

Pharmacology

Long Answer Questions

Q.1 What is pharmacology? Explain.

Ans. Pharmacology

Pharmacology is the study of drug composition, properties, medical applications and sources of drugs.

Explanation

Clinical pharmacology was present in the Middle Ages. Early pharmacologists focused on natural substances. It was developed in 19th century as a biomedical science.

Q.2 Define Drug. What are its types?

Ans. Definition

Any substance that is absorbed into the body of a living organism, alters normal body function is known as a drug.

Types

Drugs are broadly classified into two types:

i. Pharmaceutical drug

OR

Medicinal drug

It is defined as any chemical substance used in the diagnosis, cure, treatment or prevention of diseases.

ii. Addictive drugs

Some drugs often make person dependent on them, or addicted. These may be called as addictive drugs.

Q.3 Differentiate between pharmacology and pharmacy?

Ans: Pharmacology is the study of drug composition, properties, medical applications and sources of drugs while pharmacy is the study of preparation of medicines and drugs. Both terms are not synonymous. Though in common usage, the two terms are confused.

Q4. What is Materia Medica?

Ans: Until 1890, the subject of pharmacology was known as Materia Medica.



A page from the book of Materia Medica

Q.5 What are prescription drugs and Non-prescription drugs? Give examples.

Ans. Prescription drugs

These are sold only on physician's prescription. These include barbiturates, tranquillizers, antibiotics etc.

Non-Prescription drugs

These are sold over the counter because these are considered safe enough. These include aspirin and some cough medicines.

Q.6 What are the sources of drugs? Give examples?

Ans. Drugs

Any substance that absorbed into the body of a living organism, alters normal body function is known as a drug.

Sources of drugs:

Drugs are obtained from the following sources.

1. Synthetic Drugs

The drugs which do not occur naturally but are synthesized in laboratory. Pharmaceutical companies produce these drugs. e.g. Aspirin.

2. Drugs from Plants and fungi

Many important medicines are obtained from plants and fungi. These medicines include:

i. Antibiotics

The antibiotic penicillin comes from a fungus.

ii. Cardiotonics

The cardiotonic digitalis made from leaves of purple flowered plant foxglove used to stimulate heart.

iii. Analgesics

The pain reliever morphine is made from opium, which comes from the juice of opium poppy plant.

iv. Addictive

Many addictive illegal drugs e.g., marijuana are also obtained from plants.



Figure 8.1: Digitalis (Foxglove)

3. Drugs from animals

Drugs obtained from animals are usually their glandular products. Fish liver oil, musk, bees wax, certain hormones and antitoxins are obtained from animal sources.

4. Drugs from minerals

Several common drugs are obtained from minerals:-

- i. The mineral iodine is used in making tincture of iodine, a liquid that helps to prevent infection when applied to cuts and bruises.
- ii. The powder form of silver nitrate is applied on wounds to stop bleeding and prevent infection.
- iii. While testing soil, researcher resulted in the development of one antibiotic terramycin which is used to treat many infections.

5. Drugs from bacteria

Many antibiotics are obtained from bacteria i.e. streptomycin etc.

Q.7 How drugs are classified? Describe the usage of important medicinal drugs?

OR Write any three medicinal drugs. Explain in detail. (Board 2014)

Ans. Drugs are classified on the basis of their chemical properties and modes of action.

1. Analgesics

(Pain killers)

Reduce pain e.g. aspirin, paracetamol etc.

2. Antibiotics

Inhibit or kill bacteria and treat bacterial infections e.g. tetracycline, cephalosporin etc.

3. Sedatives

Induce sedation by reducing irritability or excitement e.g. Diazepam.

4. Vaccines

Vaccines are used to develop immunity against viral and bacterial infections e.g. vaccines against small pox, whooping cough, hepatitis B etc.

5. Antiseptics

Reduce the possibility of infections on skin.

6. Antibiotics

Inhibit or kill bacteria within or on the body. Sir Alexander Fleming discovered the antibiotic penicillin from the fungus *penicillium notatum*.

7. Disinfectants

Destroys microorganisms found on non-living objects. Joseph Lister introduced carbolic acid to sterilize surgical instruments and to clean wounds.

Q8. Describe the things to remember while using the medicines.

Ans. Following things should keep in mind before using medicines:

- (i) We should always check the instructions on doctor's prescription slip and take medicine accordingly.
- (ii) Before using, we should check the expiry date because expired medicines may prove poisonous.
- (iii) Never take medicines prescribed for someone else even if you think you have the same medical problem.

- (iv) Antibiotics must be taken for a specific number of days. Otherwise problem may come again.
- (v) We must consult with the doctor before we stop taking a medicine or consider a new treatment.
- (vi) Some medicines are not suitable for children, and there are special children's dosages for many medicines.
- (vii) Do not take medicine in the dark.
- (viii) If you are patient, carry medicines and dosage instructions with you, whenever you are out of home.
- (ix) Always keep healthcare products out of the reach of children
- (x) Do not use the medicine if there are signs of tampering. Inform the pharmacist and manufacturer about it.

Q.9 Write a note on addictive Drugs. (Board 2014)

Ans. Major categories of addictive drugs are:

1. Sedatives

(a) Introduction

These drugs interact with central nervous system to depress its activities. Sedative drugs have following effects:

(b) Effects:

- i. Induce dizziness
- ii. Lethargy
- iii. Slow brain function and depression
- iv. Long term use of sedative induce suicidal thoughts

2. Narcotics

(a) Introduction

Narcotics are strong pain killers. These drugs are often prescribed in conjunction with other less potent pain killers (paracetamol or aspirin).

(b) Uses of Narcotics

- i. These are used to relieve pain for patients with chronic diseases such as cancer.
- ii. These are also used to relieve acute pain after operations.
- iii. The abused narcotic i.e. heroin is a semi synthetic drug from morphine. It affects on central nervous system and causes drowsiness.
- iv. Some people may abuse narcotics for ecstatic effects
- v. Morphine and codeine are derived from poppy. Morphine is used to relieve pain.
- vi. Heroin is prescribed as a strong analgesic under the name diamorphine in many western countries. It is used for acute pain such as in severe physical trauma, myocardial infarction, post surgical pain etc.

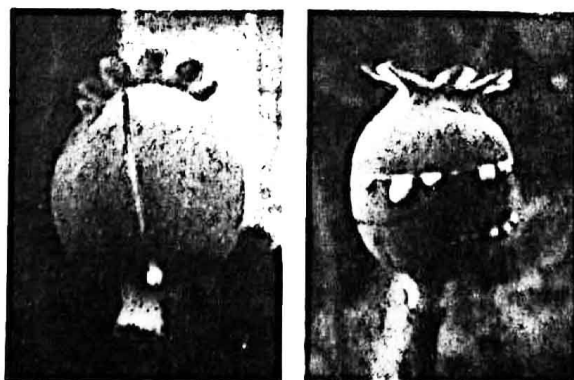


Figure 18.2 The Fruits of the opium poppy plant

3. Hallucinogens (Board 2014)

(a) Introduction

Hallucinogens are the drugs that cause changes in perception, thought, emotion and consciousness.

(b) Groups

It has two groups:

i. Mescaline

Which comes from a cactus.

ii. Psilocin

Which comes from a mushroom.

(c) Effects

Physiologically, hallucinogens affects on:

- i. Sympathetic nervous system.
- ii. Causing dilation of pupils.
- iii. Constriction of some arteries.
- iv. Rise in blood pressure.

3. Marijuana (Hashish)

(a) Introduction

Marijuana (Hashish) is a hallucinogen which is smoked. It is the Marijuana most commonly used drugs in the world.

(b) Sources:

It is obtained from the flowers, stems and leaves of the marijuana plant (*Cannabis sativa*) and (*C. indica*).

Effects

- i. Small doses of marijuana result in a feeling of well-being that lasts two to three hours.
- ii. High doses increases heart rate.
- iii. It affects the production of sperms in men.
- iv. It weakens the short term memory.

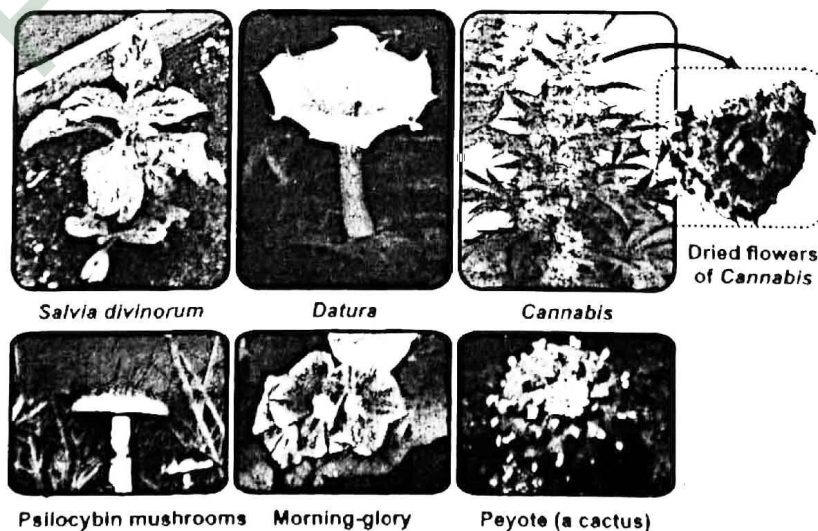


Figure 18.3: Plants from where hallucinogens are obtained

Q.10 What is drug addiction? Discuss its associated problems?

Ans. Drugs addiction

Some drugs often make person dependent on them or addicted. By using such drugs, the person's body become familiar to it and the user cannot function well without it. This is called drug addiction.

Drug addiction and associated problems

Drug abusers go through withdrawal of social contact or communication. Many studies by the experts of social sciences prove that there exists a close relationship between drug addiction and crime.

Problems of drug addiction

1. Law violation

The compulsion for narcotic drugs makes every drug addict a law violator and criminal. Mere possession of a narcotic drug is a violation of the law. Thus, every drug addict is subjected to arrest by the police.



The jails and prisons of our country are full of such people who have committed no other crime than the illegal possession of narcotics.

2. Involvement in Crimes

Most drug addicts get involved in various crimes e.g. Robbery, shoplifting, burglary, embezzlement etc.

3. Psychic patients

Drug addicts may commit violent crimes since so many become psychic patients.

4. Weak social behaviour

The addicts are very weak in their social behaviour. They face social stigma. i.e. the society dislikes them because of their unpredictable behaviours.

Q.11 What are antibiotics? How do they work? OR Discuss their uses.

Ans.

Antibiotics

An antibiotic is a drug that kills or retards the growth of bacteria. They are the chemicals produced by or derived by microorganisms (bacteria and fungi).

Bactericidal Antibiotics

Antibiotics are used to treat many different bacterial infections. Some antibiotics are "bactericidal", meaning that they kill bacteria.

Bacteriostatic Antibiotics

Antibiotics are those which work by stopping bacterial growth.

Broad-spectrum Antibiotics

Some antibiotics can be used to treat a wide range of infections and are known as broad-spectrum antibiotics.

Narrow-spectrum Antibiotics

Others are only effective against a few type of bacteria and are called narrow spectrum antibiotics.

Q.12 Describe the main groups of antibiotics?

Ans. Three major groups of antibiotics are described below:

1. Cephalosporins

Cephalosporins interfere with synthesis of bacterial cell wall and so are bactericidal. They are used to treat pneumonia, sore throat, tonsillitis, bronchitis etc.

2. Tetracyclines

These are broad spectrum bacteriostatic antibiotics and inhibit bacterial protein synthesis. Tetracyclines are used in the treatment of infections of respiratory tract, urinary tract, intestine etc.

Precaution

These are not used in children under age of 8, and during period of tooth development.

3. Sulpha Drugs-Sulfonamides

Sulpha drugs are synthetic antibiotics that contain sulfonamide group. These are broad spectrum bacteriostatic antibiotics.

Uses

They are used to inhibit folic acid synthesis in bacteria. They are used to treat pneumonia and urinary tract infections.

Q.13 Describe the antibiotic resistance?

Ans.

Antibiotic resistance

Antibiotics are most important in medicine but unfortunately bacteria are capable of developing resistance to them. Such bacteria are not affected by commonly used antibiotics, this condition is called antibiotic resistance.

Ways of resistance

Bacteria have number of ways of developing resistance.

i. Stopage by internal mechanism

Sometimes, their internal mechanism stops the working of antibiotics.

ii. Gene transfer

Bacteria can also transfer the genes responsible for antibiotic resistance between them. Such bacteria make it possible for other bacteria to acquire resistance.

iii. Efficacy

Another cause of antibiotic resistance is their use in diseases in which they have no efficacy (e.g. antibiotics are not effective against infections caused by viruses).

Problems Related to Resistance to antibiotics

1. Some bacterial infections are becoming more difficult to treat,
2. Some of the resistant bacteria can be treated with more powerful antibiotics.
3. Some infections do not eliminate even with new antibiotics.

Q.14 What are vaccines? Who introduced world's first vaccination?

Ans. Definition: (Board 2014)

A vaccine is a material containing weakened or killed pathogens and is used to produce immunity to a disease by stimulating the production of antibodies.

World's First vaccination

In 1796, a British physician, Edward Jenner, infected a young boy with cowpox, by injecting pus cells. After the boy had recovered from cowpox, Jenner injected the pus cells from a smallpox patient into him. The boy did not get smallpox.

So it became clear that intentional infection with cowpox protected people from small pox. This method was named vaccination and the substance used to vaccinate is called a "vaccine".



A painting showing Edward Jenner, injecting the boy, it was the world's first vaccination.

Q.15 Describe the mode of action of vaccines?

Ans. Antigens

Pathogens contain special proteins called antigens.

Antibodies

When pathogens enter the body (blood) of host, these proteins stimulate the immune response in host i.e. synthesis of antibodies. Antibodies bind to pathogens and destroy them.

Memory cells

These cells are produced which remain in blood and provide protection against future infections with the same pathogen.

Action of vaccine / Working of Vaccine (Board 2014)

When a vaccine i.e. weakened or dead pathogen is introduced into bloodstream, the white blood cells are stimulated; B-Lymphocytes recognize the weakened or dead pathogens as enemies and start producing antibodies against them. These antibodies remain in blood and provide protection against pathogens. If real pathogens enter blood, the already present antibodies kill them.

Q.16 When and why children are vaccinated?

Ans. Children are required to be vaccinated before attending school. The vaccination of children has resulted in marked decrease of common diseases i.e., whooping cough, polio, small pox and others. Some vaccines do not provide life time immunity.

Multiple Choice Questions

1. **Antibiotics are used for the;**
 - (a) Treatment of viral infections
 - (b) Treatment of bacterial infections
 - (c) Immunization against infections
 - (d) Both a and b
2. **The substances used for the treatment, cure, prevention or diagnosis of disease are called;**
 - (a) Medicinal drugs
 - (b) Narcotics
 - (c) Hallucinogens
 - (d) Sedatives
3. **Aspirin is categorized as:**
 - (a) A drug from animals
 - (b) A synthetic drug
 - (c) A drug from plants
 - (d) A drug from minerals
4. **The drugs used to reduce pain are known as;**
 - (a) Analgesics
 - (b) Antiseptics
 - (c) Antibiotics
 - (d) Sedatives
5. **Which of the following drugs is obtained from plants?**
 - (a) Aspirin
 - (b) Opium
 - (c) Cephalosporin
 - (d) Insulin
6. **Which of these addictive drugs are also used as painkillers?**
 - (a) Narcotics
 - (b) Sedatives
 - (c) Hallucinogens
 - (d) All can be used
7. **Sulfonamides affect bacteria in the following way:**
 - (a) Break the cell wall
 - (b) Inhibit protein synthesis
 - (c) Stop the synthesis of new cell wall
 - (d) Stop the synthesis of folic acid
8. **What is true about vaccines?**
 - (a) Protect against the future viral and bacterial infections
 - (b) Treat the existing bacterial infections only
 - (c) Treat existing infections and also protect against future infections
 - (d) Protect against viral infections only
9. **Until 1890, the subject pharmacology was known as:**
 - (a) Clinical pharmacology
 - (b) Materia Medica
 - (c) Pharmacy
 - (d) All of these
10. **A cardiotonic digitalis is obtained from a plant:**
 - (a) Poppy
 - (b) Fungi
 - (c) Cannabis
 - (d) Foxglove
11. **The role of antiseptics is:**
 - (a) Destroy microorganisms
 - (b) Kill bacteria
 - (c) Inhibit bacteria
 - (d) Reduce possibility of infections
12. **Who introduced the idea of sterile surgery for first time?**
 - (a) Alexander Fleming
 - (b) Joseph Lister
 - (c) Pasteur
 - (d) Aristotle
13. **When Sir Alexander Fleming was awarded Nobel prize on the discovery of penicillin?**
 - (a) 1881
 - (b) 1955
 - (c) 1945
 - (d) 1912
14. **Expired drugs can cause damage to:**
 - (a) Heart
 - (b) Brain
 - (c) Kidneys
 - (d) Stomach
15. **The most prescribed medications in modern medicine are:**
 - (a) Antibiotics
 - (b) Sedatives
 - (c) Cardiotonics
 - (d) Hallucinogens

16. A medicine for lowering blood pressure, which has sulfonamide group is:

- (a) Aspirin
- (b) Penicillin
- (c) Thiazide diuretics
- (d) Teramycine

17. Edward Jenner introduced the world's first:

- (a) Vaccination
- (b) Antigen
- (c) Antibiotics
- (d) Addictive drugs

18. In case of tetanus vaccination which is for limited time, _____ are used for continuous protection.

- (a) B-Lymphocytes
- (b) Booster shots
- (c) Antibiotics
- (d) None of these

19. The methods of administering vaccines is/are;

- (a) Injection
- (b) Mouth
- (c) Nasal spray
- (d) All of these

20. When the antibiotics are not effective against viral infections, then it is called;

- (a) Efficiency
- (b) Efficacy
- (c) Inefficiency
- (d) resistance

21. The medicine reduces the pain;

(Board 2013)

- (a) Aspirin
- (b) Quinine
- (c) Chloroquine
- (d) Resochin

22. This drug belongs to Hallucinogens;

(Board 2013)

- (a) Morphine
- (b) Codeine
- (c) Heroin
- (d) Mescaline

23. Cardiotonic is used to stimulate the heart, it is made from the leaves of purple flowered plant called:

- (a) Rose
- (b) Jasmine
- (c) Hibiscus
- (d) Foxglove

24. The powder form of _____ is applied on wounds to stop bleeding and prevent infection:

- (a) Ammonium nitrate
- (b) Silver nitrate
- (c) Sodium phosphate
- (d) Sulphur

25. Diazepam is included in:

- (a) Analgesics
- (b) Antibiotics
- (c) Sedatives
- (d) Vaccines

26. Long term use of _____ drug induced suicidal thoughts:

- (a) Analgesics
- (b) Vaccines
- (c) Antibiotics
- (d) Sedatives

27. Mescaline comes from:

- (a) Mushroom
- (b) Poppy plant
- (c) Cactus
- (d) Sunflower

28. The scientific name of marijuana plant is:

- (a) *Rosa Indica*
- (b) *Brassica campestris*
- (c) *Putrenzeva*
- (d) *Cannabis sativa*

29. _____ is not used in children under the age of 8 and during the period of tooth development:

- (a) Cephalosporins
- (b) Tetracyclines
- (c) Sulpha Drugs
- (d) Thiazide Diuretics

30. In which year a British physician Edward Jenner infected a young boy with cowpox by injecting pus cells:

- (a) 1786
- (b) 1696
- (c) 1756
- (d) 1796

31. Drugs obtained from animals are usually their _____ products.

- (a) Catabolic
- (b) Anabolic
- (c) Waste
- (d) Glandular

32. _____ recognize the weakened or dead pathogens as enemies and start producing antibodies against them.
- (a) Antigens
 - (b) Lymphocytes
 - (c) Vaccines
 - (d) None
33. _____ destroy microorganisms found on non-living objects.
- (a) Sedatives
 - (b) Antibiotics
 - (c) Disinfectants
 - (d) Antiseptics
34. Pathogens contain special proteins called:
- (a) Lymphocytes
 - (b) Antigens
 - (c) Antibiotics
 - (d) Antibodies
35. Which of following is/are broad spectrum antibiotics?
- (a) Tetracyclines
 - (b) Sulfonamides
 - (c) Cephalosporins
 - (d) Tetracyclines and Sulfonamides
36. Which of following drug is derived from a mushroom?
- (a) Marijuana
 - (b) Mescaline
 - (c) Morphine
 - (d) Psilocin
37. Antibiotics are derived from microorganisms:
- (a) Bacteria
 - (b) Fungi
 - (c) Bacteria and Fungi
 - (d) Viruses
38. Bacteriostatics are antibiotics:
- (a) Kill bacteria
 - (b) Stop bacterial growth
 - (c) Enhance bacterial growth
 - (d) Lessen bacterial growth
39. Which of following is not an antibiotic?
- (a) Penicillin
 - (b) Tetracycline
 - (c) Thiazide diuretics
 - (d) Sulfa drugs

40. Penicillin is derived from fungus
- (a) *Penicillium candidum*
 - (b) *Penicillium expansum*
 - (c) *Penicillium notatum*
 - (d) *Penicillium chrysogenum*
41. Example of non-prescription drug is:
- (a) Aspirin
 - (b) Antibiotics
 - (c) Barbiturates
 - (d) Tranquillizers
42. Which of following is/are an example of prescription drug:
- (a) Barbiturates and Aspirin
 - (b) Tranquillizers
 - (c) Aspirin
 - (d) Barbiturates and Tranquillizers
43. Which of following is an example of synthetic drug?
- (a) Digitalis
 - (b) Penicillin
 - (c) Aspirin
 - (d) Streptomycin
44. Which of following affects production of sperms in men?
- (a) Codeine
 - (b) Morphine
 - (c) Marijuana
 - (d) Mescaline
45. Paracetamol is a/an:
- (a) Analgesics
 - (b) Antibiotics
 - (c) Sedatives
 - (d) Vaccines
46. Small doses of _____ result in feeling of well-being that lasts two to three hours.
- (a) Mescaline
 - (b) Marijuana
 - (c) Heroin
 - (d) Morphine
47. Which of following are used to relieve pain for patients with chronic diseases such as cancer.
- (a) Sedatives
 - (b) Narcotics
 - (c) Hallucinogens
 - (d) Mescaline

48. Antibiotics used to treat a few types of bacteria are called _____ antibiotics.

- (a) Broad Spectrum
- (b) Narrow Spectrum
- (c) Large Range spectrum
- (d) Narrow and Broad Spectrum

49. Sir Alexander Fleming is _____ biologist.

- (a) Italian (b) English
- (c) Scottish (d) Swedish

50. Early Pharmacologist focused on:

- (a) Synthetic chemical extract
- (b) Microbial Extracts
- (c) Plant Extracts
- (d) Animal Extracts

51. Which cells in body provide protection against future infections?

- (a) Red Blood cells
- (b) Thrombocytes
- (c) Memory cells
- (d) Platelets

52. Drugs which make a person dependent on them are:

- (a) Antibiotics
- (b) Addictive
- (c) Clinical
- (d) Non prescription

53. Aspirin is a a/an;

- (a) Prescription
- (b) Non prescription
- (c) Synthetic drug
- (d) Synthetic & Non-Prescription drug

54. Medicines which are used to stimulate heart rate are called:

- (a) Antibiotics (b) Cardiotonics
- (c) Analgesics (d) Pain killer

55. A Cardiotonic is:

- (a) Penicillin (b) Aspirin
- (c) Digitalis (d) Opium

56. Penicillin is obtained from:

- (a) Plants (b) Fungus
- (c) Animals (d) Bacteria

57. From the leaves of foxglove, which is obtained?

- (a) Opium
- (b) Tincture of iodine
- (c) Antitoxin
- (d) Digitalis

58. The example of a pain reliever is;

- (a) Silver nitrate
- (b) Morphine
- (c) Marijuana
- (d) Mescaline

59. An example of illegal addictive drug is:

- (a) Marijuana (b) Penicillin
- (c) Digitalis (d) Foxglove

60. Drugs which are obtained from animals are:

- (a) Musk and Bees wax
- (b) Musk
- (c) Bees wax
- (d) Mush and tincture of Iodine

61. Hallucinogen which is smoked is;

- (a) Datura
- (b) Marijuana
- (c) Psilocin
- (d) Mescaline

62. Which inhibit or kill bacteria?

- (a) Aspirin (b) Tetracycline
- (c) Diazepam (d) Paracetamol

63. Who discovered penicillin?

- (a) Fleming (b) Lister
- (c) Jenner (d) Louis Pasteur

64. Which are aroused for ecstatic effects?

- (a) Sedatives
- (b) Hallucinogens
- (c) Narcotics
- (d) Marijuana

65. Most commonly abused Narcotic is:
(a) Morphine (b) Codeine
(c) Caffeine (d) Heroin
66. Which is derived from Cactus?
(a) Psilocin (b) Diazepam
(c) Mescaline (d) Morphine
67. What affects sympathetic Nervous system?
(a) Sedative (b) Hallucinogens
(c) Narcotics (d) Analgesics
68. High doses of _____ increases heart rate?
(a) Marijuana
(b) Hashish
(c) Marijuana & Hashish
(d) Morphine
69. Which interfere with synthesis of bacterial cell wall?
(a) Cephalosporins
(b) Tetracyclines
(c) Tetracyclines & Cephalosporins
(d) Sulfonamide
70. Which should not be used during period of tooth development?
(a) Cephalosporins
(b) Sulfonamides
(c) Tetracyclines
(d) Hallucinogens
71. A medicine for lowering blood pressure is:
(a) Cephalosporins
(b) Sulpha drugs
(c) Tetracyclines
(d) Thiazide diuretics
72. Who introduced Carboic Acid?
(a) Sir Alexander Fleming
(b) Louis Pasteur
(c) Joseph Lister
(d) Edward Jenner

73. The example of Sedative is:
(a) Aspirin
(b) Diazepam
(c) Carboic acid
(d) Tetracycline
74. The drugs that causes changes in perception, thought, emotion and consciousness are:
(a) Narcotics
(b) Sedatives
(c) Hallucinogens
(d) Morphine
75. Morphine and Codeine are derived from:
(a) Poppy
(b) Foxglove
(c) Sheesham
(d) All of these
76. Which one is prescribed as a strange Analgesic under the name diamorphine in many Western countries:
(a) Paracetamol
(b) Aspirin
(c) Heroin
(d) Marijuana
77. To which group aspirin belong;
(Board 2014)
(a) Obtained from animals
(b) Obtained from plants
(c) Synthetic
(d) Obtained from bacteria
78. Which of the following addictive drugs is obtained from opium?
(a) Morphine (Board 2014)
(b) Marijuana
(c) Mescaline
(d) Psilocin

Answer Key

1	b	2	a	3	b	4	a	5	b
6	a	7	d	8	c	9	b	10	d
11	d	12	b	13	c	14	c	15	a
16	c	17	a	18	b	19	d	20	b
21	a	22	d	23	d	24	b	25	c
26	d	27	c	28	d	29	b	30	d
31	d	32	b	33	c	34	b	35	d
36	d	37	c	38	b	39	c	40	c
41	a	42	b	43	c	44	c	45	a
46	b	47	b	48	b	49	b	50	c
51	c	52	b	53	d	54	b	55	c
56	b	57	d	58	b	59	a	60	a
61	b	62	b	63	a	64	c	65	d
66	c	67	b	68	c	69	a	70	c
71	d	72	c	73	b	74	c	75	a
76	c	77	c	78	a				

Short Answer Questions

Q.1 Define pharmacology and distinguish it from pharmacy?

Ans.

Pharmacology

It is the study of drug composition, properties and medical applications. Sources of drugs are also studied in pharmacology.

Pharmacy

While pharmacy is the study of preparation of medicines and drugs. Pharmacology is not synonymous with pharmacy.

Q.2 Differentiate between medicinal drug and addictive drug.

Ans.

Medicinal drug

It is defined as any chemical substance used in the diagnosis, cure, treatment or prevention of diseases.

Addictive drug

Some drugs often make person dependent on them or addicted. The person's body becomes familiar to it and user cannot function well without it, these are called addictive drugs.

Q.3 Differentiate between analgesic and antibiotic?

Ans. Analgesic (pain killers) reduces pains e.g. paracetamol etc.

Antibiotic

Antibiotic are chemicals which inhibits or kills bacteria and treat bacterial infection e.g. tetracycline etc.

Q.4 What is marijuana? To which category of addictive drugs it belongs?

Ans. Marijuana is a hallucinogen which is smoked. It is obtained from flowers, stems, leaves of the marijuana plant. It belongs to the category of hallucinogens which result in a feeling of well being that lasts two to three hours.

Q.5 Differentiate between narcotics and hallucinogens?

Ans.

Narcotics

Narcotics are strong painkillers. These drugs are often prescribed in conjunction with other less potent painkillers. These are used to relieve pain, but some people may abuse narcotics for ecstatic effects.

Hallucinogens

Hallucinogens are the drugs that cause changes in perception, thought, emotion and consciousness.

Q.6 What is Aspirin?

Ans. A pain killer medicine, synthesized in Laboratory having the composition as Acetaminophen.

Q.7 What do you know about bactericidal and bacteriostatic?

Ans. The antibiotics that they kill bacteria e.g. cephalosporins are called bactericidal.

Bacteriostatic

The antibiotics that they work by stopping bacterial growth e.g. sulphonamides.

Q.8 What is cardiogenic?

Ans. Medicines for giving strength to heart muscles is called cardiogenics.

Q.9 Define the term cephalosporin?

Ans. A group of antibiotics, interfere with synthesis of bacterial cell wall and so are bactericidal. It is used to treat pneumonia, sorethroat, tonsillitis, bronchitis etc.

Q.10 What is heroin?

Ans. A commonly abused narcotic, derived from morphine, affects the central nervous system and causes drowsiness, hypertension etc.

Q.11 What is Morphine?

Ans. A commonly used narcotic, derived from the juice of opium, acts directly on the CNS to relieve pain, has a high potential for addiction.

Q.12 What are sedatives?

Ans. The types of drugs that interact with the central nervous system to depress its activities, make a person calm or drowsy e.g. diazepam.

Q.13 What do you know about sulfonamide and tetracycline?

Ans. Sulfonamide

Sulpha drugs are synthetic anti-biotics that contain sulfonamide group. They are broad spectrum bacteriostatic antibiotics. They inhibit the folic acid synthesis in bacteria and used to treat pneumonia and urinary tract infections.

Tetracycline

Broad spectrum bacteriostatic inhibit bacterial protein synthesis. It is used in the treatment of infections of respiratory tract, urinary tract, intestine etc.

Q.14 What is vaccine?

Ans. The material used to produce immunity to a disease by stimulating the production of antibodies.

Q.15 Define the term disinfectants?

Ans. Disinfectants destroy microorganism found on non-living objects.

Q.16 What is tincture of iodine?

Ans. The mineral iodine is used in making tincture of iodine, a liquid that helps to prevent infection when applied to cuts and bruises.

Q.17 Make a difference between broad spectrum and narrow spectrum antibiotics?

Ans.

Broad Spectrum Antibiotics

Some antibiotics can be used to treat a wide range of infections and are known as broad spectrum antibiotics.

Narrow Spectrum Antibiotics

Antibiotics used against a few types of bacteria are called narrow spectrum antibiotics.

Q.18 What is role of antibodies? (Board 2013)

Ans. When pathogens enter the body (blood) of host, these proteins stimulate an immune response in host i.e. synthesis of "antibodies". Antibodies bind to pathogens and destroy them. In addition, "memory cells" are produced, which remain in blood and provide protection against future infections with the same pathogens.

Q.19. Define antibiotics.

(Board 2013)

Ans. An antibiotics is a drug that kills or retards the growth (reproduction) of bacteria. They are the chemicals produced by or derived from microorganisms (bacteria and fungi).

Q.20. Name two drugs obtained from animals.

(Board 2013)

Ans. Fish liver oils, musk, bee's wax, certain hormones and antitoxins are obtained from animal sources.

Q.21. What are the functions of antibiotics?

(Board 2013-14)

OR Define drug. Name one synthetic drug.

Ans. Antibiotics are used to treat many different bacterial infections. Some antibiotics are bactericidal meaning that they kill bacteria. Others are 'bacteriostatic' meaning that they work by stopping bacterial growth.

Q.22. What is meant by drug?" Give one example. (Board 2013)

Ans. Any substance that, when absorbed into the body of a living organism, alters normal body function is known as a drug e.g. Aspirin, is an example of synthetic drug.

Q.23. Write the name of two drugs which are obtained from minerals. (Board 2013)

Ans. (i) Tincture of Iodine
(ii) Silver Nitrate

Q.24. Which antibiotic is obtained from soil?

Ans. Terramycin is obtained from the soil which is used to treat many infections.

Q.25. Differentiate between antiseptic and antibiotics.

Ans. Antiseptic reduces the possibility of infection on skin while antibiotics inhibit or kill bacteria within or on the body.

Q.26. Write the contributions of Sir Alexander Fleming in the field of pharmacology.

Ans. Sir Alexander Fleming discovered the antibiotic penicillin from the fungus *Penicillium notatum* for which he was awarded the Nobel Prize in 1945.

Q.27. Write the important contributions of Joseph Lister in the field of surgery.

Ans. Joseph Lister was an English surgeon. He promoted the idea of sterile surgery for the first time. He introduced carbolic acid to sterilize surgical instruments and to clean wounds.

Q.28. Do vaccines provide life time immunity?

Ans. Some vaccines do not provide life time immunity. For example Tetanus vaccines are only effective for a limited period of time. In such cases, booster shots are necessary to maintain continuous protection.

Q.29. Write two functions of B.Lymphocytes.

(Board 2014)

Ans. B.Lymphocytes recognize the weakened or dead pathogens as enemies and start producing antibodies against them. These antibodies remain in blood and provide protection against pathogens. If real pathogens enter blood, the already present antibodies kill them.