

OJEE LE Pharm Sample Paper 03

A) Mode and Time: The exam is a Computer Based Test (CBT) lasting 60 minutes.

B) Total Questions: The exam contains 60 questions.

C) Marking Scheme & Rules:

- +4 marks for each correct answer; -1 mark for each incorrect answer.

Q1. Which of the following is an example of a "Universal" vehicle used in the preparation of parenteral injections?

- A. Ethanol
- B. Water for injection
- C. Chloroform
- D. Glycerin

Q2. What is the primary function of a "disintegrant" in a tablet formulation?

- A. To add flavor
- B. To bind the powder particles
- C. To facilitate tablet breakup in the GI tract
- D. To reduce friction during compression

Q3. The "Angle of Repose" is used to determine which property of a powder?

- A. Density
- B. Flowability
- C. Solubility
- D. Viscosity

Q4. The "D-value" in the context of sterilization represents the time required to reduce the microbial population by:

- A. 50%
- B. 90%
- C. 99%
- D. 99.9%

Q5. Which of the following is considered an "Organized" crude drug?

- A. Acacia gum
- B. Asafoetida
- C. Nux vomica seeds
- D. Myrrh

Q6. Which active constituent of Fennel is responsible for its carminative properties?

- A. Menthol
- B. Anethole
- C. Camphor
- D. Cineole

Q7. Which blood group is known as the "Universal Recipient"?

- A. A
- B. B
- C. AB
- D. O

Q8. Which organelle is considered the "protein factory" of the cell?

- A. Mitochondria
- B. Nucleus
- C. Ribosome
- D. Lysosome

Q9. The SA node is situated in the:

- A. Right atrium
- B. Left atrium
- C. Right ventricle
- D. Left ventricle

Q10. Which drug is an H₂-receptor antagonist used for ulcers?

- A. Omeprazole

- B. Ranitidine
- C. Domperidone
- D. Sucralfate

Q11. "Pharmacodynamics" refers to the study of:

- A. Drug absorption
- B. What the drug does to the body
- C. Drug metabolism
- D. Drug excretion

Q12. Which drug is used as an antidote for morphine poisoning?

- A. Atropine
- B. Naloxone
- C. Flumazenil
- D. Protamine sulfate

Q13. Aspirin belongs to which pharmacological class?

- A. Opioid analgesic
- B. NSAID
- C. Local anesthetic
- D. Anticonvulsant

Q14. ABC analysis prioritizes inventory items based on:

- A. Annual consumption value
- B. Storage size
- C. Expiry date
- D. Alphabetical name

Q15. Which schedule of the D&C Act covers requirements for GMP?

- A. Schedule H
- B. Schedule M
- C. Schedule X

D. Schedule G

Q16. The "Subscription" part of a prescription contains:

- A. Drug name/strength
- B. Instructions to the pharmacist
- C. Patient's name
- D. Physician signature

Q17. The core structure of Cephalosporins is:

- A. Beta-lactam + Thiazolidine
- B. Beta-lactam + Dihydrothiazine
- C. Piperazine
- D. Quinoline

Q18. Vitamin B12 deficiency causes:

- A. Pernicious anemia
- B. Scurvy
- C. Rickets
- D. Night blindness

Q19. Normal resting heart rate of an adult:

- A. 40-60 bpm
- B. 72-80 bpm
- C. 100-120 bpm
- D. 150+ bpm

Q20. Isotonic solutions have a freezing point depression of approximately:

- A. $0.52^{\circ}C$
- B. $-0.52^{\circ}C$
- C. $1.0^{\circ}C$
- D. $-1.0^{\circ}C$

Q21. Which plant is the source of Quinine?

- A. Rauwolfia
- B. Cinchona
- C. Datura
- D. Digitalis

Q22. The hospital formulary is managed by:

- A. PT Committee
- B. Nursing staff
- C. Lab Technicians
- D. Security

Q23. Bioavailability is highest with:

- A. Oral route
- B. IV route
- C. Rectal route
- D. Topical route

Q24. Dimercaprol is an antidote for:

- A. Paracetamol
- B. Heavy metals
- C. Opioids
- D. Barbiturates

Q25. A "Collodion" is applied:

- A. With rubbing
- B. Without rubbing
- C. With heat
- D. As a spray

Q26. Which is the standard volume of Size 1 hard gelatin capsule?

- A. 0.13 ml
- B. 0.37 ml

C. 0.50 ml

D. 0.95 ml

Q27. Mayer's reagent is:

A. Potassium mercuric iodide

B. Potassium bismuth iodide

C. Iodine/Potassium iodide

D. Gold chloride

Q28. The master gland is:

A. Thyroid

B. Pituitary

C. Adrenal

D. Pineal

Q29. Insulin is secreted by:

A. Alpha cells

B. Beta cells

C. Delta cells

D. Exocrine glands

Q30. Schedule X drugs refer to:

A. OTC medicines

B. Prescription narcotics

C. Nutritional aids

D. Cosmetics

Q31. PPIs inhibit:

A. Cyclooxygenase

B. H^+/K^+ ATPase

C. Acetylcholinesterase

D. Lipase

Q32. Lead time is:

- A. Time to sell
- B. Time from order to receipt
- C. Time to manufacture
- D. Drug expiry

Q33. Metabolism of drugs occurs mainly in the:

- A. Kidney
- B. Liver
- C. Lungs
- D. Skin

Q34. Night blindness is a deficiency of:

- A. Vitamin A
- B. Vitamin B
- C. Vitamin C
- D. Vitamin D

Q35. Active constituent of Mentha oil is:

- A. Menthol
- B. Eugenol
- C. Camphor
- D. Cineole

Q36. A solenoidal field has a divergence of:

- A. 1
- B. 0
- C. Infinity
- D. -1

Q37. Universal donor blood group is:

- A. A

- B. B
- C. AB
- D. O

Q38. The "Inscription" in a prescription indicates:

- A. Drug names/doses
- B. Patient info
- C. Signatura
- D. Superscription

Q39. A Pharmacopoeia is a book of:

- A. Laws
- B. Drug standards
- C. Patient records
- D. Sales data

Q40. Unit of radioactivity:

- A. Curie
- B. Watt
- C. Ohm
- D. Volt

Q41. Broad-spectrum antibiotic:

- A. Penicillin G
- B. Tetracycline
- C. Nystatin
- D. Aspirin

Q42. Gram staining distinguishes:

- A. Positive/Negative
- B. Acid-fast
- C. Aerobic/Anaerobic

D. Motile/Non-motile

Q43. Left atrium receives blood from:

A. Lungs

B. Body

C. Liver

D. Kidney

Q44. OTC means:

A. Over-the-counter

B. Only-to-consume

C. Order-to-collect

D. On-the-clock

Q45. Ethylene oxide is for sterilizing:

A. Metal tools

B. Plastic/Rubber

C. Glassware

D. Syrups

Q46. Glidants improve:

A. Color

B. Powder flow

C. Binding

D. Flavor

Q47. Pharmacognosy is study of:

A. Synthetic drugs

B. Natural crude drugs

C. Dosage forms

D. Packaging

Q48. Warfarin is an antagonist of:

- A. Vitamin K
- B. Vitamin C
- C. Vitamin D
- D. Vitamin A

Q49. Which is fat-soluble?

- A. Vitamin C
- B. Vitamin B1
- C. Vitamin A
- D. Vitamin B12

Q50. Normal adult breathing rate:

- A. 8-12 bpm
- B. 12-20 bpm
- C. 20-30 bpm
- D. 30-40 bpm

Q51. Mottling is caused by:

- A. Color variation
- B. High moisture
- C. Low machine speed
- D. Air entrapment

Q52. Baking soda is:

- A. Sodium bicarbonate
- B. Sodium chloride
- C. Calcium carbonate
- D. Magnesium sulfate

Q53. The pacemaker of the heart is:

- A. Vagus nerve
- B. SA node

C. Spinal nerve

D. Optic nerve

Q54. Vd stands for:

A. Volume of distribution

B. Velocity of decay

C. Value of dose

D. Volume of drug

Q55. Schedule X regulates:

A. OTC drugs

B. Narcotics

C. Hormones

D. Cosmetics

Q56. Parenteral products require which glass?

A. Type I

B. Type II

C. Type III

D. Type IV

Q57. Ondansetron is:

A. Antiemetic

B. Analgesic

C. Antipyretic

D. Antiseptic

Q58. Bile is synthesized by:

A. Stomach

B. Liver

C. Pancreas

D. Kidney

Q59. D-value is:

- A. Decimal reduction time
- B. Dose of drug
- C. Duration of action
- D. Depth of filter

Q60. Thioglycolic acid is used to test:

- A. Iron
- B. Chloride
- C. Lead
- D. Arsenic

Solutions

1. B

Explanation: Water is the most common universal solvent and vehicle used for parenteral preparations. It is pyrogen-free and compatible with body fluids.

2. C

Explanation: Disintegrants are added to tablet formulations to promote the break-down of the tablet into smaller granules. This increases surface area, facilitating rapid dissolution in the GI tract.

3. B

Explanation: The angle of repose is a physical property determined by allowing a powder to form a conical pile. It directly indicates the internal friction and flowability of the powder.

4. B

Explanation: The D-value, or decimal reduction time, represents the time required to kill 90% of a microbial population. It is a standard metric used to calculate sterilization efficacy.

5. C

Explanation: Organized crude drugs are derived from direct parts of a plant, such as seeds, leaves, or roots. They possess a distinct, orderly cellular structure.

6. B

Explanation: Anethole is the principal aromatic compound found in fennel seeds and oil. It exerts carminative effects by relaxing gastrointestinal smooth muscles.

7. C

Explanation: Individuals with blood group AB possess both A and B antigens on their red blood cells. They lack anti-A and anti-B antibodies, making them universal recipients.

8. C

Explanation: Ribosomes are the sites of protein synthesis within all living cells. They act as the "protein factory" by translating mRNA into polypeptide chains.

9. A

Explanation: The Sinoatrial (SA) node is a mass of specialized tissue located in the right atrium. It functions as the natural pacemaker by initiating cardiac electrical impulses.

10. B

Explanation: Ranitidine is a histamine H₂-receptor antagonist that reduces stomach acid secretion. It is widely used to treat conditions like gastric and duodenal ulcers.

11. B

Explanation: Pharmacodynamics is the branch of pharmacology concerned with the biochemical and physiological effects of drugs. It describes the drug's mechanism of action.

12. B

Explanation: Naloxone is a competitive opioid receptor antagonist. It is the stan-

dard emergency antidote for reversing life-threatening respiratory depression caused by opioids.

13. B

Explanation: Aspirin is a Non-Steroidal Anti-Inflammatory Drug (NSAID). It works by irreversibly inhibiting cyclooxygenase enzymes to reduce pain and inflammation.

14. A

Explanation: ABC analysis classifies inventory items based on their annual consumption value. High-value "A" items require stricter control than low-value "C" items.

15. B

Explanation: Schedule M of the Drugs and Cosmetics Act provides detailed guidelines for Good Manufacturing Practices (GMP). It ensures consistent quality in production.

16. B

Explanation: The subscription is the part of the prescription directed to the pharmacist. It includes instructions for compounding, dispensing, or labeling the medication.

17. B

Explanation: The core structure of Cephalosporins is a beta-lactam ring fused to a six-membered dihydrothiazine ring. This structure is vital for antibacterial activity.

18. A

Explanation: Vitamin B12 is essential for DNA synthesis and the maturation of red blood cells. Its deficiency leads to impaired erythropoiesis and pernicious anemia.

19. B

Explanation: The normal resting heart rate for a healthy adult typically falls between 72 and 80 beats per minute. This can vary based on fitness and age.

20. B

Explanation: An isotonic solution, such as 0.9% saline, has the same osmotic pressure as body fluids. It exhibits a freezing point depression of approximately -0.52°C .

21. B

Explanation: Quinine is a potent antimalarial alkaloid naturally occurring in Cinchona bark. It was the primary treatment for malaria for centuries.

22. A

Explanation: The Pharmacy and Therapeutics (P&T) Committee manages the hospital's drug formulary. They ensure safe, effective, and cost-efficient medication use.

23. B

Explanation: The Intravenous (IV) route delivers medication directly into the systemic circulation. This bypasses absorption barriers, ensuring 100% bioavailability.

24. B

Explanation: Dimercaprol acts as a powerful chelating agent. It binds to heavy metals like arsenic, mercury, and lead, facilitating their excretion from the body.

25. B

Explanation: Collodions contain pyroxylin in an alcohol/ether mixture. They should be applied without rubbing to allow the solvent to evaporate and form a film.

26. B

Explanation: Hard gelatin capsules are produced in standardized sizes. A Size 1 capsule is a common size with a nominal capacity of 0.37 ml.

27. A

Explanation: Mayer's reagent is a solution of potassium mercuric iodide. It is widely used in analytical pharmacy to test for the presence of alkaloids.

28. B

Explanation: The pituitary gland is known as the "master gland" because it regulates several other endocrine glands. It controls growth, metabolism, and reproduction.

29. B

Explanation: Beta cells located in the pancreatic Islets of Langerhans are responsible for synthesizing and secreting insulin in response to blood glucose.

30. B

Explanation: Schedule X drugs are highly restricted substances with significant potential for abuse. They include potent narcotics and require strict documentation.

31. B

Explanation: Proton Pump Inhibitors (PPIs) reduce gastric acid by irreversibly inhibiting the H^+/K^+ ATPase enzyme system in parietal cells.

32. B

Explanation: Lead time is a crucial inventory metric. It defines the total time elapsed from placing a purchase order until the items are actually received.

33. B

Explanation: The liver is the primary site for drug biotransformation. It uses enzyme systems like Cytochrome P450 to convert drugs into metabolites for excretion.

34. A

Explanation: Vitamin A is a fat-soluble vitamin essential for vision. Its deficiency impairs the retina's ability to synthesize rhodopsin, causing night blindness.

35. A

Explanation: Menthol is the primary active terpene constituent in Mentha oil. It provides the characteristic cooling sensation and therapeutic carminative effects.

36. B

Explanation: A solenoidal field is defined as a vector field with zero divergence. This implies it is incompressible and lacks internal sources or sinks.

37. D

Explanation: Blood group O is the universal donor because it lacks A and B antigens. It can be transfused to patients of any blood type safely.

38. A

Explanation: The inscription is the main part of a prescription, listing the drug names and dosages. It informs the pharmacist what components to include.

39. B

Explanation: A Pharmacopoeia is an official government publication. It sets the mandatory quality, purity, and strength standards for all medicinal substances in that region.

40. A

Explanation: The Curie (Ci) is a traditional unit of radioactivity. It is defined as the activity of one gram of radium-226, equaling 3.7×10^{10} disintegrations per second.

41. B

Explanation: Tetracyclines are broad-spectrum antibiotics that inhibit bacterial protein synthesis. They are effective against a wide range of both Gram-positive and Gram-negative bacteria.

42. A

Explanation: Gram staining is a fundamental technique to classify bacteria. It divides them into Gram-positive and Gram-negative based on peptidoglycan wall thickness.

43. A

Explanation: The left atrium receives oxygenated blood directly from the lungs via pulmonary veins. It then pumps this blood into the left ventricle.

44. A

Explanation: OTC stands for "Over-the-counter." These are medications that can be sold directly to consumers without a formal prescription.

45. B

Explanation: Ethylene oxide is a gas used for sterilizing heat-sensitive medical devices. It is ideal for plastics and rubber that would melt in an autoclave.

46. B

Explanation: Glidants are excipients that reduce inter-particulate friction. They help powders flow smoothly from the hopper into the tablet die.

47. B

Explanation: Pharmacognosy is the scientific study of drugs derived from natural sources. It covers the identification and analysis of plant, animal, and mineral substances.

48. A

Explanation: Warfarin is an anticoagulant that antagonizes Vitamin K. It inhibits the enzyme needed to recycle Vitamin K for clotting factor synthesis.

49. C

Explanation: Vitamin A is a fat-soluble vitamin stored in the liver and adipose

tissue. Water-soluble vitamins like B and C are generally not stored in the body.

50. B

Explanation: The normal respiratory rate for a healthy resting adult is 12-20 breaths per minute. Deviations can indicate respiratory or metabolic distress.

51. A

Explanation: Mottling is a tablet defect characterized by an uneven surface color. It is typically caused by poor distribution of colorants during granulation.

52. A

Explanation: Sodium bicarbonate is commonly known as baking soda. It is used as a mild antacid and for pH adjustment in pharmaceutical formulations.

53. B

Explanation: The Sinoatrial (SA) node is the heart's natural pacemaker. It is located in the right atrium and initiates the electrical rhythm for cardiac contraction.

54. A

Explanation: The Volume of Distribution (V_d) is a pharmacokinetic parameter. It relates the total drug in the body to its concentration in the plasma.

55. B

Explanation: Schedule X drugs are strictly regulated to prevent addiction and abuse. This category includes potent narcotics and psychotropic substances.

56. A

Explanation: Type I glass is borosilicate glass with high chemical resistance. It is the gold standard for all parenteral (injectable) products.

57. A

Explanation: Ondansetron is a serotonin 5-HT₃ receptor antagonist. It is a powerful antiemetic used to prevent nausea/vomiting from chemotherapy or surgery.

58. B

Explanation: Bile is produced by hepatocytes in the liver. It is essential for the digestion and absorption of fats within the small intestine.

59. A

Explanation: The D-value is a key parameter in sterilization science. It represents the time needed to achieve a 90% reduction in a microbial population.

60. D

Explanation: Thioglycolic acid is a chemical reagent used for detecting arsenic impurities. It is part of the Gutzeit test to ensure safe toxicity levels.