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MODEL PAPER-20

DIGITAL EXPLANATION

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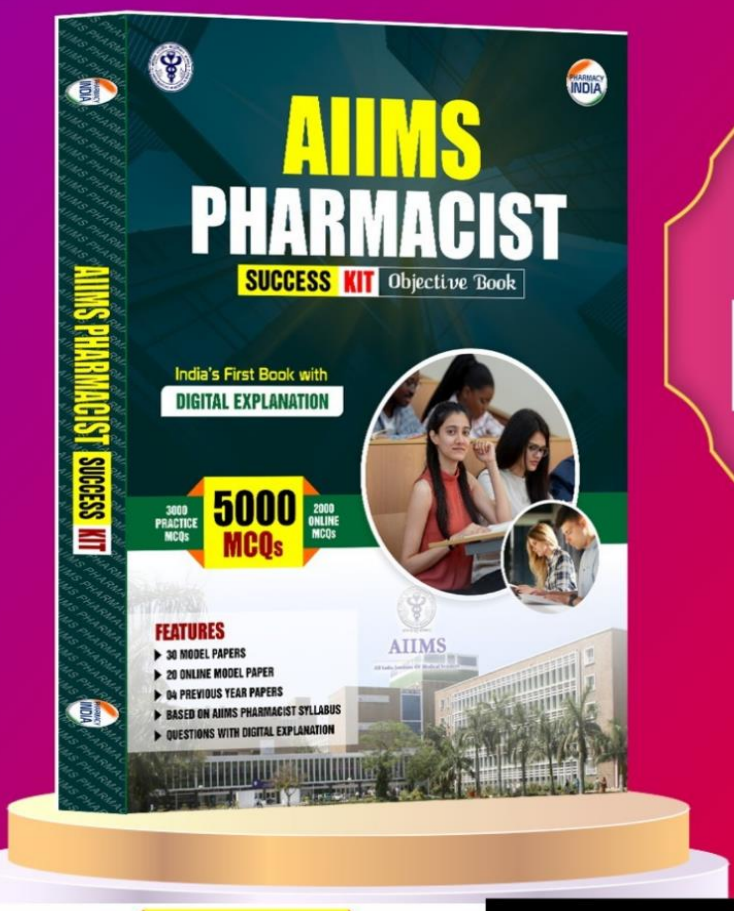

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Model Paper – 20 | Detailed Solutions

1. Which inventory----------size?

Correct Answer: Economic Order Quantity (EOQ) (**b**)

Explanation:
Economic Order Quantity (EOQ) minimizes total inventory costs by calculating the optimal order size. It balances **ordering costs** and **holding costs** to ensure cost-efficiency in inventory management.

Reference: "Inventory Management Principles," Chapter 4, pp. 50–53.

---

2. Which sales promotion ---------- move inventory?

Correct Answer: Coupons (**b**)

Explanation:
Coupons offer consumers a discount on purchases, encouraging **short-term sales** and helping businesses clear out excess inventory. They are widely used as a promotional tool.

Reference: "Marketing and Promotion Strategies," Chapter 6, pp. 72–75.

---

3. What is the ---------- sector?

Correct Answer: Accepting deposits and providing loans (**c**)

Explanation:
The main role of **commercial banks** is to **accept deposits** from individuals and organizations and **provide loans** to support businesses, personal needs, and economic growth.

Reference: "Banking and Financial Services," Chapter 3, pp. 34–37.

---

4. Which ---------- organization?

Correct Answer: Internal Recruitment (**c**)

Explanation:
Internal recruitment promotes current employees to higher positions, ensuring growth opportunities for existing staff and leveraging their knowledge of the organization.

Reference: "Human Resource Management Strategies," Chapter 2, pp. 25–28.

---

5. Which evaluation ---------- peers, and patients?

Correct Answer: 360-Degree Feedback (**b**)

Explanation:
360-degree feedback collects performance evaluations from **multiple sources**, including supervisors, peers, and patients, providing a **comprehensive assessment** of a pharmacist's skills and behavior.

Reference: "Performance Evaluation Methods," Chapter 7, pp. 88–91.

---

6. Which of the ---------- of enamel?

Correct Answer: Fluoride (**b**)

Explanation:
Fluoride strengthens tooth enamel and promotes **remineralization**, making it effective in preventing **tooth decay** and cavities when used in dental products like toothpaste and mouthwash.

Reference: "Oral Health and Dentistry Essentials," Chapter 5, pp. 60–63.

---

7. Which inhalant is ---------- of asthma?

Correct Answer: Salbutamol (**a**)

Explanation:
Salbutamol is a **beta-2 adrenergic receptor agonist** that relaxes airway muscles, providing relief from bronchospasms and improving breathing in asthma patients.

Reference: "Pharmacology of Respiratory Disorders," Chapter 8, pp. 102–105.

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8. Which of the ---------- apnea?

Correct Answer: Doxapram (**b**)

Explanation:
Doxapram is a **respiratory stimulant** that activates the respiratory center in the brainstem, used to treat **apnea** and other respiratory depressions.

Reference: "Drugs for Respiratory Conditions," Chapter 4, pp. 68–70.

---

9. Which is the ---------- therapy?

Correct Answer: Increasing the volume and reducing the viscosity of mucus (**c**)

Explanation:
Expectorants like **guaifenesin** work by increasing the **volume of respiratory secretions** and reducing their **viscosity**, facilitating the clearing of mucus from airways.

Reference: "Respiratory Pharmacology," Chapter 6, pp. 81–83.

---

10. Which substance is ---------- of poisoning?

Correct Answer: Ipecac syrup (**b**)

Explanation:
Ipecac syrup stimulates the vomiting center in the brain and is commonly used as an **emetic** in cases of accidental poisoning to eliminate ingested toxins.

Reference: "Emergency Toxicology," Chapter 3, pp. 55–57.

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11. Which ---------- sterilization?

Correct Answer: Gaseous sterilization (**c**)

Explanation:
Gaseous sterilization uses chemical agents like **ethylene oxide** or formaldehyde gas to sterilize heat-sensitive medical equipment by destroying microorganisms, including spores.

Reference: "Principles of Sterilization," Chapter 4, pp. 45–48.

---

12. Which of the ---------- ointment?
I. Trituration method
II. Fusion method

Correct Answer: Both I and II (**c**)

Explanation:
Eye ointments are prepared using the **trituration method** (manual mixing of ingredients) or the **fusion method**, where ingredients are melted and mixed under sterile conditions.

Reference: "Ophthalmic Preparations," Chapter 6, pp. 67–70.

---

13. _____ is the ---------- cream.

Correct Answer: Stearic acid (**a**)

Explanation:
Stearic acid acts as a base and stabilizer in **vanishing creams**, providing a smooth texture and forming a protective layer on the skin after application.

Reference: "Cosmetic Formulations," Chapter 8, pp. 92–95.

---

14. Which of the ----------emulsions?

Correct Answer: Magnesium oxide (**b**)

Explanation:
Magnesium oxide is an **inorganic emulsifying agent** that stabilizes emulsions by forming a film around dispersed particles, ensuring consistency.

Reference: "Pharmaceutical Emulsions," Chapter 5, pp. 74–76.

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15. Which of the ---------- suppositories?

Correct Answer: Glycerogelatin (**a**)

Explanation:
Glycerogelatin is a water-soluble base used in suppositories, providing gradual dissolution and release of the drug upon contact with body fluids.

Reference: "Suppository Bases and Their Applications," Chapter 7, pp. 83–86.

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16. Pyrogen test ----------response.

Correct Answer: Rabbit (**d**)

Explanation:

The **pyrogen test** involves injecting the product into the **ear vein of rabbits** to detect the presence of pyrogens, which induce fever. It is a standard quality control procedure for injectable products.

Reference: "Pharmaceutical Testing Methods," Chapter 9, pp. 101–104.

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17. Which of the ----------rectum?

Correct Answer: (c) Theophylline

Explanation:

1. **Adrenaline and cAMP Pathway**:
    - Adrenaline exerts its **inotropic effects** (enhancing cardiac contractility) and **relaxant effects** (relaxing smooth muscle) through activation of **beta-adrenergic receptors**, which stimulate **adenylyl cyclase**, increasing **cyclic AMP (cAMP)** production.
    - cAMP acts as a second messenger, amplifying the signal and mediating these effects.
2. **Role of Theophylline**:
    - **Theophylline** is a **phosphodiesterase (PDE) inhibitor**, which prevents the degradation of cAMP into 5'-AMP.
    - By **increasing intracellular cAMP levels**, theophylline prolongs and enhances the physiological effects typically mediated by adrenaline, including:
        - **Positive inotropic effects** on cardiac muscle.
        - **Relaxation of smooth muscles**, such as in the bronchi and gastrointestinal tract (e.g., the frog rectum).
3. **Why the other options are incorrect**:
    - **(a) Cyclic AMP**: Exogenous cAMP is not effective due to poor cellular uptake and rapid degradation by PDE.

- **(b) Dibutyryl cyclic AMP**: While this analog of cAMP is membrane-permeable and can mimic adrenaline-like effects, it is not commonly used for such physiological studies in this context.
- **(d) Beta-receptor antagonist**: This would block the action of adrenaline, reducing cAMP levels, and thus would oppose its inotropic and relaxant effects.

Reference:

- Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 13th Edition, Chapter 39 – **Methylxanthines (e.g., Theophylline)**, Page 731.
- Rang & Dale's Pharmacology, 9th Edition, Chapter 6 – **Cellular Signaling Pathways**, Page 92.
- K.D. Tripathi: Essentials of Medical Pharmacology, 8th Edition, Chapter 13 – **Drugs Acting on Smooth Muscle**, Page 161.

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18. How strychnine ---------- of Ranvier?

Correct Answer: It blocks sodium conductance (**b**)

Explanation:
Strychnine blocks **sodium conductance** by inhibiting the function of sodium channels in the **Node of Ranvier**, resulting in hyperexcitability of neurons and convulsions.

Reference: "Neurotoxins and Their Mechanisms," Chapter 5, pp. 78–81.

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19. Which of ---------- proteins?
I. Biuret test
II. Xanthoproteic reaction

Correct Answer: Both I and II (**c**)

Explanation:
The **Biuret test** detects peptide bonds, and the **Xanthoproteic reaction** identifies proteins containing aromatic amino acids by producing a color change upon reaction with nitric acid.

Reference: "Biochemical Testing Techniques," Chapter 4, pp. 62–65.

Model Paper – 20 | Detailed Solutions

20. Urine specimen ---------- diagnosis of:

Correct Answer: Urinary tract infections (**b**)

Explanation:
Urine specimens are primarily collected for the diagnosis of **urinary tract infections (UTIs)** to identify bacterial pathogens and determine antibiotic sensitivity.

Reference: "Clinical Diagnostic Methods," Chapter 7, pp. 89–91.

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21. When feces ---------- within:

Correct Answer: 2 hours (**a**)

Explanation:
Fecal specimens should be cultured within **2 hours** to prevent the growth of contaminants and ensure accurate identification of pathogens like **bacteria, parasites, or viruses**.

Reference: "Clinical Microbiology Techniques," Chapter 6, pp. 78–80.

---

22. Which ---------- dressings?

Correct Answer: Rayon (**c**)

Explanation:
Rayon, derived from **cellulose**, is used in **surgical dressings** due to its high absorbency, softness, and compatibility with the human body.

Reference: "Surgical Materials and Applications," Chapter 5, pp. 65–67.

---

23. What is used for ---------- chemical test?

Correct answer is: (b) Sodium hydroxide

Explanation:

In the **chemical test for identifying fixed oils or fats**, sodium hydroxide (NaOH) is commonly used. Here's why:

1. **Sodium Hydroxide Reaction**:

- Fixed oils and fats are esters of **glycerol** and **fatty acids**. When treated with sodium hydroxide, a **saponification** reaction occurs.
- This reaction involves the **hydrolysis of ester bonds** in the presence of sodium hydroxide, resulting in the formation of **glycerol** and **soap** (sodium salts of fatty acids).

2. **Test Mechanism**:
   - **Saponification** is a classic chemical reaction used to identify fixed oils and fats. The presence of a soap-like substance confirms the presence of oils or fats.
3. **Why the other options are incorrect**:
   - **(a) Tincture alkana**: This is not a reagent typically used for identifying oils or fats. Alkana refers to the plant **Alkanna tinctoria**, which is more commonly used in herbal preparations.
   - **(c) Potassium iodide solution**: Potassium iodide is used for testing for the presence of **oxidizing agents** (like iodine) and does not react specifically with oils and fats.
   - **(d) Picric acid solution**: Picric acid is used to detect the presence of **nitrogen-containing compounds**, not for identifying oils or fats.

Key Insight:

The saponification reaction with sodium hydroxide is a straightforward and reliable method for identifying fixed oils and fats.

Reference:

- **Pharmacognosy** by C.K. Kokate, 24th Edition, Chapter 15 – **Identification of Oils and Fats**, Page 250.
- **Basic Pharmacology** by H.P. Rang, Chapter 3 – **Test for Oils and Fats**, Page 60.

---

24. According to microscopic ---------- is known as:

Correct Answer: Palisade ratio (**a**)

Explanation:
The **palisade ratio** is a measure used in **microscopic evaluation** to identify the number of **palisade cells beneath epidermal cells**, aiding in plant authentication.

Reference: "Pharmacognosy Methods," Chapter 2, pp. 28–30.

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25. Which of the ---------- inoculating wires?

Correct Answer: Direct Flaming (**d**)

Explanation:
Direct flaming is a **physical sterilization method** where inoculating wires are passed through a flame to destroy microorganisms instantly.

Reference: "Sterilization Techniques in Laboratories," Chapter 4, pp. 50–52.

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26. Which of the ---------- dressing?

Correct answer: **(c) 8-shaped bandage**

Explanation:

The **8-shaped bandage** (also known as the **figure-eight bandage**) is the **direct framing technique** used for fixing a sterile dressing, especially in cases like joint injuries or wounds. It is used to hold a dressing or bandage in place by wrapping around the affected area in a figure-eight shape.

- The **figure-eight bandage** provides support and keeps the dressing secure by crossing over the joint, ensuring the sterile dressing stays in place even when the patient moves.
- It is often used for dressing wounds around the **elbow**, **knee**, or **ankle**.

Why the other options are incorrect:

- **(a) Simple spiral**: This is a basic method of bandaging that wraps around the limb in a spiral fashion. It is not specifically used for fixing sterile dressings in a "direct framing" manner.
- **(b) Spica**: This is a type of bandage used to immobilize a joint or limb but not specifically for securing sterile dressings.

- **(d) Reverse spiral**: This method involves overlapping the bandage in the opposite direction compared to the simple spiral, but it is more for support than specifically securing sterile dressings.

Reference:

- **Clinical Surgery** by S. Das, Chapter 23 – **Bandaging and Dressing Techniques**, Page 212

---

27. What is used to ---------- bronchoscopes?

Correct answer: **(a) Glutaraldehyde**

Explanation:

Glutaraldehyde is a highly effective **disinfectant** commonly used to sterilize medical equipment, including **endoscopes**, **rubber anaesthetic tubes**, and **bronchoscopes**.

- **Glutaraldehyde** is used for **high-level disinfection**, as it can effectively kill bacteria, viruses, and fungi without damaging sensitive equipment. It is widely used in healthcare for sterilizing **heat-sensitive** medical instruments.
- It works by **cross-linking proteins**, thereby denaturing the enzymes and proteins of microorganisms, rendering them non-functional and killing them.

Why the other options are incorrect:

- **(b) Boric acid**: This is used as an antiseptic and mild disinfectant, particularly for **eye infections** or **urinary tract infections**, but it is not typically used for disinfecting medical instruments.
- **(c) Chloroform**: This is a volatile liquid historically used as an anesthetic but is no longer used for disinfecting medical instruments due to its toxicity.
- **(d) Ethylene oxide**: This is used for sterilizing medical equipment, particularly when heat-sensitive items cannot undergo autoclaving, but **glutaraldehyde** is more commonly used for disinfection of the specified instruments in your question.

Reference:

- **Textbook of Medical Microbiology** by P. Ananthnarayan, 9th Edition, Chapter 56 – **Disinfection and Sterilization**, Page 543.

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28. Which enzyme in ---------- peptides?

Correct Answer: Pepsin (**c**)

Explanation:
Pepsin, secreted by the stomach, breaks down **proteins** into smaller **peptides** during digestion by hydrolyzing peptide bonds.

Reference: "Human Physiology and Digestion," Chapter 3, pp. 40–43.

---

29. Which bone----------body?

Correct Answer: Femur (**a**)

Explanation:
The **femur**, or thigh bone, is the **longest** and **strongest bone** in the human body, supporting body weight and enabling movement.

Reference: "Skeletal System Anatomy," Chapter 2, pp. 18–20.

---

30. What is the ---------- system?

Correct Answer: Exchange gases between the air and blood (**c**)

Explanation:
Alveoli are tiny air sacs in the lungs where **gas exchange** occurs—oxygen diffuses into the blood, and carbon dioxide diffuses out.

Reference: "Respiratory System Functions," Chapter 5, pp. 62–64.

---

31. Which solvent is ---------- moderate polarity?

Correct Answer: Ethanol (**b**)

Explanation:
Ethanol is widely used in solubility studies due to its **moderate polarity**, which makes it effective in dissolving a broad range of **organic drugs**.

Reference: "Pharmaceutical Solubility Techniques," Chapter 4, pp. 45–47.

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32. What is the main ---------- drug?

Correct Answer: To confirm its purity and integrity (**c**)

Explanation:
The **melting point** is a key parameter in assessing a drug's **purity and integrity**, as impurities lower and broaden the melting range.

Reference: "Analytical Techniques in Drug Development," Chapter 5, pp. 56–59.

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33. In an acid-base ---------- basic solutions)?

Correct Answer: Phenolphthalein (**b**)

Explanation:
Phenolphthalein is a suitable indicator for strong acid-strong base titrations, as it is colorless in acidic solutions and turns **pink** in basic solutions, signaling the endpoint.

Reference: "Titration and Indicators," Chapter 3, pp. 34–36.

---

34. What is the ---------- sulfate?

Correct Answer: To precipitate sulfate ions (**a**)

Explanation:
Barium chloride reacts with sulfate ions to form **barium sulfate precipitate**, enabling the detection and quantification of sulfates in pharmaceutical samples.

Reference: "Pharmaceutical Limit Tests," Chapter 6, pp. 68–71.

---

35. Limit ---------- stain is:

Correct Answer: Yellow (**c**)

Explanation:
In the **arsenic limit test**, arsenic reacts with mercuric chloride to form a **yellow stain**, indicating the presence of arsenic in the sample.

Reference: "Toxic Element Detection Methods," Chapter 8, pp. 84–86.

---

36. Which ---------- absorption?

Correct Answer: (b) Food in the stomach

Explanation:

The **rate of drug absorption** can be significantly influenced by the presence of food in the stomach. Here's how:

1. **Food in the stomach**:
    - **Food** can alter the absorption of drugs in several ways. It may:
        - **Delay gastric emptying**, thereby affecting the time the drug stays in the stomach.
        - **Change the pH** of the stomach, potentially enhancing or reducing the solubility of certain drugs.
        - **Interfere with drug absorption**, either by binding to the drug or by altering the gastrointestinal motility, which can either increase or decrease the drug's absorption rate.
2. **Why the other options are incorrect**:
    - **(a) Drug metabolism**: Drug metabolism occurs primarily in the liver and is related to the elimination of drugs from the body, not their absorption.
    - **(c) Excretion rate**: Excretion refers to the removal of drugs from the body, primarily through the kidneys, and doesn't directly influence the rate of absorption.
    - **(d) Distribution to tissues**: Distribution refers to how the drug spreads through the body after absorption, not the absorption itself.

Key Insight:

Food in the stomach can slow down or enhance drug absorption, making it a critical factor in determining how quickly and efficiently a drug is absorbed.

Reference:

- **Goodman & Gilman's: The Pharmacological Basis of Therapeutics**, 13th Edition, Chapter 2 – **Absorption and Distribution of Drugs**, Page 18.

- **Basic and Clinical Pharmacology** by Bertram Katzung, 14th Edition, Chapter 3 – **Absorption, Distribution, and Excretion**, Page 37.

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37. The range of ---------- as:

Correct Answer: Antibiotic spectrum (**c**)

Explanation:
The **antibiotic spectrum** refers to the range of bacterial species that an antibiotic can inhibit or kill, classified as **broad-spectrum** or **narrow-spectrum**.

Reference: "Antibiotics and Their Mechanisms," Chapter 5, pp. 60–63.

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38. Insulin ---------- of:

Correct Answer: Blood glucose level (**a**)

Explanation:
Insulin, secreted by the pancreas, regulates **blood glucose levels** by promoting glucose uptake in cells and inhibiting glucose production in the liver.

Reference: "Endocrine System and Hormones," Chapter 3, pp. 40–43.

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39. Thyroxine---------- by:

Correct Answer: Pituitary gland (**d**)

Explanation:
The **pituitary gland** releases **thyroxine-stimulating hormone (TSH)** to stimulate the thyroid gland to produce **thyroxine**, essential for metabolic regulation.

Reference: "Hormonal Regulation in Humans," Chapter 6, pp. 70–73.

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40. Which of the ---------- symptom?

Correct Answer: Tachycardia (**d**)

Explanation:
Tachycardia refers to an abnormally high **heart rate** and is a **symptom** rather than a disease. It often indicates underlying conditions like stress, fever, or heart disorders.

Reference: "Cardiovascular Disorders: Symptoms and Diagnosis," Chapter 4, pp. 50–53.

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41. The process of ---------- drugs into:

Correct Answer: More water-soluble compounds (**a**)

Explanation:
Drug metabolism, particularly in the **liver**, converts **lipophilic drugs** into **water-soluble metabolites** via phase I and phase II reactions, facilitating their elimination through urine or bile.

Reference: "Principles of Drug Metabolism," Chapter 7, pp. 82–85.

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42. Which of the ---------- system?

Correct Answer: Ribs (**a**)

Explanation:
The **ribs** form a part of the **thoracic cage**, which protects vital organs, including the **heart** and lungs, from physical damage.

Reference: "Anatomy and Physiology of the Human Body," Chapter 3, pp. 28–30.

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43. Total ---------- body are:

Correct Answer: 206 (**b**)

Explanation:
The **human skeletal system** consists of **206 bones** in adulthood, divided into axial and appendicular skeletons, supporting movement and protecting organs.

Reference: "Human Skeletal System," Chapter 2, pp. 15–18.

---

44. OTC ---------- for:

Correct Answer: Over-The-Counter (**a**)

Explanation:
OTC (Over-The-Counter) refers to medications that can be purchased without a prescription, such as analgesics, antacids, and cold remedies.

Reference: "Pharmaceutical Terminologies," Chapter 5, pp. 60–62.

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45. Medication ---------- is known as:

Correct Answer: Prophylactic drug (**b**)

Explanation:
Prophylactic drugs are administered to **prevent diseases**, such as vaccines for infections or anticoagulants to prevent blood clots.

Reference: "Pharmacology of Preventive Medicines," Chapter 8, pp. 92–95.

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46. Geometric ---------- compounds with:

Correct Answer: Cis-trans configuration (**c**)

Explanation:
Geometric isomerism, such as **cis-trans isomerism**, occurs due to restricted rotation around double bonds or ring structures, leading to different spatial arrangements.

Reference: "Organic Chemistry Concepts," Chapter 4, pp. 45–47.

---

47. Which dosage ---------- rectum?

Correct Answer: Suppository (**a**)

Explanation:
A **suppository** is a solid dosage form designed for rectal administration, where it melts or dissolves to release the drug for **local or systemic action**.

Reference: "Pharmaceutical Dosage Forms," Chapter 6, pp. 70–73.

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48. Maximum ---------- place in:

Correct Answer: Intestine (**d**)

Explanation:
The **small intestine**, particularly the **jejunum**, is the primary site for food absorption, where nutrients like carbohydrates, proteins, and fats are absorbed into the bloodstream.

Reference: "Human Digestive System," Chapter 5, pp. 63–66.

---

49. How many ---------- body?

Correct Answer: 5 (**a**)

Explanation:
The **five sensory organs** are the **eyes (sight)**, **ears (hearing)**, **nose (smell)**, **tongue (taste)**, and **skin (touch)**, which allow humans to perceive their environment.

Reference: "Human Sensory Systems," Chapter 2, pp. 18–20.

---

50. Which of the ---------- cancer?

Correct Answer: Oncologist (**c**)

Explanation:
An **oncologist** is a medical professional who specializes in the diagnosis and treatment of **cancer** through therapies like chemotherapy, radiotherapy, and surgery.

Reference: "Medical Specializations Explained," Chapter 7, pp. 88–90.

---

51. Which of ---------- metal?

Correct Answer: Copper (Cu) (**b**)

Explanation:
Copper (Cu) is a **transition metal** that belongs to the d-block of the periodic table. It exhibits variable oxidation states and forms colored compounds.

Reference: "Inorganic Chemistry Basics," Chapter 3, pp. 40–42.

---

52. Which type of ---------- alkene?

Correct Answer: (c) Elimination

Explanation:

To convert an **alkane** to an **alkene**, an **elimination reaction** is required. Here's why:

1. **Elimination Reaction**:
    - In an **elimination reaction**, two atoms or groups are removed from a molecule, leading to the formation of a **double bond** (an alkene).
    - In the case of converting an alkane to an alkene, an **alkane** undergoes dehydrogenation or a similar elimination process, losing **hydrogen atoms** and **carbon atoms** to form a **double bond**, thus producing an alkene.
2. **Why the other options are incorrect**:
    - **(a) Hydrogenation**: This reaction involves the addition of **hydrogen** to a double or triple bond (like in alkenes or alkynes), converting them into alkanes, not the other way around.
    - **(b) Substitution**: This involves replacing one atom or group in a molecule with another (e.g., halogenation), but it does not form a double bond like an alkene.
    - **(d) Addition**: Addition reactions add atoms or groups to a double bond, converting alkenes into more substituted alkanes, not converting alkanes to alkenes.

Key Insight:

The **elimination reaction** is the type that removes atoms from an alkane to form an alkene by introducing a **double bond**.

Reference:

- **Organic Chemistry** by L.G. Wade, 9th Edition, Chapter 7 – **Elimination Reactions**, Page 235.
- **Advanced Organic Chemistry** by Jerry March, 7th Edition, Chapter 8 – **Elimination Reactions**

---

53. What is ---------- for $CH_3CH_2CH_2CH_2OH$?

Correct Answer: Butanol (**c**)

Explanation:
The compound **$CH_3CH_2CH_2CH_2OH$** contains four carbon atoms and a hydroxyl group (-OH), making its **IUPAC name butanol**.

Reference: "Nomenclature in Organic Chemistry," Chapter 2, pp. 25–28.

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54. Morphine ---------- per D & C Act?

Correct Answer: Schedule X (**d**)

Explanation:
Morphine is classified under **Schedule X** of the Drugs and Cosmetics Act, which includes **narcotics** and psychotropic substances requiring strict regulation.

Reference: "Regulatory Framework for Narcotics," Chapter 7, pp. 78–80.

---

55. A healthy ---------- of:

Correct Answer: 120 mm Hg (**c**)

Explanation:
A **normal systolic blood pressure** for a healthy individual is around **120 mm Hg**, which represents the pressure exerted when the heart pumps blood.

Reference: "Cardiovascular Health and Blood Pressure," Chapter 4, pp. 50–52.

---

56. CDSCO ---------- for:

Correct Answer: Central Drug Standard Control Organization (**b**)

Explanation:
The **Central Drug Standard Control Organization (CDSCO)** is the national regulatory authority in India for the approval, regulation, and monitoring of drugs and clinical trials.

Reference: "Drug Regulatory Authorities in India," Chapter 6, pp. 65–68.

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57. FIFO ---------- for:

Correct Answer: First In First Out (**b**)

Explanation:
FIFO (First In First Out) is an inventory management method that ensures the oldest stock is used or sold first, minimizing waste and maintaining product quality.

Reference: "Inventory Control Techniques," Chapter 3, pp. 35–37.

---

58. Which of ---------- evaluation?

Correct Answer: Solution Viscosity (**c**)

Explanation:
Solution viscosity is not a part of tablet evaluation. Common tests include **disintegration**, **dissolution**, and **friability**, which assess a tablet's performance and stability.

Reference: "Quality Control of Tablets," Chapter 8, pp. 90–93.

59.Which of ---------- typhoid?

Correct Answer: It is not treatable (**c**)

Explanation:
Typhoid is a bacterial infection caused by *Salmonella typhi*. It is treatable with **antibiotics**, proper hydration, and supportive care.

Reference: "Infectious Diseases and Management," Chapter 5, pp. 60–63.

---

60. MDI is ---------- used in:

Correct Answer: Asthma (**a**)

Explanation:
Metered-Dose Inhalers (MDIs) are widely used in **asthma** management to deliver precise doses of bronchodilators or corticosteroids directly into the lungs.

Reference: "Respiratory Devices in Therapy," Chapter 7, pp. 75–78.

---

61. Insulin is ---------- by:

Correct Answer: Pancreas (**a**)

Explanation:
Insulin is secreted by the **beta cells** of the pancreas, specifically in the **islets of Langerhans**, and it plays a crucial role in regulating blood glucose levels.

Reference: "Endocrinology and Hormonal Control," Chapter 3, pp. 40–42.

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62. LASA ---------- for:

Correct Answer: Look-Alike Sound-Alike (**b**)

Explanation:
LASA (Look-Alike Sound-Alike) refers to medications with similar names or appearances, which can lead to errors in prescription or dispensing if not carefully managed.

Reference: "Pharmaceutical Safety Guidelines," Chapter 6, pp. 65–67.

---

63. Dementia ----------:

Correct Answer: Loss of memory (**c**)

Explanation:
Dementia is characterized by a **progressive decline in cognitive function**, primarily affecting **memory**, reasoning, and the ability to perform daily activities.

Reference: "Neurodegenerative Disorders," Chapter 5, pp. 58–61.

---

64. Warfarin ---------- show:

Correct Answer: Synergistic (**b**)

Explanation:
Warfarin and **aspirin** exhibit a **synergistic effect** by increasing the risk of **bleeding**, as both inhibit clotting pathways through different mechanisms.

Reference: "Drug Interactions in Pharmacology," Chapter 8, pp. 78–81.

---

65. Calamine ----------:

Correct Answer: Zinc oxide (**b**)

Explanation:
Calamine, a mixture of **zinc oxide** with a small amount of iron oxide, is widely used in topical preparations to relieve itching and skin irritation.

Reference: "Topical Agents in Dermatology," Chapter 4, pp. 48–50.

---

66. Powder ---------- as:

Correct Answer: Hygroscopic (**a**)

Explanation:
Hygroscopic powders have the ability to **absorb moisture** from the air, which is a crucial property for substances like silica gel and calcium chloride.

Reference: "Physical Properties of Powders," Chapter 3, pp. 40–43.

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67. Lugol's ---------- contains:

Correct Answer: Iodine (**d**)

Explanation:
Lugol's solution is an aqueous solution of **iodine** and potassium iodide, used as an antiseptic and in medical diagnostics like thyroid function tests.

Reference: "Solutions and Their Applications," Chapter 5, pp. 60–62.

---

68. Solutions ----------:

Correct answer: **(b) Monophasic**

Explanation:

- A **solution** is a **monophasic** mixture, meaning that it is a homogeneous mixture composed of a **solvent** and one or more solutes that are completely dissolved. In solutions, the solute is uniformly distributed in the solvent, and no distinct phases are present.

Why the other options are incorrect:

- **(a) Biphasic**: Biphasic systems have two distinct phases, such as in emulsions or suspensions, where one phase is dispersed in another.

- **(c) Multi-layered**: Solutions do not have multiple layers; multi-layered systems are more typical of emulsions or suspensions.
- **(d) Suspension**: A suspension is a heterogeneous mixture where solid particles are suspended in a liquid, not dissolved.

Key Insight:

A **solution** is characterized by being **monophasic**, with the solute dissolved in the solvent, forming a single phase.

Reference:

- **Pharmaceutical Dosage Forms** by Howard C. Ansel, 9th Edition, Chapter 4 – **Solutions**, Page 56.
- **Pharmaceutics: The Science of Dosage Form Design** by Michael E. Aulton, 4th Edition, Chapter 2 – **Solutions and Their Preparation**, Page 50.

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69. Which of the ---------- is largest?

Correct answer: **(c) 0**

Explanation:

Capsule sizes are standardized, with the numbering system indicating the **size** of the capsule, where **0** is the **largest** size and numbers increase as the size decreases.

- **Size 0** is larger compared to the other sizes. Capsules range from size **000** (largest) to size **5** (smallest).
- **Size 0** is commonly used for containing larger amounts of powder or active pharmaceutical ingredients.

Why the other options are incorrect:

- **(a) 3**: This is smaller than size **0** and would hold less powder.
- **(b) 2**: This is also smaller than size **0** and would hold a smaller amount.
- **(d) 1**: Even smaller than size **2**, it would hold even less material than size **0**.

Key Insight:

Size 0 is the **largest** capsule size, suitable for larger doses.

Reference:

- **Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems** by Loyd V. Allen Jr., 10th Edition, Chapter 8 – **Capsules**, Page 142.
- **Pharmaceutics: The Science of Dosage Form Design** by Michael E. Aulton, 4th Edition, Chapter 4 – **Capsules**.

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70. Sunscreen ---------- means:

Correct Answer: Up to 15 times more solar energy required to produce a sunburn compared to unprotected skin (**c**)

Explanation:
SPF (Sun Protection Factor) indicates the level of protection against UVB rays. An SPF of 15 allows a person to be exposed to **15 times more sunlight** without burning compared to unprotected skin.

Reference: "Dermatological Preparations and UV Protection," Chapter 7, pp. 75–78.

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71. Insulin ---------- a:

Correct Answer: Hormone (**c**)

Explanation:
Insulin is a **hormone** produced by the pancreas that regulates blood glucose levels by facilitating the uptake of glucose into cells and suppressing glucose production in the liver.

Reference: "Endocrine Functions of Insulin," Chapter 4, pp. 42–44.

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72. Oil in ---------- oil as:

Correct Answer: Dispersed phase (**a**)

Explanation:
In an **oil-in-water (O/W) emulsion**, oil acts as the **dispersed phase**, and water serves as the **continuous phase**, with emulsifiers stabilizing the mixture.

Reference: "Emulsion Systems in Pharmacy," Chapter 5, pp. 50–53.

---

73. COVID-19 ---------- by:

Correct Answer: Virus (**b**)

Explanation:
COVID-19, caused by the **SARS-CoV-2 virus**, is a contagious respiratory disease that led to a global pandemic starting in late 2019.

Reference: "Virology and Emerging Diseases," Chapter 6, pp. 62–65.

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74. ICMR ---------- for:

Correct Answer: Indian Council of Medical Research (**a**)

Explanation:
The **Indian Council of Medical Research (ICMR)** is the apex body in India for formulating and promoting **biomedical research** to address public health challenges.

Reference: "Research Organizations in India," Chapter 3, pp. 30–32.

---

75. The largest ---------- is:

Correct Answer: Femur (**c**)

Explanation:
The **femur**, also known as the thigh bone, is the **longest and strongest bone** in the human body, supporting body weight during movement.

Reference: "Skeletal Anatomy," Chapter 2, pp. 18–20.

---

76. The process of ---------- is called:

Correct Answer: Compiling (**b**)

Explanation:
Compiling translates **source code** written in high-level programming languages into **machine language**, enabling computers to execute the instructions.

Reference: "Computer Programming Basics," Chapter 4, pp. 45–47.

---

77. A collection of ---------- is called a:

Correct Answer: Database (**c**)

Explanation:
A **database** is an organized collection of data that can be **stored, retrieved, and managed** electronically using software like SQL or Oracle.

Reference: "Data Management Systems," Chapter 6, pp. 65–67.

---

78. In Windows, ---------- open windows?

Correct Answer: Windows + M (**a**)

Explanation:
The shortcut **Windows + M** minimizes all open windows on a computer screen, quickly accessing the desktop in a Windows operating system.

Reference: "Windows OS Shortcuts," Chapter 3, pp. 38–40.

---

79. Which ---------- apps?

Correct Answer: Java (**b**)

Explanation:
Java is the core programming language for Android app development due to its compatibility with the Android platform and widespread use in mobile application development.

Reference: "Programming Languages for Mobile Apps," Chapter 7, pp. 78–81.

---

80. What is the ---------- cache?

Correct Answer: To speed up page loading by storing data locally (**b**)

Explanation:
A **web browser cache** stores **temporary files** such as images and HTML pages locally to reduce loading times for frequently visited websites.

Reference: "Web Browser Mechanics," Chapter 5, pp. 52–54.

Model Paper – 20 | Detailed Solutions

81. A person buys 18 pens ---------- per pen?

Correct Answer: ₹50 (**b**)

Explanation:
Cost price per pen = ₹720 ÷ 18 = ₹40.
Selling price per pen with 25% profit = ₹40 + (25% of ₹40) = ₹40 + ₹10 = ₹50.

Reference: "Profit and Loss Simplified," Chapter 3, pp. 45–47.

---

82. If a number is ---------- number?

Correct answer: **(c) 120**

Explanation:

- Let the original number be **x**.
- After decreasing it by 10%, the value becomes **0.90x**.
- After increasing this new value by 20%, the final value becomes **1.20 × 0.90x = 1.08x**.
- Given that the final value is 99:
  - 1.08x = 99
  - x = 99 ÷ 1.08 = 120

So, the original number is **120**.

---

83. A man ---------- journey?

Correct Answer: 12.5 km/h (**b**)

Explanation:
Time taken for 45 km = 45 ÷ 15 = 3 hours.
Time taken for 30 km = 30 ÷ 10 = 3 hours.
Total distance = 45 + 30 = 75 km.
Total time = 3 + 3 = 6 hours.
Average speed = Total distance ÷ Total time = 75 ÷ 6 = 12.5 km/h.

Reference: "Time, Speed, and Distance," Chapter 4, pp. 38–41.

---

84. The sum of two ---------- the numbers?

Correct answer: **(a) 27, 45**

Explanation:

- The two numbers are **27** and **45**.
- Their sum: 27 + 45 = 72
- Their difference: 45 - 27 = 18

---

85. A shopkeeper ---------- the mixture?

Correct answer: **(a) ₹44**

Explanation:

- The shopkeeper mixes 20 kg of sugar at ₹40 per kg with 30 kg of sugar at ₹50 per kg.
- The total cost of the mixture is:
  - 20 kg × ₹40 = ₹800
  - 30 kg × ₹50 = ₹1500
  - Total cost = ₹800 + ₹1500 = ₹2300
- The total weight of the mixture is:
  - 20 kg + 30 kg = 50 kg
- The cost price per kg of the mixture is:
  - ₹2300 ÷ 50 kg = ₹44

The cost price per kg of the mixture is **₹44**.

---

86. If "DOCTOR" ---------- coded?

Correct Answer: NCOCGT (**c**)

Explanation:
Each letter in the code is shifted alternately by +2 and -2.

For "LAWYER":
L → N (+2), A → C (+2), W → O (-2), Y → C (-2), E → G (+2), R → T (+2).

Reference: "Coding-Decoding Logic," Chapter 2, pp. 25–28.

---

87. Pointing to a ---------- to Raj?

Correct Answer: Sister (**a**)

Explanation:
Raj's **grandmother's only son** would be Raj's father. Hence, the girl is Raj's **sister**.

Reference: "Family Relation Puzzles," Chapter 1, pp. 18–20.

---

88. What comes ----------, 17, 26, 37, ?

Correct Answer: 50 (**a**)

Explanation:
The difference between consecutive terms is increasing by 2:
17 - 10 = 7, 26 - 17 = 9, 37 - 26 = 11.
Next difference = 13. So, 37 + 13 = 50.

Reference: "Numerical Series Patterns," Chapter 4, pp. 34–36.

---

89. Find the ----------, 3, 5, 7, 12.

Correct Answer: 12 (**d**)

Explanation:
All numbers except **12** are **prime numbers**, as they are divisible only by 1 and themselves.

Reference: "Prime Numbers and Patterns," Chapter 3, pp. 28–30.

---

90. If in a certain ---------- written?

Correct Answer: RXHHQ (**b**)

Explanation:
The coding rule alternates between shifting letters by **+2** and **-1**.

For "QUEEN":
Q → R (+2), U → X (+2), E → H (-1), E → H (-1), N → Q (+2).

Reference: "Coding-Decoding Techniques," Chapter 2, pp. 25–28.

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91. The Economic ---------- ministry?

Correct Answer: Ministry of Finance (**b**)

Explanation:
The **Ministry of Finance** is responsible for presenting the **Economic Survey of India**, which reviews the country's economic progress and sets the groundwork for the Union Budget.

Reference: "Indian Economy and Policies," Chapter 5, pp. 62–64.

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92. Which ---------- in India?

Correct Answer: 101st Amendment (**c**)

Explanation:
The **101st Constitutional Amendment** Act, 2016, introduced **GST** to simplify and unify India's indirect tax system, replacing multiple taxes with a single tax structure.

Reference: "Indian Constitution and Amendments," Chapter 7, pp. 78–81.

---

93. Who is the only ---------- Economics?

Correct Answer: Amartya Sen (**b**)

Explanation:
Amartya Sen was awarded the **Nobel Prize in Economics** in 1998 for his contributions to welfare economics, poverty alleviation, and social justice theories.

Reference: "Indian Nobel Laureates," Chapter 3, pp. 40–42.

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94. The Preamble to the ---------- words?

Correct Answer: We, the People of India (**b**)

Explanation:
The **Preamble** starts with "We, the People of India," signifying that the **Constitution** derives its authority from the people and represents democratic ideals.

Reference: "Indian Constitution and Preamble," Chapter 1, pp. 18–20.

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95. Which movement ---------- Champaran?

Correct Answer: Champaran Satyagraha (**c**)

Explanation:
The **Champaran Satyagraha** (1917) was Mahatma Gandhi's first mass movement in India, aimed at addressing the grievances of indigo farmers forced into exploitative contracts.

Reference: "Indian Freedom Struggle," Chapter 4, pp. 55–58.

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96. The 'Blue Revolution' ---------- sector?

Correct Answer: Fisheries (**a**)

Explanation:
The **Blue Revolution** refers to the growth of the **fisheries sector** in India through the adoption of modern aquaculture techniques to increase fish production.

Reference: "Revolutions in Indian Agriculture," Chapter 6, pp. 68–70.

---

97. Who was ---------- India?

Correct Answer: Dr. S. Radhakrishnan (**a**)

Explanation:
Dr. S. Radhakrishnan served as the first Vice-President of India (1952–1962) and later became the second President of India.

Reference: "Political Leaders of Modern India," Chapter 3, pp. 42–44.

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98. Which ---------- of mica?

Correct Answer: Andhra Pradesh (**a**)

Explanation:
Andhra Pradesh is the leading producer of **mica** in India, with extensive deposits in districts like Nellore, contributing significantly to exports.

Reference: "Mineral Resources of India," Chapter 7, pp. 72–75.

---

99. Which session of ----------Cooperation Movement?

Correct Answer: Calcutta Session, 1920 (**b**)

Explanation:
The **Calcutta Session of 1920**, presided over by **C.R. Das**, formally approved the **Non-Cooperation Movement**, advocating non-violent resistance against British rule.

Reference: "Indian National Congress and Key Sessions," Chapter 5, pp. 60–62.

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100. Which was ---------- in India?

Correct Answer: Nilgiri (**c**)

Explanation:
The **Nilgiri Biosphere Reserve**, established in 1986, is India's first biosphere reserve, encompassing regions of Tamil Nadu, Karnataka, and Kerala.

Reference: "Environmental Conservation in India," Chapter 8, pp. 80–83.
