to release of histamine such as common cold, acidity, swelling, redness of skin and itching. Therefore, the drugs used to stop the release of histamine are classified as separated as of **antihistamines**.

● On the basis of chemical structure of drugs :

- Drugs containing similar chemical structure are included in same class.
- eg. sulphonamides have common structure as follows :



● On the basis of molecular targets of drugs :

- Biomolecules such as carbohydrates, lipids, proteins and nucleic acids. These biomolecules are called target molecules of drugs.

● Working Mechanism of Drugs

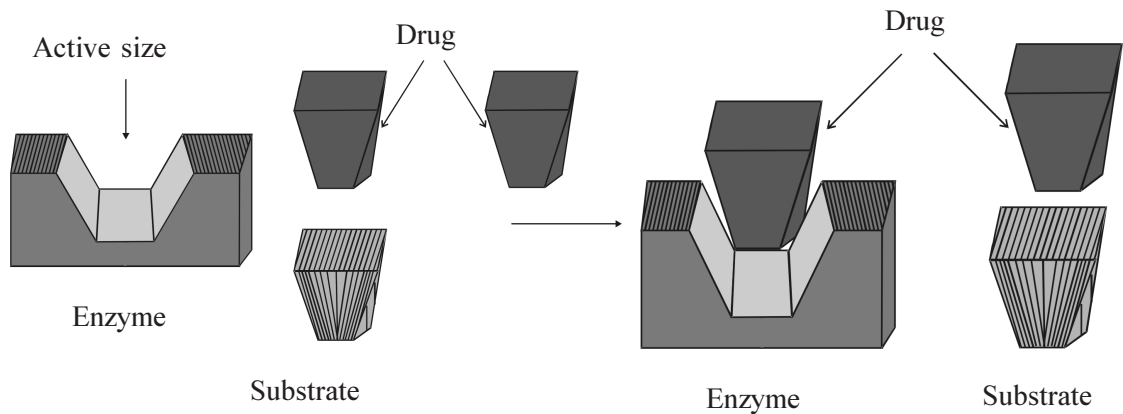
- Some proteins perform the role of biological catalysts in the body which is known as **enzymes**.
- Some proteins are crucial to communication system in the body which is known as **acceptors**.
- **Nucleic acid** have coded genetic information for the cell.
- **Lipid** and **carbohydrates** are structural parts of the cell membrane.

Drug-Enzyme Interaction :

- Generally substrate is bound with active site of enzyme. Drugs stop this reaction of enzymes for this drugs stop the substrate from binding with active site of enzyme. This drugs are called **enzyme inhibitors**.
- Drugs, stop the substrate to bind with active site of enzymes in two ways.

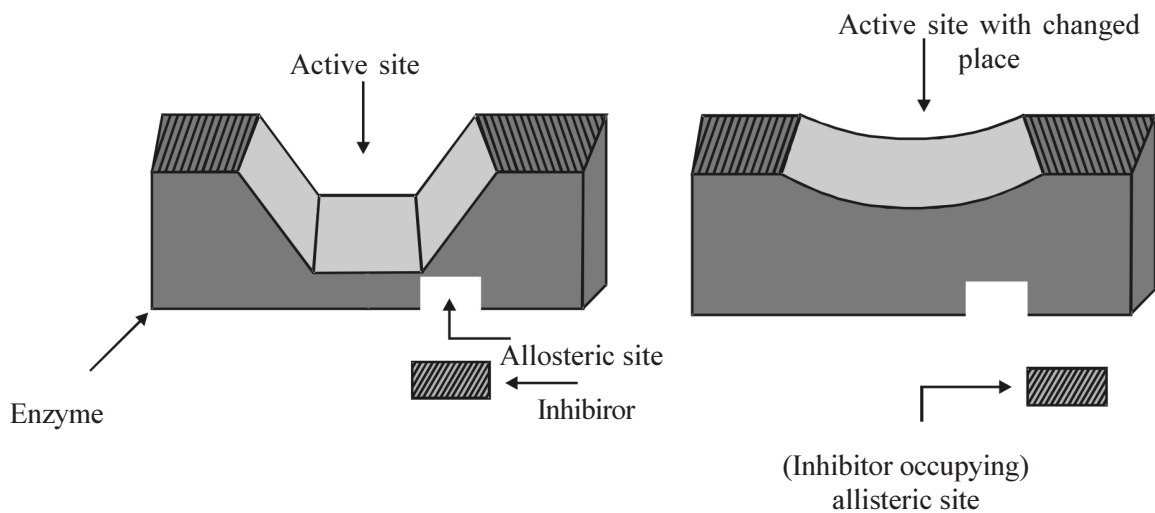
- **Competitive inhibitors :**

- Drugs compete with natural substrate for their attachment on the active site of enzymes. Such drugs are called competitive inhibitors.



- **Allosteric site :**

- Some drugs do not bind to the active site of enzyme but bind to a different site. This site is called '**allosteric site**'.
- This type of binding of drug with enzyme results in the change in shape of active site therefore substrate cannot bind with it.

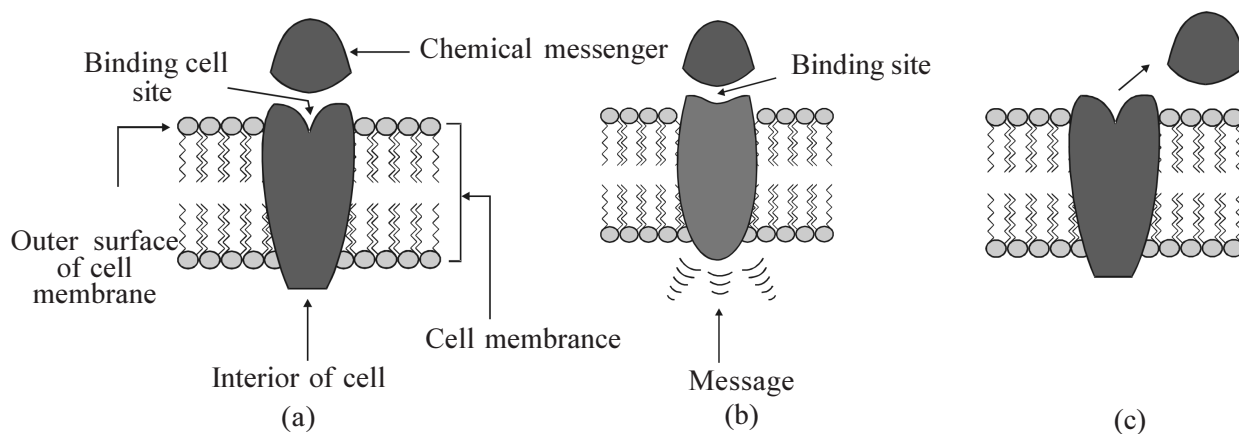


- **Drug-Receptor Interaction**

- In the body, message between two neurons to muscles is communicated through certain chemicals. These chemicals are called **chemical messengers**.
- Drugs bind to receptor site and stop communication process of cell. These drugs are called **antagonists**.
- If the messenger shaped drug is used, then receptor accept it and under the impression of natural messenger the communication process occurs. These drugs are called **agonists**.
- Antagonists is **competitor** and Agonists is **contender**.

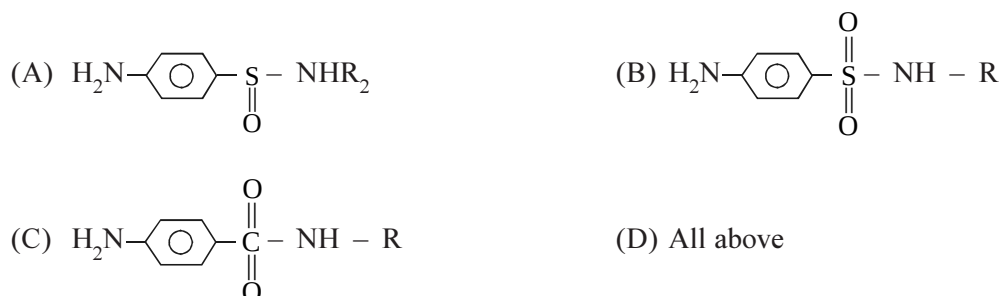
● **Examples of chemical messengers**

- (1) Adrenaline (2) Nora adrenaline (3) acetylcholine (4) Dopamine (5) serotonin

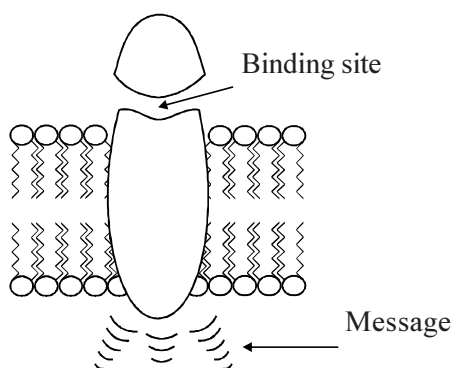


- (a) Receptor receiving chemical messenger.
 (b) Shape of the receptor changed for attachment of messenger.
 (c) Receptor regains structure after removal of chemical messenger.

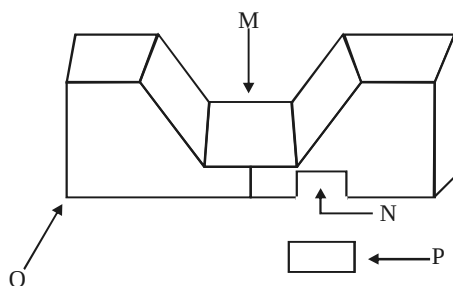
- Who is the father of chemotherapy ?
 (A) Alexander Fleming (B) Howard Florey
 (C) Paul Ehrlich (D) Ernest Boris chain
- Which of the following act as hormone and nerve transmitted both ?
 (A) Nora adrenaline (B) Dopamine (C) Acetyl choline (D) Serotonin
- For which treatment of disease drugs containing arsenic is more used ?
 (A) Jaundice (B) Typhoid (C) Syphilis (D) TB
- Which facts for following statements according to drugs receptor interaction ?
 (1) Drugs bind to acceptor site and stop communication process of cell, known as antagonists.
 (2) Some drugs bind to a different site instead of its active site known as allosteric site.
 (3) Drugs bind the substrate from binding with active site of enzyme known as enzyme inhibitors.
 (A) T T F (B) T T T (C) F T T (D) F T F
- Which of the following release to create disease like common cold, acidity, swelling, redness of skin and itching ?
 (A) Virus (B) Bacteria (C) Histamine (D) Worm
- Due to which bond between catalyst and drugs that it cannot be easily broken ?
 (A) Ionic bond (B) Van-dar waals bond (C) Hydrogen bond (D) co-valent bond
- Which of the following is the structure of sulphonamide drugs ?



8. Which drug is used in treatment of Malaria ?
 (A) Aspirin (B) Peniciline
 (C) Chloroquine (D) Paracetamol
9. For which two diseases Ehrlich synthesised arsenic containing compounds in chemotherapy ?
 (A) Sleeping sickness, Syphilis (B) Acidity, Apathy
 (C) Fever, Convulsion (D) Paralysis, Bleeding
10. Which of the following drugs is not a target molecule ?
 (A) Nucleic acid (B) Protein (C) Catalyst (D) Lipid
11. What is indicated by this figure ?



- (A) Receptor receiving chemical messenger.
 (B) shape of the receptor changed for attachment of messenger.
 (C) Receptor regains structure after removal of chemical messenger.
 (D) Receptor attached to cell element.
12. What are M, N, O, P in given figure ?



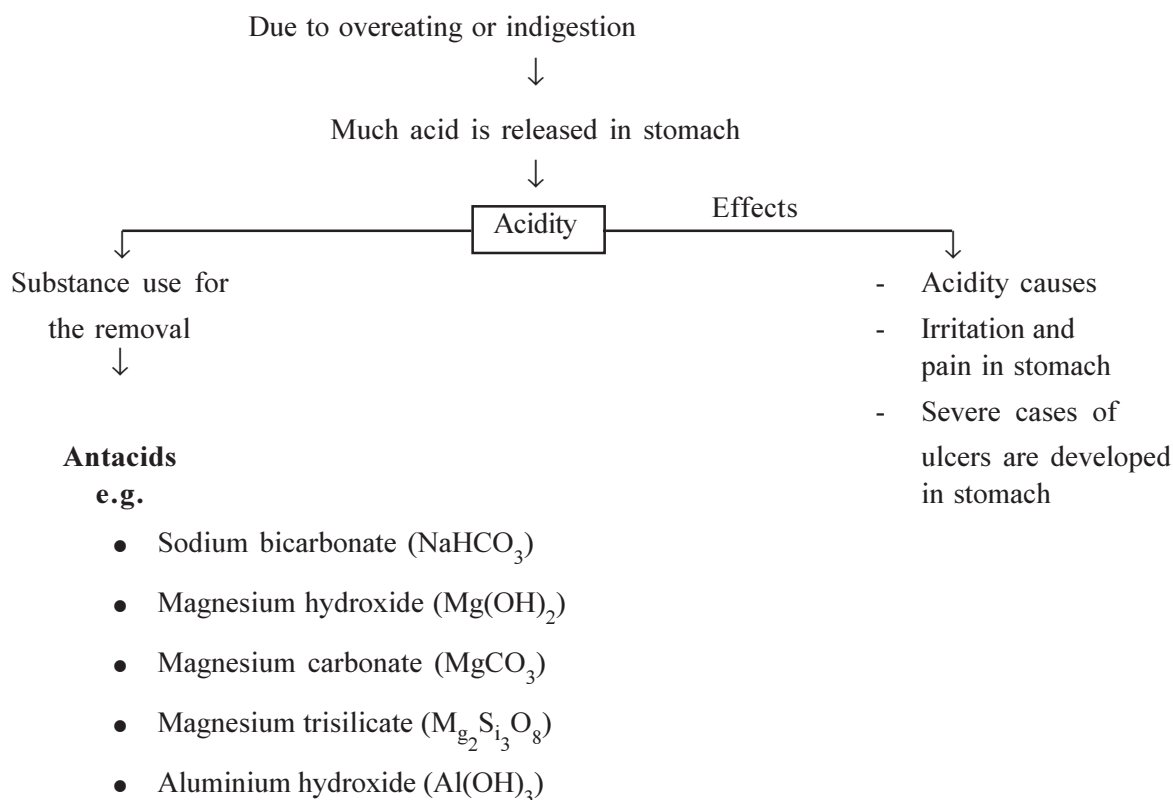
- (A) M–inhibitor, N–catalyst, O–active site, P–allosteric site
 (B) M–allosteric site, N–catalyst, O–inhibitor, P–active site
 (C) M–catalyst, N–active site, O–inhibitor, P–allosteric site
 (D) M–active site, N–allosteric site, O–catalyst, P–inhibitors

- There are two statements in each questions. where one is statement (A) and other is reason (R). Select correct option to study carefully :
 - (A) Statement (A) is correct. Reason (R) is correct and Reason (R) is not correct explanation of reason (R).
 - (B) Statement (A) is correct. Reason (R) is correct and Reason (R) is correct explanation of reason (R).
 - (C) Statement (A) is wrong and Reason (R) is wrong.
 - (D) Statement (A) is true but reason (R) is wrong.
- 13. **Statement (A)** : Sulpha drugs contain sulphonamide group.
Reason (R) : Salvarsan is sulpha drug.
- 14. **Statement (A)** : Chemical messenger communicate message between two neurons or between neuron to muscles.
Reason (R) : Chemical messenger enter into cell through receptors.
- 15. **Statement (A)** : Chemical messenger gives message to the cell without entering into the cell.
Reason (R) : Chemical messenger is obtained at binding site of receptor like protein.
- 16. **Statement (A)** : Nucleic acids have coded genetic information for the cell.
Reason (R) : Nucleic acid is target molecules of drugs.

Answers : 1. (C), 2. (A), 3. (C), 4. (A), 5. (C), 6. (D), 7. (B), 8. (C), 9. (A), 10. (C), 11. (B), 12. (D), 13. (D), 14. (D), 15. (B), 16. (A)

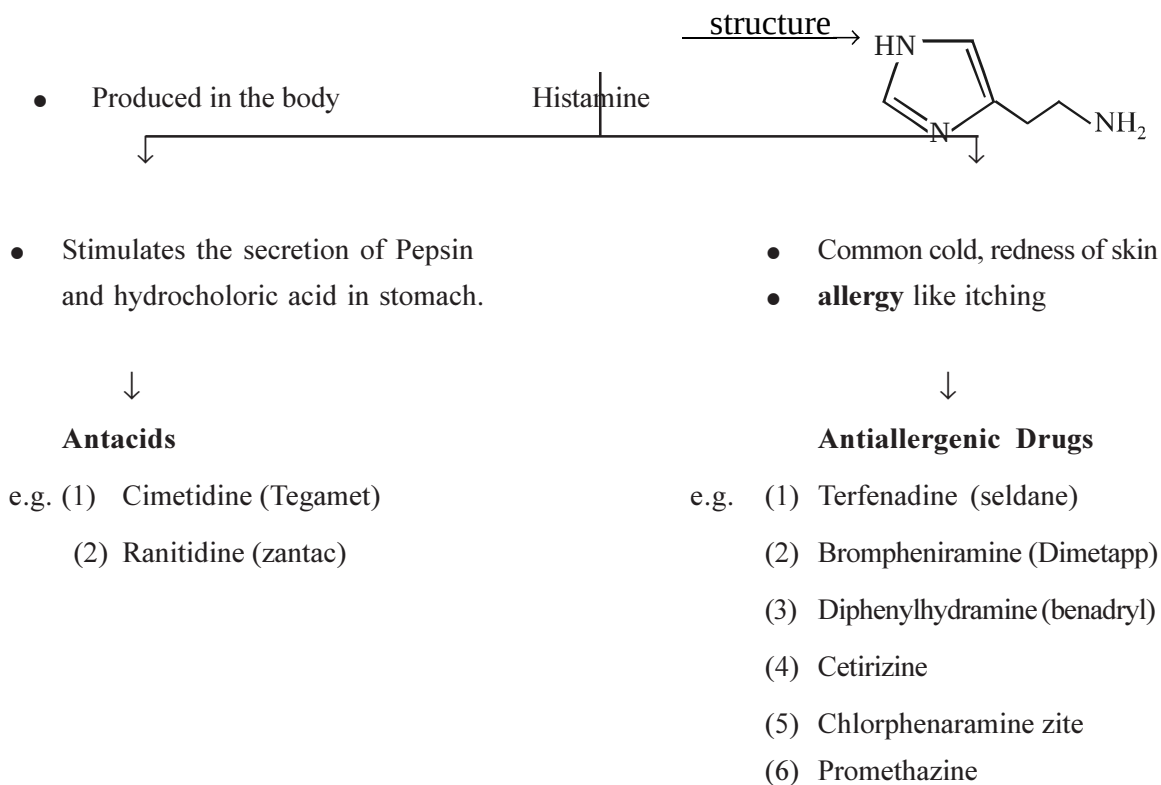
- **Therapeutic Action of Different classes of Drugs.**

(1) **Antacids** :



- Aluminium phosphate (AlPO_4)

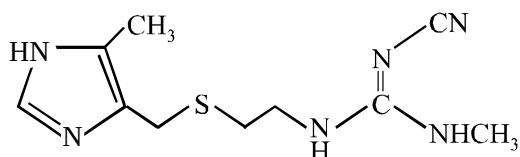
(2) Antihistamines :



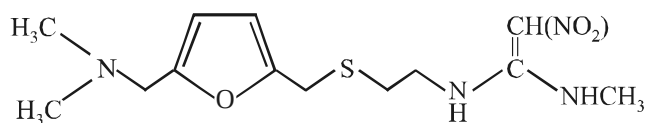
● Structur :

Antihistamines drugs :

- (1) Cimetidine (Tegamet)

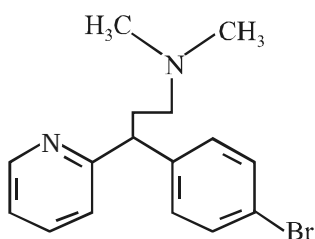


- (2) Ranitidine (Zantac)

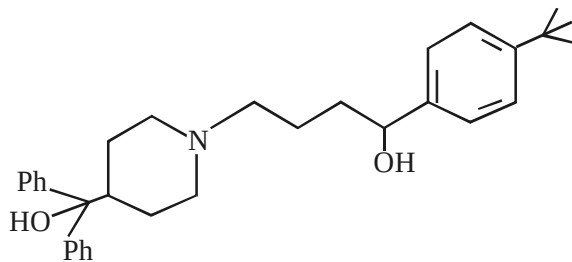


Antiallergenic drugs :

- (1) Brompheniramine (Dimetapp) :

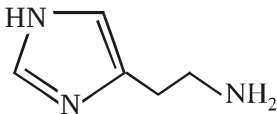


(2) Terfenadine (seldan) :



17. Which of the following is not an antacid ?

- (A) NaHCO_3 (B) Mg(OH)_2 (C) AlPO_4 (D) Al_2O_3

18.  is the structure of

- (A) Histamine (B) Promethazine (C) Seldan (D) Cimetidine

19. Which of the following substance is not used as an antacid ?

- (A) NaHCO_3 (B) Al(OH)_3 (C) Mg(OH)_2 (D) NaOH

20. Which catalyst stimulates in stomach when release of histamine in our body ?

- (A) Urase (B) Zymase (C) Pepsin (D) Pitesin

21. Which drug prevents the interaction of histamine with the receptors present in stomach wall ?

- (A) Tegamet (B) brompheniramine (C) Iproniazid (D) Meprobamate

22. Which drug is not antiallergenic ?

- (A) terfenadine (B) cetirizine (C) promethazine (D) ranitidine

23. In which of the following drug's structure furan ring is present ?

- (A) Seldan (B) Ranitidine (C) Dimetapp (D) Cimetidine

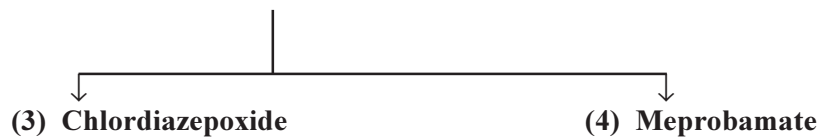
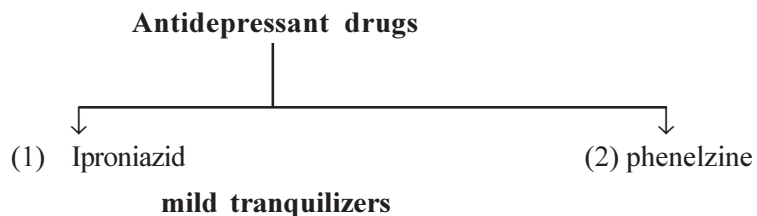
Answers : 17. (D), 18. (A), 19. (D), 20. (C), 21. (A), 22. (D), 23. (B)
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● Neurologically active drugs

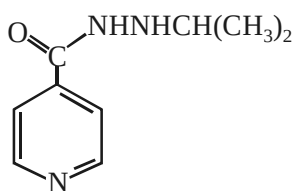
- Tranquilizers and analgesics are neurologically active drugs.
- These drugs affect mainly the message transfer mechanism between nerve and receptor.

● Tranquilizers

- Relieves anxiety, stress, irritability or excitement.
- 'Noradrenaline' is one of the neurotransmitter that means neuro messenger.
- If the level of noradrenaline is low, due to this person feels depressed.

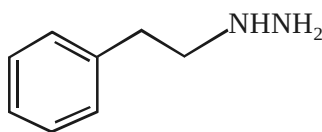


- → **(5) Equanil drugs** relieves from depression and hypertension.
- (6) Barbiturates (Derivatives of barbituric acid) (sedative durgs)
 - barbituric acid, veronal, seconal, amytal, nembutal
- (7) Valium
- (8) Serotonin
- **Structure :**



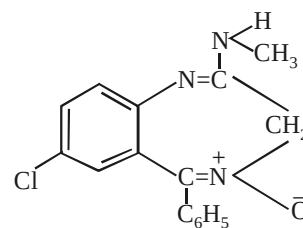
Iproniazid

(1)



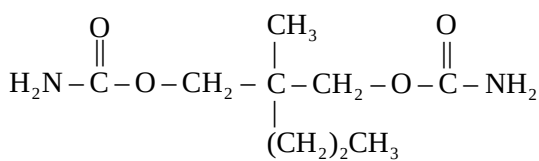
Phenelzine

(2)



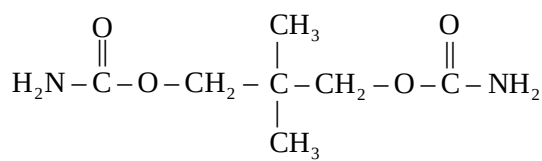
Chlordiazepoxide

(3)



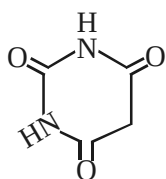
Meprobamate

(4)

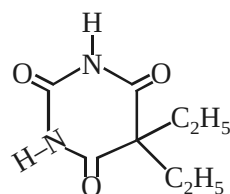


Equanil

(5)



(6) Barbituric acid



Veronal

- **Analgesic drugs :**

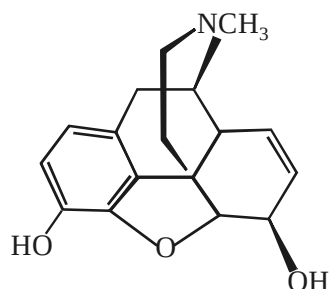
Physical pain reducing drugs can be classified into two classes.

- **Narcotic analgesic drugs :**

Relieve pain, produce sleep and excitement occurs before sleep. It is called euphoria then person has to take it regularly and becomes an addict.

Alkaloids like **Morphine, Codeine, Heroin (Morphine diacetate)** obtained from 'opium poppy' known as **opeats**.

eg. (1) morphine



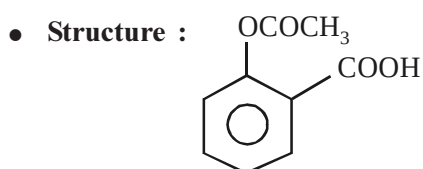
Morphine

- **Non-narcotic analgesic drugs :**

Due to these drugs, a person does not suffer from sleepiness or excitement.

- **Aspirin : (2-acetyloxy benzoic acid)**

- These drugs relieve from skeletal pain such as that caused by arthritis.
- Aspirin prevents coagulation of blood, due to this it is more useful to patient of heart diseases.
- In body released prostaglandis chemical causes inflammation and pain in the tissue. Aspirin inhibits synthesis of prostaglandis.



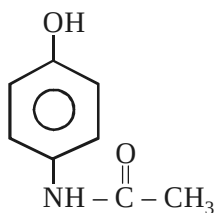
Aspirin (Acetylsalicylic acid)

- **Paracetamol :**

- These drugs reduce body temperature which means they are fever relievers.

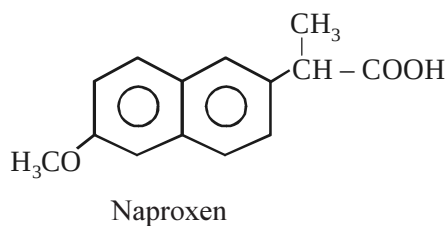
Structure :

Common name - P-hydroxy acetanilide

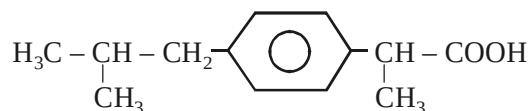


IUPAC name : 4-acetamidophenol

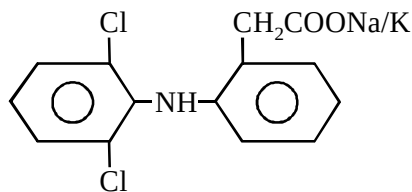
● **Naproxen :**



● **Ibuprofen :**

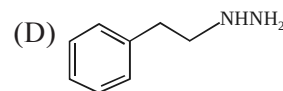
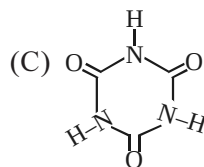
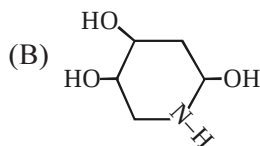
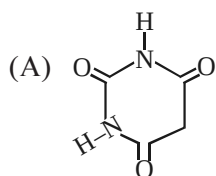


● **Diclofena sodium/potassium :**



-
24. Barbiturates are used as which of the following ?
(A) Analgesic (B) Antipyretics (C) preservatives (D) Tranquilizes
25. Which of the following level if low, then the person feels depression ?
(A) Noradrenaline (B) cerotinine (C) Nembutal (D) seconal
26. Which drug is used as antidepressant ?
(A) Noradrenaline (B) Iproniazide (C) phenelzine (D) All above
27. Rameshbhai is very sad and worried due to excessive loss in sharemarket. Which drug is advised by doctor at that time ?
(A) Chlordiazepoxide (B) Meprobamate (C) Equanil (D) Phenelzine
28. Which of the following is not barbiturates ?
(A) veronal (B) seconal (C) amytal (D) equanil
-

29. Which of the following derivatives are known as barbiturates ?



30. Which of the following chemical release in body causes inflammation and pain in tissue ?

(A) Noradrenaline (B) Prostaglandin (C) Veronal (D) Gerotinine

31. Which of the following drugs do not produce excitement and sleep in person ?

(A) Paracetamol (B) Morphine (C) Cocaine (D) Heroin

32. Select correct option for the facts of aspirin ?

(i) Prevents coagulation of blood, it is more useful to patient of heart diseases.

(ii) Inhibits synthesis of prostaglandin in body.

(iii) It is made from acetylation reaction of m-hydroxy benzoic acid.

(iv) Its other name is acetyl salicylic acid.

(A) T T F F (B) T T T T (C) T T F T (D) F T T T

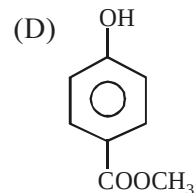
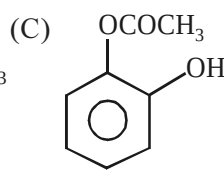
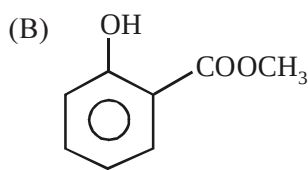
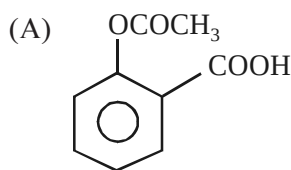
33. Which antipyretic drug is more used ?

(A) Naproxen (B) Paracetamol (C) Phenacetin (D) Salicylic acid

34. Which of the following uses this compound ?

(A) antibiotics (B) antiseptics (C) analgesic (D) disinfectants

35. Which of the following is the structure of aspirin ?



36. What is naproxen ?

(A) Non-narcotic analgesic drugs (B) Narcotic analgesic drugs
(C) Antiseptics (D) Disinfectants

37. This compound is used as which of the following ?

(A) to relieve pain (B) relieve in itching (C) to prevent cold (D) as antipyretics

38. Match correct pair :

	Section-I (Structure)	Section-II (Name)
(P)	$\text{H}_3\text{C}-\underset{\text{CH}_3}{\text{CH}}-\text{CH}_2-\text{C}_6\text{H}_4-\underset{\text{CH}_3}{\text{CH}}-\text{COOH}$	(S) Neproxin
(Q)	$\text{H}_3\text{CO}-\text{C}_6\text{H}_3(\text{CH}_3)-\text{CH}-\text{COOH}$	(T) Ibruphophene
(R)	$\text{OH}-\text{C}_6\text{H}_4-\text{NH}-\text{C}(=\text{O})-\text{CH}_3$	(U) Suphanilamide (V) Ceramycutine

(A) (P)-(U), (Q)-(S), (R)-(V)

(B) (P)-(V), (Q)-(T), (R)-(U)

(C) (P)-(S), (Q)-(T), (R)-(U)

(D) (P)-(T), (Q)-(S), (R)-(V)

39. According to chemically haroin is

(A) morphine monoacetate

(B) morphine diacetate

(C) morphine dibenzoate

(D) morphine mono benzoate

40. Whose derivaties are sulpha drugs ?

(A) Benzene sulphonic acid

(B) Sulphanillic acid

(C) Suphanilamide

(D) P-amino benzoic acid

41. Which drugs are used as analgesic and antipyretics ?

(A) Quinin

(B) Penicilin

(C) Insulin

(D) Aspirin

42. Which sulpha drugs used in treatment in neumonia ?

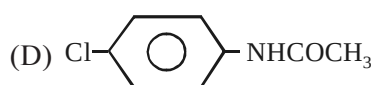
(A) Sulphadiazine

(B) Sulphapyridine

(C) Sulphagwanidine

(D) Suphanilamide

43. Correct structure of paracetamol drug ?



44. What is the name of situation when excitement occurs before sleep due to morphine ?

(A) Phobia

(B) Euphoria

(C) Stupor

(D) Pathoqentic situation

45. Which of the following is not alkaloid ?

(A) Reserpine

(B) Morphine

(C) Quinine

(D) Phenyl butazone

46. Haroin is a derivative of which of the following ?

(A) Caffeine

(B) Nicotine

(C) Cocaine

(D) Morphine

47. Which of the following is not analgesic drug ?

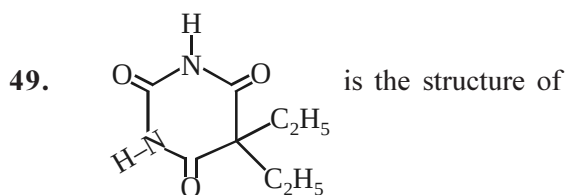
(A) Ibruphophane

(B) Dichlofenac sodium

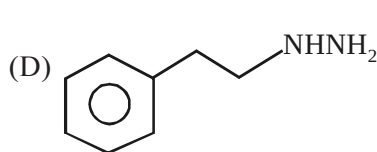
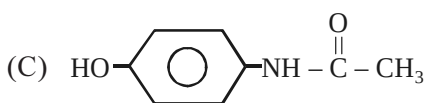
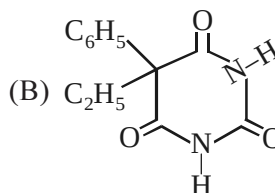
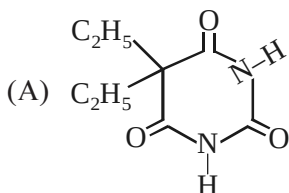
(C) Neproxane

(D) Ofloxacin

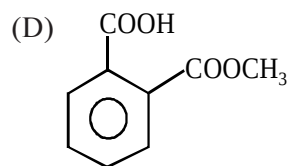
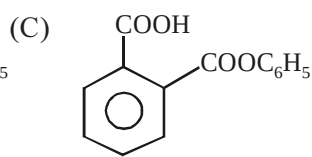
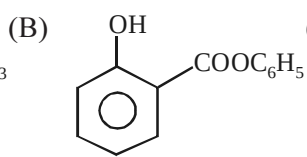
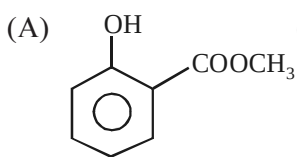
48. Barbituric acid and their derivatives are known as
 (A) tranquilizers (B) antiseptics (C) analgesic (D) insecticide



- (A) Amytal (B) Luminal (C) Veronal (D) Seconal
50. Whose acetylation process synthesizes Paracetamol drug ?
 (A) 2-amino hydroxy benzene (B) 3-amino hydroxy benzene
 (C) 4-amino hydroxy benzene (D) hydroxy benzene
51. Wintergreen oil and salol are ester of which of the following ?
 (A) salicylic acid (B) lactic acid (C) acetic acid (D) sulphanilic acid
52. Which drug among the structure of drugs is different on the basis of the cure ?



53. Which statement is improper for Barbiturates ?
 (A) They are sleep producing drugs (sedatives).
 (B) They are tranquilizers.
 (C) They affect nervous system to relieve tension.
 (D) They are non-narcotic analgesic drugs.
54. Identify the drug different from the other drugs :
 (A) Morphine (B) Heroin (C) Cocaine (D) Aspirine
55. Which of the following is narcotic analgesic drugs ?
 (A) Heroin (B) Ibuprofen (C) Naproxen (D) Aspirine
56. Which of the following is the structure of salol ?



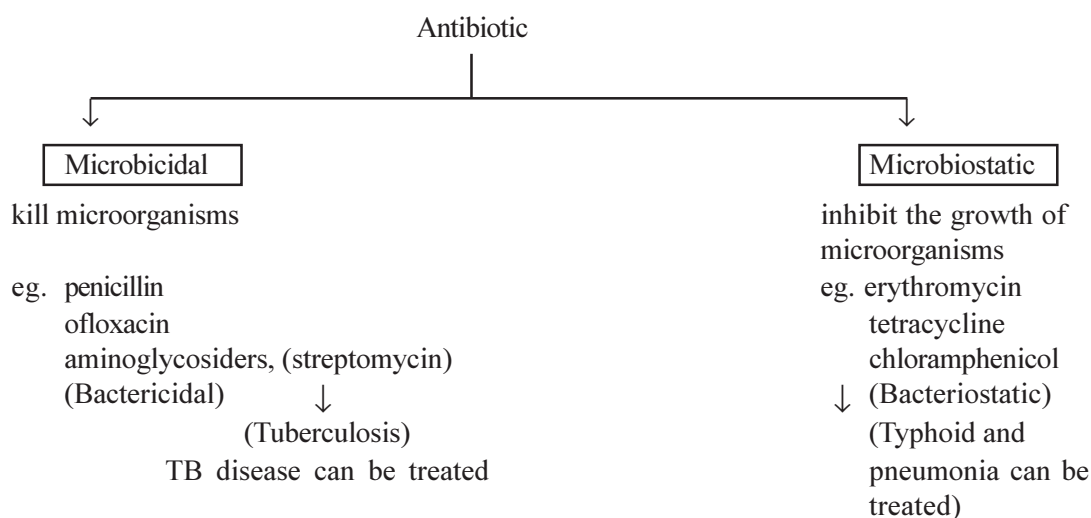
57. Which alkaloids obtained from named opium-poppy ?
 (A) Morphine (B) Cocaine (C) Heroin (D) All above.

Iproniazid, phinelzin, chlordiazepoxid, aspirin, paracetamol, neproxin, ibuprofan, sodium dichilofenac, equanil, morphine, meprobamate, veronal, seconal, valium, heroin, luminal, cerotenin.

- Answers :** 24. (D), 25. (A), 26. (D), 27. (C), 28. (D), 29. (A), 30. (B), 31. (A), 32. (C),
33. (B), 34. (C), 35. (A), 36. (A), 37. (A), 38. (D), 39. (B), 40. (C), 41. (D),
42. (B), 43. (B), 44. (B), 45. (D), 46. (D), 47. (D), 48. (A), 49. (C), 50. (C),
51. (A), 52. (C), 53. (D), 54. (D), 55. (A), 56. (B), 57. (D), 58. (C), 59. (A),
60. (B),

(A) Antibiotics :

Penicillin produced by microorganisms is first antibiotic that acts as drug. (**Alexander Fleming**)



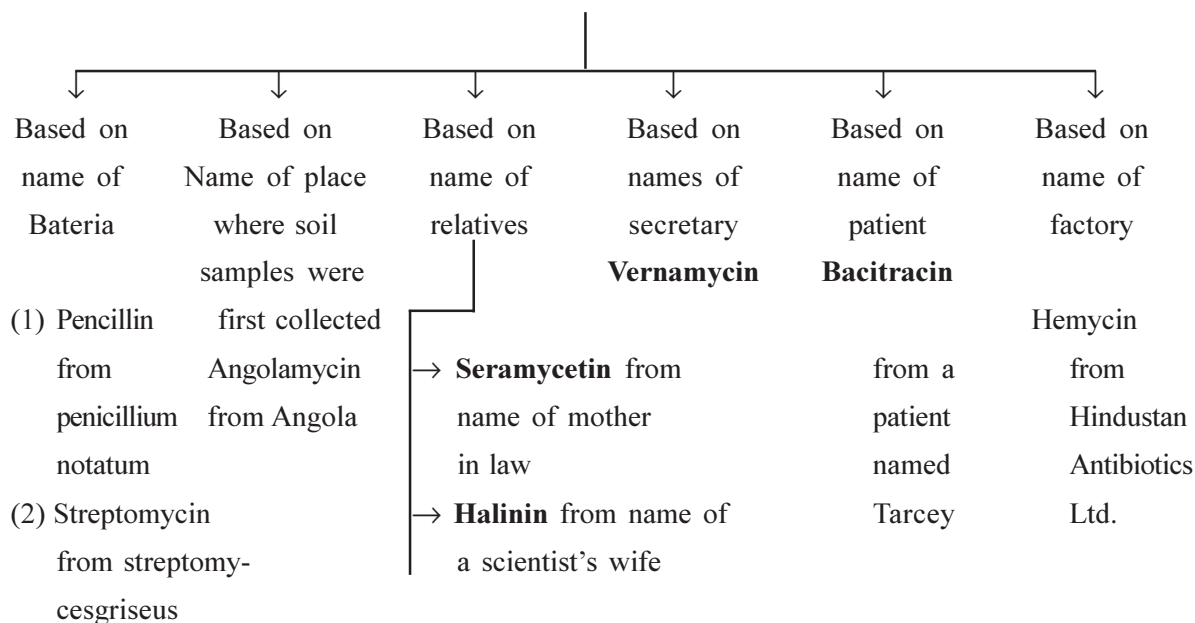
For Penicillin G, $R = \text{C}_6\text{H}_5\text{CH}_2$

For Penicillin K, $R = \text{CH}_3-(\text{CH}_2)_6-$

For Penicillin F, $R = \text{CH}_3\text{-CH}_2\text{-CH} = \text{CH-CH}_2\text{-}$

For Ampicillin, R = -CH₂-NH₂-

Nomenclature methods of antibiotics

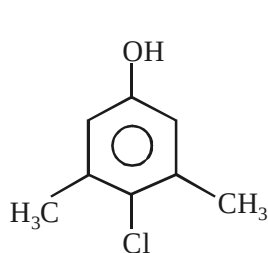


● Antiseptics

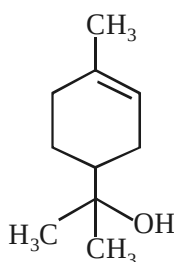
Antiseptic are useful in making tissues free from microorganisms.

- (1) **Potassium permanganate** (KMnO_4) → Making mouth free from microorganisms by gargling
- (2) Furacin
- (3) Soframycin
- (4) Dettol (**mixture of Chloroxylenol + α -terpineol**)
- (5) **Bithionol** - added to soaps to develop the antiseptic properties.
- (6) **Tincture of iodine** → 2-3% Iodine solution in alcohol-water mixture.
- (7) Boric acid (H_3BO_3) → Washing solution of eyes to free them from microorganisms
- (8) Hydrogen peroxide (H_2O_2) (perhydrol) → For washing teeth
- (9) **Salol (phenyl salicylate)** → Treatment for throat
- (10) 2–3 % **concentration solution of mercurochrome** solution is used as an antiseptic for skin
- (11) 0.2 % aqueous solution of phenol for Antiseptic.

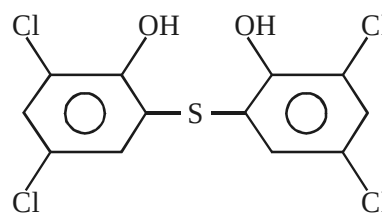
● Structure :



Chloroxylenol



α -Terpineol



Bithionol

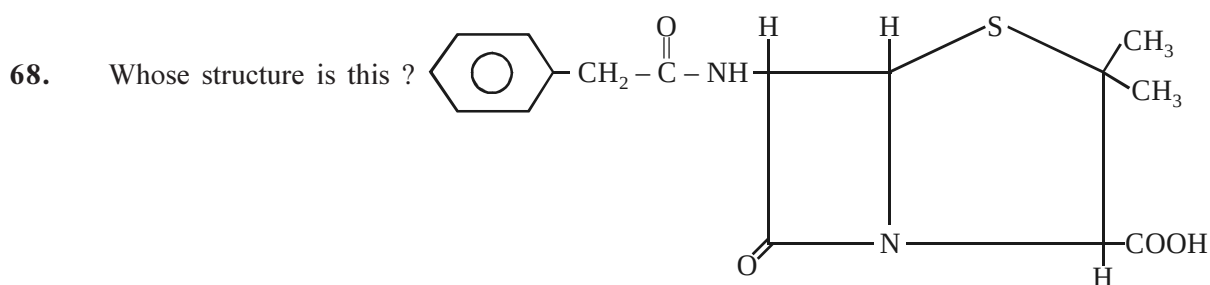
● **Disinfectants :**

- Disinfectants are applied to inanimate objects for making them free from microorganisms.
 - Activity is expressed by **phenol coefficient**
 - Activity is checked on '**salmonella typhosa**' bacteria
- (1) 1 % of phenol solution
 - (2) 0.2 to 0.4 ppm concentration containing aqueous solution of chlorine
 - (3) SO₂ gas (very low concentration)
 - (4) '**Lysol**'-Aqueous solution of o/m/p-cresol

● **Antifertility drugs**

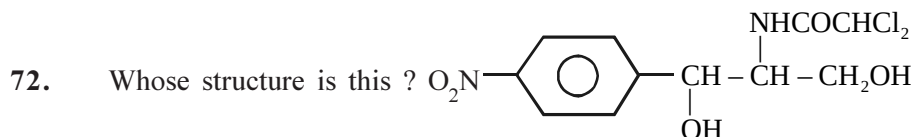
- Drugs used for prevention of impregnation are called Antifertility drugs.
- Mixture of **mestranol (estrogenic)** and **norethindrone (progesterone)** is used as pill.

61. Who had found penicillin ?
 (A) Alexander Fleming (B) Ziggler-Natta (C) Paul-Ehlich (D) Emil-Fischer
62. Which of the following is not included in antimicrobial drugs ?
 (A) Antibiotics (B) Antacids (C) Antiseptics (D) Distufectants
63. Which of the following drug is not antibiotics ?
 (A) Penicillin (B) Tetracyclin (C) mypheprestone (D) Chloramphenicol
64. Which of the following is used in treatment of typhoid not microbiocidal ?
 (A) Ofloxacin (B) Streptomycin (C) Penicilline (D) Chloramphenicol
65. Which of the following is not microbiocidal ?
 (A) Penicillin (B) Ofloxacin (C) Aminoglycosides (D) Erythromycin
66. Which of the following is not antimicrobial drugs ?
 (A) Eryhromycin (B) Tetracyclin (C) Chloramphenicol (D) Ofloxacin
67. Which antibiotics is used in treatement of Tuberculosis (TB) ?
 (A) Aminoglycosides (B) Penicilline (C) Erythromycin (D) Tetracyclin



- (A) Penicillin-G (B) Penicillin-F (C) Penicillin-K (D) Ampicillin

69. Which of the following is not an antibiotic ?
 (A) Penicillin (B) Oxytosin (C) Erythromycin (D) Tetracyclin
70. Which of the following pair is not antibacterial ?
 (A) Erythromycin, tetracyclin (B) Erythromycin, chlormphenicol
 (C) Ofloxacin, amino glycoside (D) Tetracyclin, chloremphenicol
71. Which of the following is antibacterial ?
 (A) Tetracyclin (B) Chloramphenicol
 (C) Erythromycin (D) Straptomycin

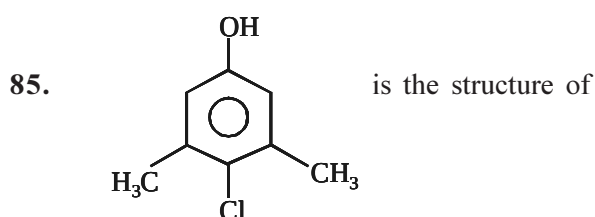


- (A) Chlorozylanol (B) Chloramphenicol (C) Penicillin-F (D) Ampicillin
73. Which of the following is not an example of large spectrum antibiotic ?
 (A) Penicillin (B) Tetracyclin (C) Chloremphenicol (D) Vencomycin
74. Match the correct pair according to names of antibiotics :

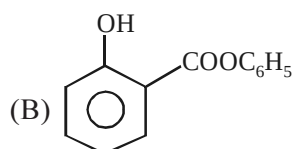
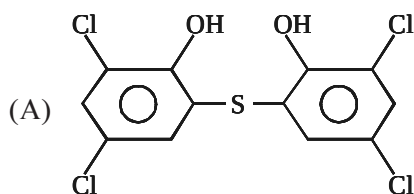
Section-I	Section-II Nomenclature of antibiotics
(P) Name of Mother-in-law	(T) Vernamycin
(Q) Name of Bacteria	(U) Hemycin
(R) Name of Secretary	(V) Streptomycin
(S) Name of factory	(W) Seramycetin

- (A) (P)-(W), (Q)-(V), (R)-(T), (S)-(U) (B) (P)-(V), (Q)-(W), (R)-(U), (S)-(T)
 (C) (P)-(T), (Q)-(U), (R)-(V), (S)-(W) (D) (P)-(U), (Q)-(T), (R)-(V), (S)-(W)
75. What is the name of antibiotics based on name of patient ?
 (A) Angolamycin (B) Vernamycin (C) Hemycin (D) Bacitracin
76. Give the name of antibiotic based on name of scientist's wife :
 (A) Bacitracin (B) Halinin (C) Vernamycin (D) Seramycetin
77. Where is the industrial production of penicillin in India ?
 (A) Vadodara (Gujarat) (B) Kalpakkam (Tamilnadu)
 (C) Pimpri (Maharashtra) (D) Kota (Rajasthan)
78. Which aqueous solution of substance is used for eyes to free it from microorganisms ?
 (A) I₂ (B) H₃BO₃ (C) KMnO₄ (D) SO₂
79. Which substance is used to make mouth free from microorganisms by gargling ?
 (A) Boric acid (B) H₂O₂ (C) KMnO₄ (D) Soframycin
80. Which drug is not included in antiseptic class ?
 (A) KMnO₄ (B) Furacin (C) Soframycin (D) Vernamycin

81. What is the mixture of Tincture of iodine ?
 (A) 2.3% iodine of alcohol-water mixture (B) 2-3 % bromine of alcohol-water mixture
 (C) 2-3% H_2O_2 of alcohol-water mixture (D) 2-3 % phenol of alcohol-water mixture
82. What is the mixture of Dettol ?
 (A) Chloroxylenol + Terpinol (B) Terpinol + Bithionol
 (C) Chloroxylenol + Bithionol (D) Chloroxylenol + Salol
83. Which antiseptic is added to soaps to develop the antiseptic property ?
 (A) Terpineol (B) Phenol (C) Boric acid (D) Bithionol
84. For which of the following uses of 2-5 % concentrated mercuriform solution ?
 (A) for treatment of neck (B) cleaning of teeth
 (C) eyes free from microorganisms (D) skin free from insecticides



- (A) Terpineol (B) Chloroxylenol (C) Bithionol (D) Salol
86. Which of the following compound is used in soap to develop the antiseptic properties ?



- (C) KMnO_4 (D) H_2O_2
87. Match correct pair :
- | Antiseptics | Uses |
|---------------------|---|
| (P) Salol | (T) For eyes free from microorganism. |
| (Q) KMnO_4 | (U) In soap to develop antiseptic properties. |
| (R) Bithionol | (V) Making mouth free from microorganism |
| (S) Boric acid | (W) Treatment of neck |
- (A) (P)-(V), (Q)-(W), (R)-(U), (S)-(T) (B) (P)-(W), (Q)-(V), (R)-(U), (S)-(T)
 (C) (P)-(U), (Q)-(W), (R)-(V), (S)-(T) (D) (P)-(R), (Q)-(W), (R)-(U), (S)-(V)
88. Which aqueous solution act as antiseptics disinfectants both ?
 (A) phenol (B) potassium permanganate (C) hydrogen peroxide (D) salol

89. of phenol solution acts as antiseptic.
 (A) 0.2 % (B) 1 % (C) 2-3 % (D) 2-5 %

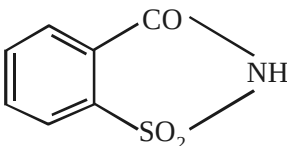
90. are applied to inanimate objects for making them free from micro-organism.
 (A) Antiseptics (B) disinfectants
 (C) Antibiotic (D) Antimicrobial
91. By which of the following the activity of disinfectants is expressed ?
 (A) Iodine coefficient (B) Phenol coefficient
 (C) Carbon coefficient (D) Bromine coefficient
92. On which type of bacteria is checked the activity of disinfectants
 (A) Penicillin nonatum (B) Streptomycin graciuss
 (C) Salmonella typhosa (D) E-Coli
93. of phenol solution act as disinfectant ?
 (A) 1 % (B) 0.2 % (C) 0.5 % (D) 2 %
94. of chlorine solution act as disinfectant :
 (A) 30 - 40 ppm (B) 0.1 - 100 ppm
 (C) 10 - 20 ppm (D) 0.2 - 0.4 ppm
95. What amount of water is added to 100 ml 1% aqueous solution of phenol used as antiseptic ?
 (A) 400 ml (B) 108 ml (C) 500 ml (D) 100 ml
96. Which of the following is known as aqueous solution of o/m/p cresol ?
 (A) dettol (B) lysol (C) sevlon (D) Salol
97. Which of the following gas in very less concentration act as disinfectants ?
 (A) CO₂ (B) SO₂ (C) NO₂ (D) O₂
98. What is the name of chemical substances used for birth control ?
 (A) Antacid (B) Antiseptic (C) Antifertility (D) Antibiotics
99. Which two mixture of compounds is used as antifertility pills ?
 (A) Estrogenic, Progestrogenic (B) Testogenic, Estrogenic
 (C) Progestogenic, Testogenic (D) Thiogenic, Estrogenic
100. Which of the following is used as morning after pill ?
 (A) Norethindrone (B) Bithionol (C) Mephriprestone (D) Promathazine
101. Which of the following mixture is antifertility pills ?
 (A) Aspirin + Ibruprofen (B) Mestranol + Norethindrone
 (C) Luminal+Equanil (D) Cimetidine + Ranitidine
102. Chloraxyleneol antiseptic is
 (A) 4-chloro, 3,5-dimethyl phenol (B) 3-chloro,4-5-dimethyl phenol
 (C) 4-chloro, 2,5-dimethyl phenol (D) 5-chloro, 3, 4-dimethyl phenol

Answers : 61. (A), 62. (B), 63. (C), 64. (D), 65. (D), 66. (D), 67. (A), 68. (A), 69. (B), 70. (D), 71. (C), 72. (B), 73. (A), 74. (A), 75. (D), 76. (B), 77. (C), 78. (B), 79. (C), 80. (D), 81. (A), 82. (A), 83. (D), 84. (D), 85. (B), 86. (A), 87. (B), 88. (A), 89. (A), 90. (B), 91. (B), 92. (C), 93. (A), 94. (D), 95. (A), 96. (B), 97. (B), 98. (C), 99. (A), 100. (C), 101. (B), 102. (A)

- **Chemical in Food**

- **Artificial sweetening agents :**

- Sweetness value of artificial sweetening agent determines relative sweetness value of sucrose.
 - Sweetness value of sucrose is accepted as '100'.

Examples	Sweetness value	
(1) Aspartame	160	● It decomposes at cooking temperatures (used in cold foods and soft drinks)
(2) Saccharin	550	● Structure 
(3) Sucrolose	600	● stable at temperatures used for cooking (looks and tastes like sucrose)
(4) Alitame	2000	
(5) N-Cyclohexyl Sulphamate	07	(Cyclamate)

- **Food preservatives**

- The chemicals used to prevent food from spoiling by microorganisms like fungi are called food preservatives.

- example :**

- (1) table salt (NaCl)
 - (2) sodium benzoate (C_6H_5COONa)
 - (3) sodium metabisulphite ($Na_2S_2O_5$)
 - (Jams, squashes, pickles)

- Its preservative action is due to SO_2 which dissolves in water to give sulphurous acid. Which resist yeast, bacterias.

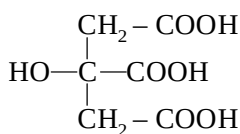
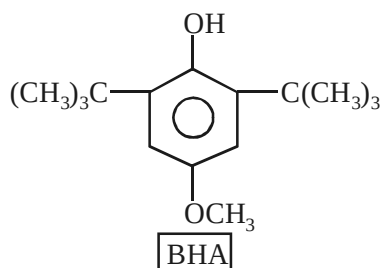
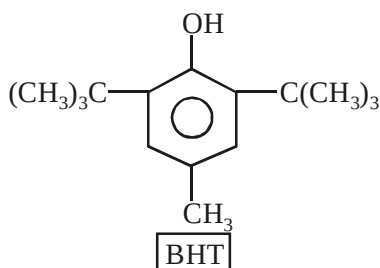


- (4) Sorbic acid and its salts :
 - (5) Epoxides
 - (6) P-Hydroxybenzoates esters
 - (7) Salt of propionic acid

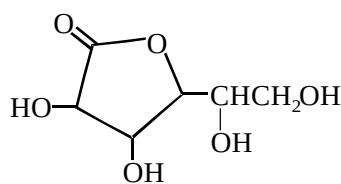
- **Antioxidants**

- Addition of some chemical compounds to food causes slow activity of oxygen, so that the food is preserved for a long time. These types of chemical compounds are called **Antioxidants**.

- (1) Ascorbic acid
- (2) Citric acid
- (3) BHA (Butylated hydroxy anisole)
- (4) BHT (Butylated hydroxy toluene)



Ascorbic acid



Citric acid

- (5) β -tocopherol (Vitamin E)

● Food colours

- | | |
|--|---------------------------------|
| ● β -Carotene | ● Caramel |
| ● Tetrazine | ● Arneto |
| ● Iron oxide (Red colour) (Inorganic colour) | ● Cetron (saffron) |
| ● Titanium dioxide (Inorganic colour) | ● Amaranth (magenta red colour) |
| ● Indigo carmine (Sky blue colour) | ● Erythrosine (Fast Red) |

103. Which of the following is not an artificial sweetening agent ?

- (A) Sucrolose (B) Alitame (C) Sedccharin (D) Sucrose

104. Which dipeptide's methyl ester is artificial sweetning agent aspartame ?

- (A) Glycine alanine (B) Aspartyle phenyl alanine
(C) Phenyl alanyle aspartic acid (D) Alanine alycine

105. Which of the following has maximum sweetness values ?

- (A) Alitame (B) Aspartam (C) Sucrose (D) Sucrolose

106. Which of the following synthesized sweetining substance which is unstable at room temperature ?

- (A) Alitame (B) Surcrolose (C) Aspartame (D) All mentioned

107. Why aspartame is not used in cooking ?
 (A) It is unstable at cooking temperature.
 (B) It is converted into phenyl pyruvic acid which responsible for mental diseases like brainhemorrhage
 (C) Its sweetness value is less like (160) .
 (D) Both (A) and (B).

108. Which artificial sweetening substance is used in cold foods and cold drinks ?
 (A) Alitame (B) Aspartame (C) Sucrolose (D) Saccharin

109. What is the sweetness value of  N-SO₃H ?

(A) 160 (B) 550 (C) 7 (D) 600

110. Which artificial sweetening agent is stable at room temperature which has appearance and taste like sugar ?

(A) Sucrolose (B) Alitame (C) Saccharin (D) Aspartame

111. Match correct pair :

Artificial sweetening agent	Sweetness value
(P) Aspartame	(T) 7
(Q) Saccharin	(U) 600
(R) Alitame	(V) 100
(S) Cyclamate	(W) 550
	(X) 160
	(Y) 2000

(A) (P)-(X), (Q)-(W), (R)-(Y), (S)-(T) (B) (P)-(W), (Q)-(X), (R)-(T), (S)-(Y)
 (C) (P)-(W), (Q)-(T), (R)-(Y), (S)-(U) (D) (P)-(X), (Q)-(T), (R)-(W), (S)-(T)

112. What is the use of salts of sorbic acid and propionic acid ?

(A) Anti oxidant (B) Fragranting agent
 (C) Food preservatives (D) Artificial sweetening agent

113. Which of the following is used as food preservatives ?

(A) Methyl benzoate (B) Methyl Salicylate (C) Sodium benzoate (D) Sodium phenoxide

114. Which of the following food preservatives used pickles, jam etc ?

(A) Sodium bisulphite (B) Epoxide
 (C) p-hydroxy benzoate (D) Sorbic acid and its salts

115. Which of the following acid acts as antioxidant ?

(A) Sorbic acid (B) Citric acid (C) Ascorbic acid (D) Both (B) and (C)

116. How many-COOH group are present in Citric acid ?

(A) 1 (B) 3 (C) 2 (D) 4

117. Which of the following is not an anti-oxidant ?

(A) BHA (B) BHT (C) Ascorbic acid (D) Sodium benzoate

118. Which of the following is artificial food colour ?
 (A) Seffrone (B) β -carotene (C) Tetrazine (D) Melamine
119. Which of the following pair is not for food preservatives and food colour ?
 (A) Salt of sorbic acid, caramel (B) Sodium benzoate, citric acid
 (C) Propionic acid, β -carotene (D) Sodium metabisulphite, arneto
120. Which of the following is inorganic food colour ?
 (A) β -carotene (B) Tetrazine (C) Caramel (D) Titanium dioxide
121. Which food colour prepare meganta red colour ?
 (A) Iron oxide (B) Emernth (C) Indio carmine (D) Titanium dioxide
- Some name of substances are given give answer the following questions on the basis of that compound :
- (Aspartame, Table salt, sodium benzoate, Saccharin, Epoxide, P-hydroxy benzoate ester, Propionic acid, Sorbic acid, Cyclamate, Alitame, sodium metabisulphite, Ascorbic acid, BHA, BHT, β -Carotene, Caramel, Erythromycin, Emernth, Tetrazine, Arneto)
122. How many number of anti-oxidants from the above given ?
 (A) 06 (B) 10 (C) 05 (D) 03
123. How many number of food colours from the above given ?
 (A) 8 (B) 6 (C) 7 (D) 4
124. How many number of artificial sweetning agents from the above given ?
 (A) 03 (B) 04 (C) 05 (D) 06
125. How many number of food preservaties from the above given ?
 (A) 04 (B) 03 (C) 05 (D) 07

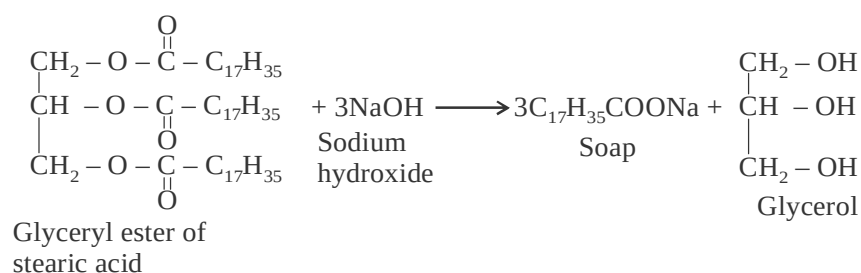
Answers : 103. (D), 104. (C), 105. (A), 106. (C), 107. (D), 108. (B), 109. (C), 110. (A), 111. (A), 112. (B), 113. (C), 114. (A), 115. (D), 116. (B), 117. (D), 118. (B), 119. (B), 120. (D), 121. (B), 122. (D), 123. (B), 124. (B), 125. (D),

• **Cleansing Agents**

• **SOAP :**

- Soap is **Sodium** or **Potassium** salt of fatty acid (Stearic acid, Oleic acid, Palmitic acid)
- Lauric acid [$C_{11}H_{23}COOH$]
- Palmitic acid [$C_{15}H_{31}COOH$]
- Stearic acid [$C_{17}H_{35}COOH$]
- Oleic acid [$C_{17}H_{31}COOH$]

• **Saponification process :**



- **Types of soap**

- **Bath soap :**

- Quality of bath soap can be decided on the basis of presence of TFM (Total Fatty Matters)

- **Laundry soap :**

- **Shaving soap :** (add glycerol to prevent rapid drying)

- Rosin is added while preparing. It forms **Sodium-Rosinate** which produces lather.

- **Medicated soap :**

- Deodorants are added during preparation.

Limitations :

- Soap does not produce foam with Acidic medium and hard water.

TFM (As per BIS)	Grade
● more than 76%	1
● more than 65% but less than 76%	2
● more than 60% but less than 65%	3

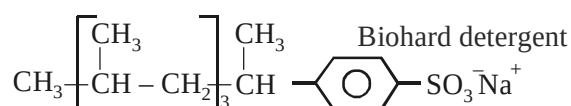
- **Synthetic Detergents**

- Sodium salts of organic sulphonic acid
 - The cleanliness ability in **acidic medium** or even with **hard water**.
 - In this detergents **10 to 14 carbon atoms** attach in branch of aromatic ring.

- **Classification of Detergents**

- **Anionic detergents :**

- In aqueous solutions, negative ions are formed.
 - Effective also in dilute acidic medium.
 - e.g. ABS (Branched sodium dodecyl benzene Sulphonate)



ABS detergent

IUPAC Name : Sodium 4- (1, 3, 5, 7-tetramethyl octyl) benzenesulphonate

- Example (2) LAS (Linear sodium dodecylbenzene sulphonate)



(LAS detergent)

IUPAC Name : Sodium 4-(1-dodecyl) benzen salphonet

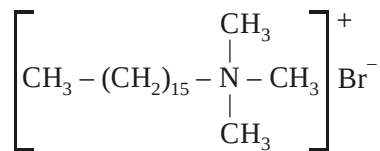
- **Cationic detergents :** (known as invert shop)

- In aqueous solution, positive ion is formed

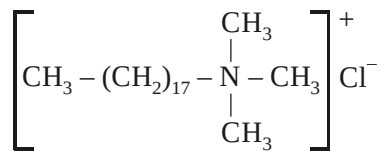
- **Use :**

- These type of detergents being Germicidal are used in hospitals
 - Also used in preparation of cosmetics.
 - Hair conditioner.

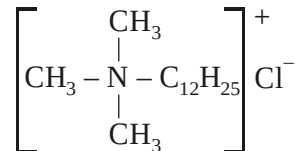
(1) Cetyltrimethyl ammonium bromide.



(2) Trimethyl cetyl ammonium chloride



(3) Benzalconium chloride



● **Non-ionic detergents :**

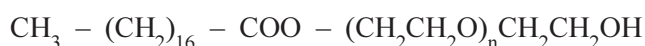
- Neither in cationic nor in anionic form in their aqueous solution.
- **Use :** Cleaning the glass and Ceramic wares.

(1) **Polyethylene glycol** and ester of **stearic acid** are these type of **detergents**.



stearic acid

polyethylene glycol



Non-ionic detergents

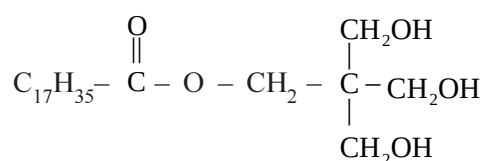
● **Biosoft Detergent**

- The detergents easily degraded by microorganism are called biosoft detergents. eg. LAS

● **Biohard Detergents**

- The detergents not easily degraded or very slowly degraded by microorganisms are called biohard detergents. e.g. ABS

(2) Pentaerythritol monostearate (Non-ionic detergents)



126. Which biproduct is obtained except soap in saponification process ?

- (A) Ethanol (B) Glycerol (C) Ethylene glycol (D) propanol

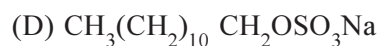
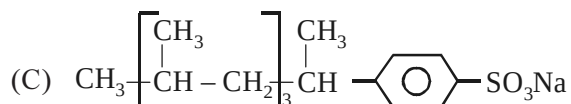
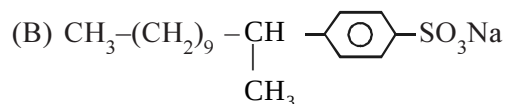
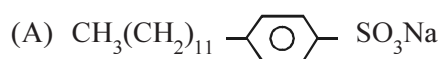
127. Which substance is added in shaving soap that its foam does not dry rapidly ?

- (A) rosin (B) glycerol (C) caustic soda (D) oil

128. What is the proportion of total fatty matters (TFM) of soap grade-1 as per BIS ?

- (A) > 76 % (B) < 76 % (C) 76 % (D) 70 %

129. Which substance is used to form more foam in shaving soap ?
 (A) Rosin (B) Glycerol (C) Caustic soda (D) Oil
130. How many carbon atoms in chain attached to aromatic ring in detergent ?
 (A) 2 to 4 (B) 6 to 10 (C) 10 to 14 (D) 14 to 20
131. Which organic detergent is used in hair conditioner ?
 (A) Sodium dodecyl benzene sulphonate (B) Sodium Lauryl sulphate
 (C) Sodium steryl sulphate (D) Cetyl trimethyl ammonium bromide
132. Which is the example of anionic detergent ?
 (A) $\text{CH}_3(\text{CH}_2)_{16}\text{CH}_2\text{O}-\text{SO}_3\text{Na}$ (B) $\text{CH}_3(\text{CH}_2)_{16}\text{N}^+(\text{CH}_3)_3\text{Cl}^-$
 (C) $\text{CH}_3(\text{CH}_2)_{16}\text{COO}(\text{CH}_2\text{CH}_2\text{O})_n\text{CH}_2\text{CH}_2\text{OH}$ (D) $\text{C}_6\text{H}_5\text{SO}_3\text{Na}$
133. Which detergent is used as insecticides ?
 (A) Sodium lauryl sulphate (B) Cetyl trimethyl ammonium bromide
 (C) Lauryl alcohol ethoxylate (D) Sodium-2-dodecyl benzene sulphonate
134. Which of the following is cationic detergent ?
 (A) Cetyl trimethyl ammonium chloride (B) trimethyl cetyl ammonium chloride
 (C) Benzalconium chloride (D) All above
135. Select correct option for following statements of cationic detergent :
 (i) It is also known as invert soap.
 (ii) In aqueous medium it is negative ion.
 (iii) Used in hair conditioner.
 (iv) In preparation of cosmetics.
 (A) T F T T (B) T T T T (C) F F T T (D) T T F F
136. Which of the following is the important role of phosphate in detergent powder ?
 (A) To control the pH value in mixture of water in detergent.
 (B) To remove Ca^{2+} and Mg^{2+} ion in hard water.
 (C) Whitening of clothes.
 (D) All above.
137. Which of the following is an example of bio hard (non biodegradable detergents) ?



138. Which type of detergent is penta erythritol monostearate ?
 (A) Anionic detergent (B) Cationic detergent
 (C) Non-ionic detergent (D) None.
139. What is the use of non-ionic detergent ?
 (A) As cleaning in hospitals (B) In cosmetics
 (C) In hair conditioners (D) As cleaning glass and ceramic wares.
140. Match the proper pair :

Section-I	Section-II
(P) Neuro transmitter	(T) Iprionizid
(Q) Antidepressant drugs	(U) Sodium benzoate
(R) Artificial sweetening agent	(V) Dopamine
(S) Preservatives	(W) Aspartame

- (A) (P)-(V), (Q)-(T), (R)-(W), (S)-(U) (B) (P)-(U), (Q)-(W), (R)-(T), (S)-(V)
 (C) (P)-(W), (Q)-(V), (R)-(U), (S)-(T) (D) (P)-(T), (Q)-(U), (R)-(V), (S)-(W)

141. Match the correct pair :

Section-I	Section-II
(P) Cetyl trimethyl ammonium chloride	(T) Hormone
(Q) Norphenamine	(U) Nerve transmitter
(R) Acetylcholine	(V) Insecticides
(S) Adrenaline	(W) Cationic detergent

- (A) (P)-(V),(W), (Q)-(T),(U), (R)-(U), (S)-(T) (B) (P)-(T),(U), (Q)-(V),(W), (R)-(U), (S)-(T)
 (C) (P)-(U), (Q)-(T), (R)-(T),(U), (S)-(V),(W) (D) (P)-(V),(W), (Q)-(U), (R)-(T),(U), (S)-(T)

- There are two statements are given. Among these one is statement (A) and other is reason (R). Read instructions carefully and select correct option :

- (A) Statement (A) and reason (R) both correct, Reason (R) is correct explanation of statement (A).
 (B) Statement (A) and reason (R) both correct but Reason is not correct explanation of statement (A).
 (C) Statement (A) is correct but reason (R) is wrong.
 (D) Statement (A) is wrong but reason (R) is correct.

142. **Statement (A)** : Diphenyl hydrazine is antiallergic drug while cimetidine is used in treatment of acidity.

Reason (R) : Both are antihistamine drugs.

143. **Statement (A)** : Depression due to less proportion of noradrenaline.

Reason (R) : Antidepressant drugs synthesis noradrenaline.

144. **Statement (A)** : Aspirin is non-narcotic analgesic drug.
Reason (R) : It relieves pain without effect on nervous system.
145. **Statement (A)** : BHA is a preservative.
Reason (R) : BHA is more reactive than O_2 so it does not oxidise edible oil.
146. **Statement (A)** : Saccharine is artificial sweetening agent.
Reason (R) : Its calorie value is very high.
147. Correct order according to sweetness :
 (A) Aspartame > Sucralose > Alitame > Saccharin
 (B) Aspartame > Saccharin > Sucralose > Alitame
 (C) Alitame > Sucralose > Saccharine > Aspartame
 (D) Saccharine > Aspartame > Alitame > Sucralose
148. Which of the following two pairs are proper ?
 (A) Food preservatives - Sodium benzoate
 (B) Antioxidant-propionic acid
 (C) Food colour - β -carotene
 (D) artificial sweetening substance - aspartame
 (A) (A), (B) (B) (A), (C) (C) (A), (D) (D) (B), (D)

Answers : 126. (B), 127. (B), 128. (A), 129. (A), 130. (C), 131. (D), 132. (A), 133. (B), 134. (D), 135. (A), 136. (B), 137. (C), 138. (C), 139. (D), 140. (A), 141. (A), 142. (B), 143. (C), 144. (A), 145. (D), 146. (C), 147. (C), 148. (B),
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