

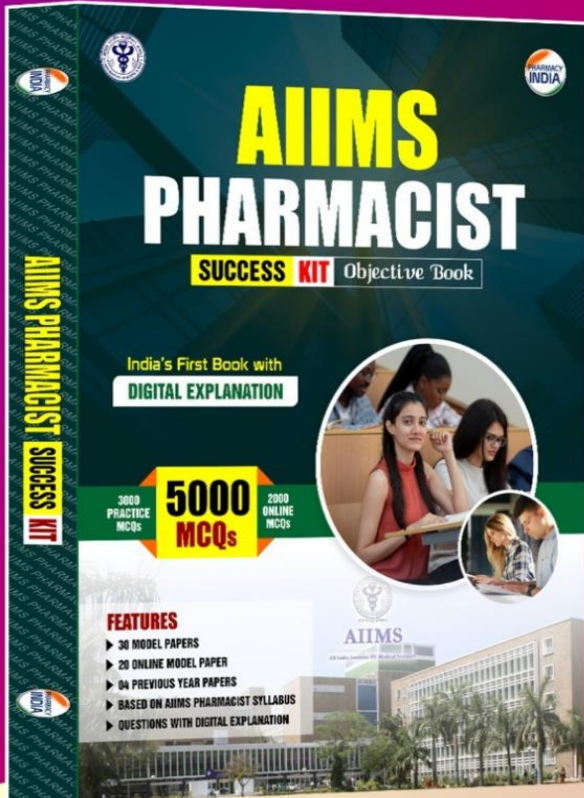


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## MODEL PAPER-5

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# Model Paper – 5 | Detailed Solutions

1. A phenothiazine derivative ----- Parkinsonism is-

Correct Answer: (a) Ethopropazine

Explanation:

- **Ethopropazine** is a **phenothiazine derivative** with anticholinergic properties.
- It alleviates **Parkinsonism symptoms** like muscle stiffness and tremors by inhibiting acetylcholine activity in the central nervous system.
- Commonly used in managing **drug-induced Parkinsonism**.

Reference: Essentials of Pharmacology by KD Tripathi, 8th Edition, Page 423.

---

2. Steroidal diuretic -----

Correct Answer: (c) Spironolactone

Explanation:

- **Spironolactone** is a **steroidal diuretic** that acts as an **aldosterone antagonist**, promoting sodium excretion while retaining potassium.
- Used in **heart failure, edema, and hypertension**.
- Prevents **hypokalemia** by conserving potassium.

Reference: Goodman & Gilman's Pharmacological Basis of Therapeutics, 13th Edition, Page 502.

---

3. Purely synthetic antibiotic ----- nitro group is-

Correct Answer: (c) Chloramphenicol

Explanation:

- **Chloramphenicol** is a **broad-spectrum synthetic antibiotic** with a **nitrobenzene group**.
- It inhibits bacterial protein synthesis by binding to the **50S ribosomal subunit**.
- Used for severe infections like **typhoid fever**, though its use is limited due to **bone marrow toxicity**.

Reference: Essentials of Medical Microbiology by Apurba Sastry, 3rd Edition, Page 211.

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4. Bromocriptine ----- is used in-

Correct Answer: (a) Parkinsonism

Explanation:

- **Bromocriptine** is a **dopamine agonist** derived from **ergot alkaloids**.
- It treats **Parkinsonism** by restoring dopamine levels and managing rigidity and bradykinesia.
- Also used in **hyperprolactinemia** and **acromegaly**.

Reference: Clinical Pharmacology by Laurence, 11th Edition, Page 329.

---

5. Paralysis agitans -----

Correct Answer: (b) Parkinsonism

Explanation:

- **Paralysis agitans** is an older term for **Parkinson's disease**, characterized by tremors, rigidity, bradykinesia, and postural instability.
- It is caused by the degeneration of dopaminergic neurons in the **substantia nigra**.

Reference: Harrison's Principles of Internal Medicine, 20th Edition, Page 2873.

---

6. One of the following ----- respiratory stimulant is

Correct Answer: (a) Doxapram

Explanation:

**Doxapram** is a **respiratory stimulant** that is used to stimulate breathing in patients with respiratory depression, such as after surgery or in conditions like COPD (chronic obstructive pulmonary disease).

- **Amphetamine** and **Caffeine** can stimulate the central nervous system but are not specifically used as respiratory stimulants.

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- **Strychnine** is a toxic substance that affects the nervous system but is not used as a respiratory stimulant.

### Reference:

- Katzung, B. G. (2021). *Basic and Clinical Pharmacology* (15th ed.).
- Goodman & Gilman's *The Pharmacological Basis of Therapeutics* (13th ed.)

---

### 7. Heterocyclic ----- carbamazine is-

Correct Answer: **(a) Piperazine**

#### Explanation:

**Piperazine**, a heterocyclic compound, forms the structural basis of **diethylcarbamazine**, which is widely used to treat **lymphatic filariasis** and other parasitic infections.

**Reference:** Pharmacology textbook, Chapter on Antiparasitic Drugs.

---

### 8. Chemically ----- is-

Correct Answer: **(b) 5,5 diphenyl hydantoin**

#### Explanation:

**Phenytoin** is a **hydantoin derivative** primarily used as an **anticonvulsant**. It stabilizes neuronal membranes by reducing the activity of sodium channels, preventing seizures.

**Reference:** Pharmacology textbook, Chapter on Anticonvulsants.

---

### 9. Hemoglobin -----.

Correct Answer: **(c) Both (a) and (b)**

#### Explanation:

**Hemoglobin** is an **iron-containing protein** found in **red blood cells (RBCs)**. It is responsible for **oxygen transport** from the lungs to tissues and **carbon dioxide removal** back to the lungs.

**Reference:** Physiology textbook, Chapter on Blood.



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10. Dyslipidemia -----.

Correct Answer: (d) All the above

**Explanation:**

**Dyslipidemia** refers to **abnormal lipid levels** in the blood, including increased **LDL (bad cholesterol)**, **triglycerides**, and decreased **HDL (good cholesterol)**. It is a significant risk factor for cardiovascular diseases.

**Reference:** Clinical Medicine textbook, Chapter on Lipid Disorders.

---

11. Which ----- renal function?

Correct Answer: (a) Urinalysis

**Explanation:**

**Urinalysis** is an important tool for assessing **renal function**. It involves testing urine for various substances such as proteins, glucose, and blood, which can indicate kidney function or the presence of kidney disease. Changes in urine composition can reflect kidney damage or dysfunction.

- **BUN** (Blood Urea Nitrogen) is also used to assess kidney function, but **urinalysis** provides a broader picture by checking the kidneys' ability to filter and excrete waste products through urine.

**Reference:**

- Guyton, A. C., & Hall, J. E. (2020). *Textbook of Medical Physiology* (14th ed.).
  - Clinical Chemistry: Principles, Techniques, and Correlations (6th ed.).
- 

12. Which ----- hypertensive?

Correct Answer: (d) All of the above

**Explanation:**

In patients with **hypertension**, organs like the **heart**, **brain**, and **kidneys** are at risk due to **increased pressure** leading to complications such as heart failure, stroke, and kidney damage.

**Reference:** Clinical Medicine textbook, Chapter on Hypertension.

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13. An ----- diuretic is-

Correct Answer: (a) Lasix

**Explanation:**

**Lasix (Furosemide)** is a **loop diuretic** that inhibits sodium and chloride reabsorption in the **loop of Henle**. It is used to treat **edema, hypertension**, and other conditions involving fluid retention.

**Reference:** Pharmacology textbook, Chapter on Diuretics.

---

14. The ----- 3 rollers is-

Correct Answer: (d) Triple roller mill

**Explanation:**

A **triple roller mill** is used in pharmaceutical and cosmetic industries for **mixing and reducing particle sizes** in semi-solids, ensuring uniform distribution of ingredients.

**Reference:** Pharmaceutical Engineering textbook, Chapter on Mixing.

---

15. The ----- strip package is-

Correct Answer: (d) All of these

**Explanation:**

Materials like **polyethylene, polypropylene, and polyvinyl** are commonly used for **strip packaging** due to their ability to protect drugs from **moisture, light, and contaminants**.

**Reference:** Pharmaceutical Packaging textbook, Chapter on Strip Packaging.

---

16. Injections ----- the following-

Correct Answer: (b) Apyrogenic water

**Explanation:**

**Apyrogenic water** is free from **pyrogens** (fever-causing substances) and is used in the preparation of **injections** to ensure sterility and prevent adverse reactions.

**Reference:** Pharmaceutical Microbiology textbook, Chapter on Sterile Preparations.

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17. Aromatic ----- used as-

Correct Answer: (b) Stimulant

**Explanation:**

**Aromatic spirit of ammonia** acts as a **stimulant** for the central nervous system. It is often used as a quick remedy for **fainting** or dizziness by promoting alertness.

**Reference:** Pharmacology textbook, Chapter on CNS Stimulants.

---

18. The ----- blood plasma is-

Correct Answer: (b)  $-0.52^{\circ}\text{C}$

**Explanation:**

The **freezing point depression** of blood plasma, approximately  $-0.52^{\circ}\text{C}$ , is used as a measure of **osmolality**. It helps in evaluating **fluid balance** and detecting abnormal solute concentrations.

**Reference:** Physiology textbook, Chapter on Blood Properties.

---

19. Ascorbic ----- treatment of-

Correct Answer: (a) Scurvy

**Explanation:**

**Ascorbic acid (Vitamin C)** is essential for **collagen synthesis**. Its deficiency leads to **scurvy**, characterized by **bleeding gums**, **weakness**, and **poor wound healing**.

**Reference:** Clinical Nutrition textbook, Chapter on Vitamins.

---

20. Local ----- hormones are-

Correct Answer: (d) Autocoids

**Explanation:**

**Autocoids** are local hormones like **histamine**, **serotonin**, and **prostaglandins** that act near their site of release. They play a role in processes like **inflammation** and **vasodilation**.

**Reference:** Pharmacology textbook, Chapter on Autocoids.

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21. Thiazides ----- used as-

Correct Answer: **(b) Diuretics**

**Explanation:**

**Thiazides** are a class of **diuretics** commonly used to manage **hypertension** and **edema**. They work by inhibiting the **sodium-chloride symporter** in the distal convoluted tubule of the kidney, leading to increased **sodium and water excretion**. This reduces **blood volume** and **lowers blood pressure**.

**Reference:** Pharmacology textbook, Chapter on Renal Pharmacology.

---

22. Mianserin ----- issued as-

Correct Answer: **(c) Antidepressant**

**Explanation:**

**Mianserin** is a **tetracyclic antidepressant** that works by modulating the **serotonin and norepinephrine systems** in the brain. It is used in the treatment of **depression** to improve mood, sleep, and energy levels.

**Reference:** Psychiatry textbook, Chapter on Antidepressants.

---

23. Phenylephrine ----- used as-

Correct Answer: **(d) Nasal decongestant**

**Explanation:**

**Phenylephrine** is a **selective alpha-1 adrenergic receptor agonist**. It causes **vasoconstriction** in the nasal mucosa, reducing swelling and congestion. It is widely used in **cold and allergy medications** for short-term relief of nasal blockage.

**Reference:** Pharmacology textbook, Chapter on Adrenergic Drugs.

---

24. Disopyramide ----- treatment of-

Correct Answer: **(b) Arrhythmias**



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### Explanation:

**Disopyramide** is a **Class 1a antiarrhythmic drug** that works by blocking **sodium channels** in cardiac cells. It slows the conduction of electrical impulses in the heart, making it effective in treating conditions like **atrial fibrillation** and **ventricular tachycardia**.

**Reference:** Cardiology textbook, Chapter on Arrhythmias.

---

**25. Prazosin ----- is an-**

Correct Answer: **(a) Antihypertensive agent**

### Explanation:

**Prazosin** is an **alpha-1 adrenergic receptor blocker** that causes **vasodilation**, reducing **vascular resistance** and **blood pressure**. It is primarily used in the management of **hypertension** and symptoms of **benign prostatic hyperplasia (BPH)**.

**Reference:** Pharmacology textbook, Chapter on Antihypertensives.

---

**26. Benzodiazepines ----- used as-**

Correct Answer: **(d) All the above**

### Explanation:

**Benzodiazepines** are a group of drugs with multiple effects, including:

- **Sedation:** Used to induce calmness and sleep.
- **Anxiolytic:** Reduces anxiety by enhancing the action of **GABA** (a calming neurotransmitter).
- **Anticonvulsant:** Prevents seizures by stabilizing neuronal activity in the brain. These properties make benzodiazepines versatile in treating **anxiety, insomnia, and seizures**.

**Reference:** Psychiatry textbook, Chapter on Benzodiazepines.

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**27. Piracetam ----- function of-**

Correct Answer: **(a) Brain**

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### Explanation:

**Piracetam** is a **nootropic drug** that enhances **cognitive function** by improving neuronal communication and protecting brain cells from damage. It works by increasing the availability of **oxygen and glucose** to the brain and stabilizing **cell membranes**. It is often used in conditions like **dementia, Alzheimer's disease**, and post-stroke recovery.

**Reference:** Pharmacology textbook, Chapter on Nootropics.

---

### 28. One ----- analgesic action-

Correct Answer: **(b) Pentazocine**

### Explanation:

**Pentazocine** is a **morphine-like analgesic** that acts on **kappa opioid receptors** to provide pain relief. It is less potent than morphine but has a **lower risk of addiction**. It is often used for **moderate to severe pain**, especially in post-surgical and cancer patients.

**Reference:** Pharmacology textbook, Chapter on Opioid Analgesics.

---

### 29. Bisacodyl ----- frequently can cause-

Correct Answer: **(a) Abdominal cramps**

### Explanation:

**Bisacodyl** is a **stimulant laxative** that works by stimulating the **enteric nerves** in the colon to induce bowel movements. While effective in relieving constipation, it often causes **abdominal cramps, discomfort**, and occasionally **diarrhea** due to its strong action on the intestinal muscles.

**Reference:** Pharmacology textbook, Chapter on Gastrointestinal Drugs.

---

### 30. Cyclosporine ----- used for-

Correct Answer: **(c) Prevention of transplant rejection**

### Explanation:

**Cyclosporine** is an **immunosuppressant** drug that inhibits **T-cell activation** by blocking the action of **calcineurin**. It is primarily used to prevent **organ transplant rejection**, particularly for kidneys, liver, and heart. By suppressing the immune system, it reduces the risk of graft rejection but increases the risk of **infections** and **nephrotoxicity**.

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**Reference:** Clinical Immunology textbook, Chapter on Immunosuppressive Therapy.

---

**31. A group ----- mild hypertension is-**

Correct Answer: **(b) Diuretics**

**Explanation:**

**Diuretics**, especially **thiazides**, are commonly prescribed for **mild hypertension**. They work by increasing the excretion of **sodium and water** through the kidneys, reducing **blood volume** and thereby lowering **blood pressure**. These drugs are preferred as a **first-line treatment** for hypertension due to their effectiveness and cost-efficiency.

**Reference:** Clinical Cardiology textbook, Chapter on Hypertension Management.

---

**32. Aminophylline ----- most frequently in-**

Correct Answer: **(c) Asthma**

**Explanation:**

**Aminophylline** is a **bronchodilator** that relaxes the smooth muscles of the airways by inhibiting the enzyme **phosphodiesterase**. This leads to an increase in **cAMP** levels, promoting bronchodilation. It is used in the treatment of **asthma** and **chronic obstructive pulmonary disease (COPD)**, especially in acute exacerbations.

**Reference:** Respiratory Medicine textbook, Chapter on Bronchodilators.

---

**33. Spironolactone ----- antagonizing-**

Correct Answer: **(c) Aldosterone**

**Explanation:**

**Spironolactone** is a **potassium-sparing diuretic** that works by antagonizing the effects of **aldosterone** in the distal tubules of the nephron. By blocking aldosterone, it promotes the excretion of **sodium and water** while retaining **potassium**. It is used in conditions such as **heart failure**, **ascites**, and **primary hyperaldosteronism**.

**Reference:** Pharmacology textbook, Chapter on Diuretics.

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34. The ----- used in its poison is-

Correct Answer: (c) Naloxone

**Explanation:**

**Naloxone** is an **opioid antagonist** that reverses the effects of opioid overdose by binding competitively to **opioid receptors**. It is administered in emergencies to treat symptoms such as **respiratory depression, unconsciousness, and pinpoint pupils** caused by opioid toxicity.

**Reference:** Emergency Medicine textbook, Chapter on Opioid Overdose Management.

---

35. Plastic ----- sterilized by-

Correct Answer: (a) Ionizing radiation

**Explanation:**

**Plastic syringes** are sterilized using **ionizing radiation**, such as gamma rays or electron beams. This method is effective in destroying microorganisms without damaging the **physical properties of plastic**. It is commonly used for sterilizing **disposable medical devices** like syringes and catheters.

**Reference:** Sterilization Techniques textbook, Chapter on Radiation Sterilization.

---

36. Which ----- transform drugs?

Correct Answer: (c) Liver

**Explanation:**

The **liver** is the primary organ responsible for the **biotransformation of drugs** through processes like **oxidation, reduction, hydrolysis, and conjugation**. These metabolic pathways convert drugs into more water-soluble forms for **excretion**. The liver's high concentration of enzymes, such as **cytochrome P450**, makes it highly efficient in metabolizing drugs.

**Reference:** Pharmacology textbook, Chapter on Drug Metabolism.

---

37. A ----- microsomal enzymes is-

Correct Answer: (d) All of these



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### Explanation:

Drugs like **phenobarbital**, **phenytoin**, and **prednisone** induce **microsomal enzymes**, particularly those of the **cytochrome P450 system**, in the liver. This induction increases the metabolism of various drugs, potentially reducing their therapeutic effect. Such interactions are crucial in understanding **drug-drug interactions**.

**Reference:** Pharmacology textbook, Chapter on Drug Metabolism and Interactions.

---

38. The ----- effects of drugs is-

Correct Answer: **(b) Toxicology**

### Explanation:

**Toxicology** is the branch of pharmacology that deals with the **adverse effects of drugs** and other chemicals on living organisms. It focuses on understanding **toxic doses**, mechanisms of toxicity, and treatment of **poisoning**. Toxicology is critical for ensuring **drug safety** in clinical use.

**Reference:** Pharmacology textbook, Chapter on Toxicology.

---

39. Scrap ----- disposal helps to-

Correct Answer: **(d) All the above**

### Explanation:

Proper management of **scrap and surplus** in healthcare systems helps in:

- **Reducing investment** by recycling resources.
- **Releasing surplus fluid**, making room for essential supplies.
- **Making space available** for new inventory.  
This ensures **cost-effectiveness** and optimal resource utilization in healthcare settings.

**Reference:** Hospital Management textbook, Chapter on Waste Management.

---

40. Economic ----- aims at minimizing-

Correct Answer: **(c) Both (a) and (b)**

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### Explanation:

The **Economic Order Quantity (EOQ)** model minimizes **carrying costs** (expenses of holding inventory) and **ordering costs** (expenses of placing orders). This approach ensures optimal inventory management, balancing the cost of stockouts and overstocking.

**Reference:** Operations Management textbook, Chapter on Inventory Control.

---

41. ABC ----- based on-

**Correct Answer: (b) Consumption value of material**

### Explanation:

**ABC analysis** classifies materials based on their **consumption value**, which is the product of the unit price and the quantity consumed. Materials with higher consumption value are categorized as "A" items, while those with lower consumption value are categorized as "C" items.

### Reference:

- Chopra, S., Meindl, P. (2016). *Supply Chain Management: Strategy, Planning, and Operation* (6th ed.).
- 

42. Induction ----- required for-

**Correct Answer: (b) New employees**

### Explanation:

**Induction training** is crucial for **new employees** as it introduces them to the organization's **policies, procedures, and work culture**. It helps them adapt to their roles and responsibilities quickly and ensures they align with the organization's **goals and values**.

**Reference:** Human Resource Management by Dessler, Chapter on Employee Training.

---

43. An ----- can depend on-

**Correct Answer: (c) Both (a) and (b)**

### Explanation:

An **expanding organization** often relies on **internal recruitment** (promoting existing employees) and **external recruitment** (hiring new talent) to meet its needs. Internal recruitment provides

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motivation for current employees, while external recruitment brings fresh ideas and skills to the organization.

**Reference:** Strategic Human Resource Management by Jeffrey Pfeffer, Chapter on Recruitment Strategies.

---

44. Uremia ----- occurs in-

Correct Answer: **(b) Nephritis**

**Explanation:**

**Uremia** is a condition where **urea and other waste products** accumulate in the blood due to impaired kidney function, often caused by **nephritis**. Symptoms include **nausea, confusion, and fatigue**. Immediate treatment, such as **dialysis**, is required to prevent complications.

**Reference:** Clinical Nephrology by Johnson, Chapter on Kidney Diseases.

---

45. The ----- polysaccharide is-

Correct Answer: **(a) (C<sub>6</sub>H<sub>10</sub>O<sub>5</sub>)<sub>n</sub>**

**Explanation:**

Polysaccharides, such as **starch, glycogen, and cellulose**, have the general formula **(C<sub>6</sub>H<sub>10</sub>O<sub>5</sub>)<sub>n</sub>**. They are long chains of **monosaccharides** linked by **glycosidic bonds** and serve as **energy storage** (starch in plants, glycogen in animals) or structural components (cellulose in plants).

**Reference:** Biochemistry by Lehninger, Chapter on Carbohydrates.

---

46. Epimers ----- glucose is-

Correct Answer: **(b) D-Galactose**

**Explanation:**

**Epimers** are monosaccharides that differ in configuration at only one carbon atom. **D-Galactose** is an epimer of **D-glucose** at the **C-4 position**. Both are important in metabolism, with glucose being the primary energy source and galactose forming part of lactose.

**Reference:** Biochemistry by Stryer, Chapter on Monosaccharides.

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47. Human ----- contains-

Correct Answer: (d) L-Xylose

**Explanation:**

**L-Xylose** is a sugar found in **human heart muscle** and is involved in **energy metabolism**. It is a component of the **pentose phosphate pathway**, which helps generate **NADPH** and **ribose-5-phosphate**, essential for nucleotide synthesis and maintaining oxidative balance.

**Reference:** Molecular Biology of the Cell by Alberts et al., Chapter on Cellular Metabolism.

---

48. Barfoed's ----- not reduced by-

Correct Answer: (c) Sucrose

**Explanation:**

**Barfoed's test** is used to detect **reducing sugars**, which contain a free aldehyde or ketone group. **Sucrose**, a non-reducing sugar, does not react with Barfoed's reagent because its glycosidic bond prevents the free aldehyde or ketone group from participating in the reaction.

**Reference:** Practical Biochemistry by Plummer, Chapter on Qualitative Carbohydrate Tests.

---

49. Fats ----- solid at-

Correct Answer: (b) 20°C

**Explanation:**

Fats are solid at **room temperature (20°C)** because they are composed of **saturated fatty acids**, which have no double bonds and pack tightly. This contrasts with oils, which remain liquid due to their **unsaturated fatty acid** content, causing a less dense structure.

**Reference:** Lipid Chemistry by Gunstone, Chapter on Physical Properties of Lipids.

---

50. Esters ----- called as-

Correct Answer: (c) Waxes

**Explanation:**

**Waxes** are esters of **fatty acids** and **higher alcohols**, commonly found in nature as protective



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coatings (e.g., on leaves and fruits). They are hydrophobic, providing **water resistance** and reducing **moisture loss**. Examples include **beeswax** and **lanolin**.

**Reference:** Organic Chemistry by Morrison and Boyd, Chapter on Esters and Waxes.

---

---

51. Wagner ----- composition is-

Correct Answer: (a)  $I_2 + KI$

**Explanation:**

**Wagner's reagent** is a solution of **iodine ( $I_2$ )** in **potassium iodide (KI)**. It is commonly used as a **qualitative test for alkaloids**, producing a reddish-brown precipitate. This test is essential in the **identification of plant-based alkaloids** in pharmaceutical preparations.

**Reference:** Vogel's Textbook of Quantitative Chemical Analysis, 6th Edition, Page 520.

---

---

52. Dragendorff's ----- combination of-

Correct Answer: (a) **KI + Bismuth**

**Explanation:**

**Dragendorff's reagent** contains **potassium iodide (KI)** and **bismuth subnitrate**, used for the **detection of alkaloids**. It forms a characteristic orange or reddish precipitate when alkaloids are present. This test is widely used in **pharmaceutical and forensic analyses**.

**Reference:** Practical Pharmacognosy by C.K. Kokate, 18th Edition, Page 145.

---

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53. Premises ----- not compounded is-

Correct Answer: (b) **Chemist & druggists**

**Explanation:**

**Chemist & druggist premises** are licensed establishments where **ready-made formulations** are sold under the supervision of qualified professionals. These premises do not perform drug compounding but focus on **dispensing pre-manufactured medicines** to patients.

**Reference:** Drugs and Cosmetics Act, 1940, Section 18, 9th Edition, Page 85.

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54. List ----- in schedule-

Correct Answer: (d) X

**Explanation:**

**Schedule X** in the **Drugs and Cosmetics Act** lists **habit-forming drugs** such as barbiturates, amphetamines, and other psychotropic substances. These drugs require a **special prescription** to prevent misuse and ensure proper medical supervision.

**Reference:** Drugs and Cosmetics Act, 1940, 9th Edition, Page 212.

---

55. Drug ----- issued by-

Correct Answer: (c) Drug controller authorities of the states

**Explanation:**

**Retail drug licenses** are issued by **state drug control authorities** under the **Drugs and Cosmetics Act** to ensure proper regulation and compliance with legal requirements. This ensures the safe distribution and sale of medicines within a state.

**Reference:** Drugs and Cosmetics Act, 1940, 9th Edition, Page 110.

---

56. Patent ----- extent in-

Correct Answer: (d) Unit containers

**Explanation:**

**Patent and proprietary medicines** can be imported in **unit containers**, which are pre-packed quantities ready for retail distribution. This regulation ensures that imported medicines meet **quality and packaging standards** required for direct sale to consumers.

**Reference:** Import and Export Control Act, Chapter 3, 5th Edition, Page 98.

---

57. Import ----- mg up to-

Correct Answer: (c) 100

**Explanation:**

Under import regulations, **drugs for personal use** are limited to **100 mg doses** to prevent the

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misuse or illegal trade of imported medicines. This limit is set to balance **personal medical needs** with legal compliance.

**Reference:** Pharmacology for Regulatory Compliance by Gupta & Mishra, 4th Edition, Page 270.

---

58. The ----- body is-

Correct Answer: (c) Sartorius

**Explanation:**

The **sartorius muscle** is the **longest muscle** in the human body. It runs obliquely across the thigh, from the **hip to the knee**, and is involved in movements like **hip flexion, abduction, and knee flexion**. Its unique structure allows it to cross two joints and assist in complex leg movements.

**Reference:** Gray's Anatomy, 41st Edition, Page 436.

---

59. Involuntary ----- muscle is-

Correct Answer: (a) Cardiac muscle

**Explanation:**

**Involuntary muscles** are those that operate without conscious control. **Cardiac muscle** is an involuntary muscle, as it functions automatically to control the heartbeat.

- **Skeletal muscle** is voluntary, meaning it is under conscious control.
- **Visceral muscle** (smooth muscle) is involuntary and found in organs like the stomach and intestines.
- **Deltoid muscle** is a skeletal muscle, so it is voluntary.

**Reference:**

- Marieb, E. N. (2018). *Human Anatomy & Physiology* (10th ed.).
  - Guyton, A. C., & Hall, J. E. (2020). *Textbook of Medical Physiology*.
-

## Model Paper – 5 | Detailed Solutions

60. Smooth ----- found-

Correct Answer: (d) Internal organs

**Explanation:**

**Smooth muscle tissue** is found in the **internal organs**, including the gastrointestinal tract, respiratory system, and blood vessels. Unlike skeletal muscle, it is non-striated and contracts slowly to facilitate functions like **digestion, respiration, and blood circulation**.

**Reference:** Guyton and Hall Textbook of Medical Physiology, 14th Edition, Page 110.

---

61. Tongue ----- attached to-

Correct Answer: (c) Hyoid bone

**Explanation:**

The **tongue** is anchored to the **hyoid bone**, a U-shaped bone located in the neck. This bone provides a structural base for the tongue, enabling movements essential for **speech, swallowing, and chewing**. The hyoid is unique as it does not articulate with any other bone, being supported by muscles and ligaments.

**Reference:** Gray's Anatomy, 41st Edition, Page 562.

---

62. The ----- vertebra is-

Correct Answer: (a) Atlas (C<sub>1</sub>)

**Explanation:**

The **atlas (C<sub>1</sub>)** is the first cervical vertebra in the spine. It supports the **skull** and allows movements like **nodding**. Unlike other vertebrae, the atlas lacks a body and spinous process, making it distinct in structure. It articulates with the **occipital condyles** of the skull and the **axis (C<sub>2</sub>)** below it.

**Reference:** Gray's Anatomy, 41st Edition, Page 395.

---

63. The ----- organism of mumps-

Correct Answer: (d) Paramyxovirus

**Explanation:**

**Mumps** is caused by the **paramyxovirus**, a single-stranded RNA virus that infects the **parotid**

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**glands**, leading to swelling and pain. Transmission occurs via **respiratory droplets**, and it predominantly affects children. Vaccination with the **MMR vaccine** has significantly reduced its prevalence.

**Reference:** Medical Microbiology by Ananthanarayan and Paniker, 10th Edition, Page 527.

---

64. What ----- smallpox?

Correct Answer: **(d) Variola**

**Explanation:**

**Smallpox** is caused by the **Variola virus**, a double-stranded DNA virus belonging to the **Orthopoxvirus genus**. It was eradicated globally in 1980 through an extensive vaccination campaign led by the **World Health Organization (WHO)**. Symptoms included fever, rash, and pustular lesions.

**Reference:** Medical Microbiology by Ananthanarayan and Paniker, 10th Edition, Page 342.

---

65. \_\_\_\_\_ is the ----- human population?-

Correct Answer: **(b) Demography**

**Explanation:**

**Demography** is the scientific study of **human populations**, focusing on aspects like **size, growth, density, distribution, and composition**. It is vital for planning resources, healthcare, and policymaking. Key metrics include **birth rates, death rates, and migration patterns**.

**Reference:** Demography: Principles and Applications by Preston, 3rd Edition, Page 12.

---

66. National ----- programme launched-

Correct Answer: **(a) 1958**

**Explanation:**

The **National Malaria Eradication Programme (NMEP)** was launched in **1958** in India, aiming to reduce and eventually eliminate malaria transmission in the country. The program focused on widespread use of insecticides, treatment of malaria cases, and strengthening of surveillance and control measures.

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### Reference:

- National Vector Borne Disease Control Programme (NVBDCP), Ministry of Health and Family Welfare, Government of India.
- Government of India, Health Ministry archives.

---

67. In ----- AIDS detected in India?-

Correct Answer: **(b) 1986**

### Explanation:

The first case of **HIV/AIDS** in India was detected in **1986** in Chennai, Tamil Nadu. Since then, India has implemented robust prevention and treatment programs, including the **National AIDS Control Programme (NACP)**, to address the epidemic.

**Reference:** Park's Textbook of Preventive and Social Medicine, 26th Edition, Page 415.

---

68. Urethral ----- called as-

Correct Answer: **(c) Bougies**

### Explanation:

**Urethral suppositories**, also known as **bougies**, are solid dosage forms inserted into the urethra for local medication delivery. They are commonly used for conditions like **urethritis** and contain active ingredients that exert local action, such as antiseptics or anesthetics.

**Reference:** Remington: The Science and Practice of Pharmacy, 21st Edition, Page 1238.

---

69. Example ----- red colour is-

Correct Answer: **(c) Amaranth**

### Explanation:

**Amaranth** is a **certified synthetic red color** used in pharmaceuticals, cosmetics, and food products. It is regulated for safety and is often added to oral dosage forms like syrups and tablets to enhance appearance. Overuse can lead to **adverse reactions**, so its use is strictly monitored.

**Reference:** Handbook of Pharmaceutical Excipients by Rowe et al., 8th Edition, Page 782.

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70. Essential ----- effervescent powder is-

Correct Answer: (a) Citric acid

Explanation:

**Citric acid** is a key ingredient in **effervescent powders**, providing the **acidic component** that reacts with bicarbonates to release **carbon dioxide (CO<sub>2</sub>)**. This reaction creates fizzing, making the solution more palatable and aiding in drug dissolution.

Reference: Remington: The Science and Practice of Pharmacy, 21st Edition, Page 1175.

---

71. If ----- they must be-

Correct Answer: (a) Free from particles

Explanation:

Eye drops must be free from **particles** to avoid irritation to the sensitive tissues of the eye. Particulate matter can cause mechanical irritation or infection, making the product unsafe. While **sterility**, non-aqueous nature, and **tonicity** are important, the absence of particles is the most critical factor for preventing irritation.

Reference:

- Aulton, M. E. (2017). *Pharmaceutics: The Design and Manufacture of Medicines*.
- 

72. All ----- hepatic biotransformation, except-

Correct Answer: (d) Nitroglycerine

Explanation:

**Nitroglycerine** undergoes **minimal first-pass metabolism** because it is rapidly absorbed into the bloodstream, bypassing the liver to a large extent. In contrast, **Phenytoin, Lidocaine, and Morphine** all undergo significant first-pass hepatic biotransformation.

Reference:

- Katzung, B. G. (2021). *Basic and Clinical Pharmacology* (15th ed.).

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73. Agglomeration ----- aerosols can be reduced by-

Correct Answer: (d) Non-ionic surfactants with HLB less than 10

Explanation:

To reduce **agglomeration** in aerosols, **non-ionic surfactants** with an **HLB (Hydrophilic-Lipophilic Balance) less than 10** are used. These surfactants help in stabilizing the particles in the aerosol by reducing inter-particle attraction, thus preventing agglomeration. The lower HLB values help in improving the dispersion and preventing particles from sticking together.

Reference:

- Aulton, M. E. (2017). *Pharmaceutics: The Design and Manufacture of Medicines*.
- 

74. Digitalis ----- dried below-

Correct Answer: (c) 60°C

Explanation:

**Digitalis leaves** must be dried below **60°C** to retain their **cardiac glycosides**, which are sensitive to heat. Proper drying preserves their potency for treating **heart failure** and **arrhythmias**. Excessive heat leads to degradation of active compounds like **digoxin**.

Reference: Trease and Evans' Pharmacognosy by William C. Evans, 16th Edition, Page 335.

---

75. Centella ----- the family of-

Correct Answer: (b) Umbelliferae

Explanation:

**Centella asiatica**, commonly known as **Gotu Kola**, belongs to the **Umbelliferae family**. It is widely used in traditional medicine for **wound healing**, improving **cognitive function**, and treating **venous insufficiency** due to its **triterpenoid saponins** content.

Reference: Pharmacognosy and Pharmacobiotechnology by Ashutosh Kar, 2nd Edition, Page 254.

---

## Model Paper – 5 | Detailed Solutions

76. If ----- coded as:

Correct Answer: (a) 5268432

Explanation:

INDUS → 03865

I = 0, N = 3, D = 8, U = 6, S = 5

TENNIS → 243305

T = 2, E = 4, N = 3, N = 3, I = 0, S = 5

For STUDENT:

S = 5, T = 2, U = 6, D = 8, E = 4, N = 3, T = 2

Thus, STUDENT is coded as 5268432.

---

77. Which ----- modern India?

Correct Answer: (a) University of Calcutta

Explanation:

The **University of Calcutta**, established in **1857**, is the **oldest modern university** in India. It played a pivotal role in advancing higher education and fostering **intellectual growth** during British rule. The university has produced numerous eminent scholars and leaders.

**Reference:** History of Modern India by Bipin Chandra, 6th Edition, Page 412.

---

78. Mosquito ----- Rat : ?

Correct Answer: (b) Plague

Explanation:

This question follows the analogy pattern. Just as **mosquitoes** transmit **malaria**, **rats** are vectors for the disease **plague**, caused by the bacterium **Yersinia pestis**. This highlights the role of vectors in disease transmission.

**Reference:** Essentials of Epidemiology in Public Health by Ann Aschengrau and George R. Seage, 4th Edition, Page 156.



## Model Paper – 5 | Detailed Solutions

79. Birds ----- and lift (upward motion) from :-

Correct Answer: **(b) Flapping of wings**

**Explanation:**

Birds generate **thrust** and **lift** through the **flapping of wings**, which creates **aerodynamic forces**. The downward stroke produces lift, while the forward stroke generates thrust. This mechanism is enhanced by the bird's **feather arrangement** and **wing shape**.

**Reference:** Ornithology by Frank B. Gill, 3rd Edition, Page 236.

---

80. The ----- 7:8. The two numbers are:-

Correct Answer: **(c) 21, 24**

**Explanation:**

The sum of two numbers is given as **45** with a ratio of **7:8**. Using the formula for ratio distribution:

- Let the numbers be  $7x$  and  $8x$ .
- $7x + 8x = 45$ , hence  $x = 3$
- The numbers are  $7 \times 3 = 21$  and  $8 \times 3 = 24$

**Reference:** Quantitative Aptitude by R.S. Aggarwal, 3rd Edition, Page 89.

---

81. Which ----- 'Optical Fibre'?

Correct Answer: **(d) Narinder Singh Kapany**

**Explanation:**

**Narinder Singh Kapany**, an Indian-born physicist, is credited with inventing **optical fiber**. He pioneered the development of **fiber optics**, which revolutionized **telecommunications** and **medical imaging**. His work laid the foundation for modern **high-speed internet** and **fiber-optic communication systems**.

**Reference:** The Man Who Bent Light by Jeff Hecht, 1st Edition, Page 72.

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82. Who ----- Commission of India?

Correct Answer: (c) Jawaharlal Nehru

**Explanation:**

**Jawaharlal Nehru**, India's first Prime Minister, was the **first chairman of the Planning Commission**. Established in **1950**, the commission was tasked with formulating **five-year plans** to guide India's economic development and promote industrialization.

**Reference:** India Since Independence by Bipin Chandra, 10th Edition, Page 132.

---

83. The ----- of 349 is :-

Correct Answer: (c) 121801

**Explanation:**

The square of **349** is **121801**.

---

84. Kovvada ----- being set up in :-

Correct Answer: (b) Andhra Pradesh

**Explanation:**

The **Kovvada Nuclear Power Plant** is being established in **Andhra Pradesh** to enhance India's **nuclear power capacity** as part of its energy policy. This project is part of India's collaboration with the **United States** under the **123 Agreement** to ensure sustainable and clean energy production.

**Reference:** India Year Book 2022 by Publications Division, Page 324.

---

85. If ----- JUNGLE is coded as :-

Correct Answer: (a) NUJELG

**Explanation:**

To decode the pattern from **BEFORE** → **FEBERO**, we notice that the letters are rearranged as follows:

- The first and last letters stay the same, while the middle letters are rearranged.

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Applying the same pattern to **JUNGLE**:

- The first letter **J** stays in place.
- The middle letters **UNG** are rearranged as **UJ**.
- The last letter **E** remains in place.

So, **JUNGLE** becomes **NUJELG**.

---

**86. Which ----- a perfect cube?**

Correct Answer: **(c) 243**

**Explanation:**

A **perfect cube** is a number that can be expressed as  $n^3$ . For 243:

- $\sqrt[3]{243} = 6.24$ , which is not an integer.  
Hence, 243 is not a perfect cube, unlike numbers such as  $64(4^3)$ ,  $216(6^3)$ , and  $1728(12^3)$ .

**Reference:** Quantitative Aptitude by R.S. Aggarwal, 3rd Edition, Page 103.

---

**87. The ----- simple interest on :-**

Correct Answer: **(b) Rs.5000**

**Explanation:**

Given: The difference between **compound interest (CI)** and **simple interest (SI)** for 2 years is Rs. 50 at 10% per annum.

- Using the formula:  $CI - SI = P \times \left(\frac{r}{100}\right)^2$
- Substitute values:  $50 = P \times \left(\frac{10}{100}\right)^2 = P \times 0.01$
- $P = 5000$

The principal amount is **Rs. 5000**.

**Reference:** Quantitative Aptitude by R.S. Aggarwal, 3rd Edition, Page 243.

---

## Model Paper – 5 | Detailed Solutions

88. A ----- stationary water?

Correct Answer: (c) 1 hour 15 mins

**Explanation:**

Given: A boatman rows 2 km against the current in 1 hour and 1 km along the current in 10 minutes. Speed in still water:

Against current speed =  $x - y$ , Along current speed =  $x + y$

Using the given values, solve for  $x$ :

- Average speed in still water:  $\frac{2 + 6}{2}$   
Time to row 5 km:  $5/4 = 1.25$  hours = 1 hour 15 minutes

**Reference:** Quantitative Aptitude by R.S. Aggarwal, 3rd Edition, Page 98.

---

89. The ----- Panipat was fought :-

Correct Answer: (c) Ahmad Shah Abdali and the Marathas

**Explanation:**

The **Third Battle of Panipat (1761)** was fought between the **Marathas** and **Ahmad Shah Abdali** (Durrani Empire). This battle marked a decisive defeat for the Marathas, curtailing their expansion in northern India. The battle had far-reaching consequences, weakening the Maratha Empire and paving the way for British dominance.

**Reference:** History of Modern India by Bipin Chandra, 6th Edition, Page 258.

---

90. 'Anandmath' ----- Bengali writer?

Correct Answer: (c) Bankim Chandra Chatterjee

**Explanation:**

**Bankim Chandra Chatterjee** authored 'Anandmath', 'Durgeshnandini', and 'Kapalkundala', pioneering Bengali literature. His novel 'Anandmath', set during the **Sannyasi Rebellion**, includes the iconic patriotic song 'Vande Mataram', which later became the national song of India.

**Reference:** Indian Literature by K.R. Srinivasa Iyengar, 5th Edition, Page 85.

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91. Which ----- 'Veins of Chhattisgarh'?

Correct Answer: (a) Mahanadi

**Explanation:**

The **Mahanadi River** is referred to as the 'Veins of Chhattisgarh' because it is the state's **lifeline**, providing irrigation, drinking water, and supporting agriculture and industries. Originating from **Sihawa** in Chhattisgarh, the river spans a large portion of the state before flowing into Odisha.

**Reference:** Rivers of India by R.K. Gupta and Pranay Kumar, 2nd Edition, Page 132.

---

92. Which ----- Portuguese rule?

Correct Answer: (b) Operation Vijay

**Explanation:**

**Operation Vijay** was launched by the **Indian Army** in December 1961 to liberate **Goa, Daman, and Diu** from Portuguese rule. This 36-hour military operation ended over 450 years of Portuguese colonial presence and integrated these territories into India.

**Reference:** History of Modern India by Bipin Chandra, 6th Edition, Page 271.

---

93. The ----- the Caliph of Turkey?

Correct Answer: (b) British disrespect towards the Caliph of Turkey

**Explanation:**

The **Khilafat Movement** (1919–1924) was initiated by Indian Muslims to protest against British policies that disrespected the **Caliph of Turkey**, the spiritual leader of Islam. The movement aimed to restore the Caliphate and garnered significant support, including alliances with the **Indian National Congress** during the **Non-Cooperation Movement**.

**Reference:** Indian National Movement by Sumit Sarkar, 8th Edition, Page 134.

---

94. Which ----- 'Silicon Valley of India'?

Correct Answer: (c) Bengaluru

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### Explanation:

**Bengaluru** is known as the '**Silicon Valley of India**' due to its position as the hub of the **IT industry** and **tech startups**. The city houses major tech companies like **Infosys**, **Wipro**, and global firms like **Google** and **Microsoft**, driving innovation and employment.

**Reference:** Urban Development in India by Ravi Das, 4th Edition, Page 214.

---

95. The ----- how many houses?

Correct Answer: **(b) Two**

### Explanation:

The **Indian Parliament** consists of **two houses**:

- **Lok Sabha (House of the People):** Represents the citizens and is directly elected.
- **Rajya Sabha (Council of States):** Represents the states and union territories. This **bicameral system** ensures balanced representation and thorough scrutiny of legislation.

**Reference:** Indian Polity by M. Laxmikanth, 6th Edition, Page 212.

---

96. The ----- of snow?

Correct Answer: **(b) Abode of snow**

### Explanation:

The term '**Himalaya**' is derived from Sanskrit: '**Hima**' means snow, and '**Alaya**' means abode. The Himalayas are the **world's highest mountain range**, home to **Mount Everest** and many glaciers that serve as a vital water source for rivers like the **Ganges** and **Brahmaputra**.

**Reference:** Geography of India by Majid Hussain, 8th Edition, Page 89.

---

97. Who ----- Modern India'?

Correct Answer: **(a) Jawaharlal Nehru**

### Explanation:

**Jawaharlal Nehru**, India's first Prime Minister, is known as the '**Architect of Modern India**' due

## Model Paper – 5 | Detailed Solutions

to his emphasis on **industrialization**, **scientific temper**, and infrastructure development. Projects like **Bhakra Nangal Dam** and institutions like **IITs** were initiated under his leadership.

**Reference:** India Since Independence by Bipin Chandra, 10th Edition, Page 102.

---

98. The ----- concerned with-

Correct Answer: **(b) Forest conservation**

**Explanation:**

The **Chipko Movement** (1970s) focused on **forest conservation** by protesting against deforestation in the Himalayan regions. Villagers, especially women, hugged trees to prevent their cutting. This grassroots environmental movement raised awareness about the importance of **sustainable development**.

**Reference:** Environmental Movements in India by Ramachandra Guha, 4th Edition, Page 145.

---

99. The ----- in which year?

Correct Answer: **(c) 1949**

**Explanation:**

The **Reserve Bank of India (RBI)** was **nationalized** on **January 1, 1949**, under the **Reserve Bank of India Act, 1948**. This ensured that the central bank operated under government ownership to manage the country's **monetary policy** and **financial stability**.

**Reference:** Indian Economy by Ramesh Singh, 13th Edition, Page 245.

---

100. Which ----- longest coastline?

Correct Answer: **(b) Gujarat**

**Explanation:**

**Gujarat** has the **longest coastline** in India, measuring approximately **1,600 km**. This strategic location supports a thriving **maritime economy**, with major ports like **Kandla** and **Mundra** facilitating trade. The coastline also supports fisheries and tourism.

**Reference:** Geography of India by Majid Hussain, 8th Edition, Page 123.

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