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MODEL PAPER-19

DIGITAL EXPLANATION

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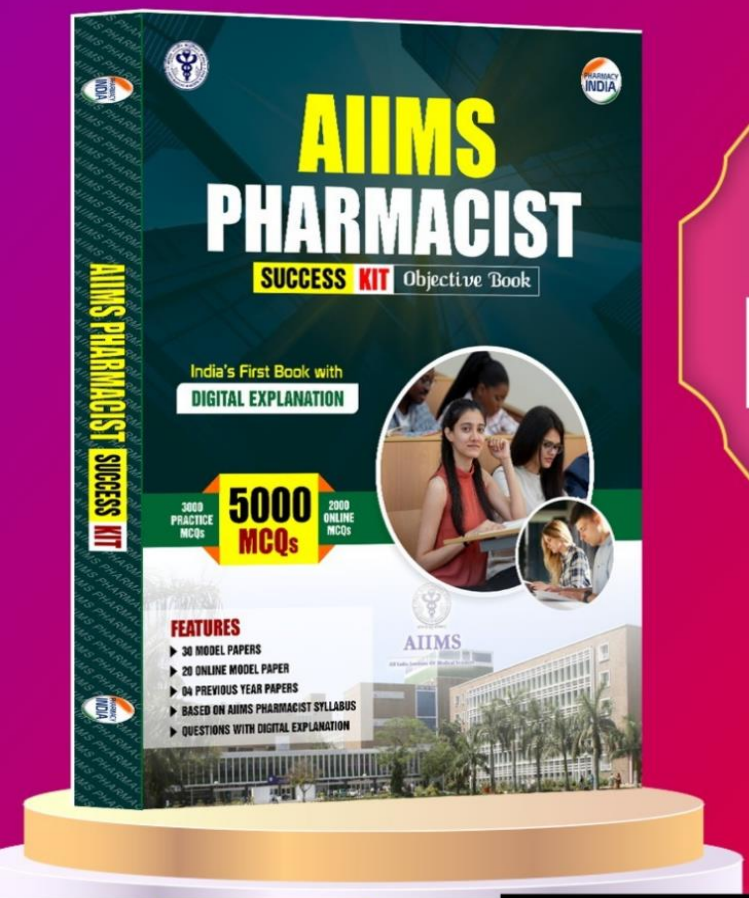

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Model Paper – 19 | Detailed Solutions

1. All are ---------- Except

- **Correct Answer:** (c) Do not consult the doctors
- **Explanation:** Consulting doctors when necessary is an important safety measure in dispensing drugs. The other options ensure focused and accurate dispensing.
- **Reference:** Pharmacy Practice Handbook, Dispensing Safety Section.

---

2. Idiosyncratic ---------- are

- **Correct Answer:** (b) Type B Adverse Reaction
- **Explanation:** Type B (Bizarre) adverse reactions are unpredictable, non-dose-dependent, and often immune or genetic-related.
- **Reference:** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Adverse Drug Reactions Chapter.

---

3. All the ---------- Except

- **Correct Answer:** (d) Adrenaline
- **Explanation:** Adrenaline is not typically monitored because it has a rapid onset and short duration. Drugs like digoxin, lithium, and cyclosporin require monitoring due to narrow therapeutic windows.
- **Reference:** Clinical Pharmacokinetics Handbook.

---

4. Filgrastim is:

- **Correct Answer:** (b) Granulocyte colony-stimulating factors
- **Explanation:** Filgrastim stimulates the production of neutrophils and is used in conditions like neutropenia.
- **Reference:** Katzung's Basic and Clinical Pharmacology, Hematopoietic Agents Section.

---

5. The branch ---------- is called

- **Correct Answer:** (c) Pharmacogenomics
- **Explanation:** Pharmacogenomics studies genetic variations affecting drug responses.

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- **Reference:** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Pharmacogenomics Chapter.

---

6. Hydroalcoholic ---------- called

- **Correct Answer:** (d) Elixirs
- **Explanation:** Elixirs are clear, sweetened hydroalcoholic solutions for oral use.
- **Reference:** Pharmaceutical Compounding and Dispensing.

---

7. Creaming ---------- stability of

- **Correct Answer:** (c) Emulsions
- **Explanation:** Emulsions are prone to instability through creaming (phase separation) and coalescence (droplet merging).
- **Reference:** Remington: The Science and Practice of Pharmacy.

---

8. OTC ---------- means

- **Correct Answer:** (b) Drugs which can be dispensed on the patient's demand
- **Explanation:** Over-the-counter (OTC) drugs are available without a prescription.
- **Reference:** Pharmacy Regulations and OTC Guidelines.

---

9. Auxiliary ---------- like

- **Correct Answer:** (d) Take 1 Tablet 4 times a day for 10 days
- **Explanation:** Auxiliary labels provide storage and usage warnings, not dosing instructions, which are part of the prescription label.
- **Reference:** Pharmacy Labeling Standards.

---

10. % Sodium ---------- isotonic:

Correct Answer: (b) 0.78%

Explanation:

To make a **1% atropine sulfate solution isotonic**, you need **0.78% sodium chloride**. This is based on the sodium chloride equivalent (E-value) of atropine sulfate, which is **0.12**. The step-by-step breakdown is as follows:

1. **Isotonic Sodium Chloride Requirement:** A normal isotonic solution contains **0.9% sodium chloride**.
2. **Sodium Chloride Equivalent of Atropine Sulfate:** The sodium chloride equivalent (E) indicates how much **1 gram of a substance** contributes to isotonicity. For atropine sulfate, the **E-value = 0.12**.
3. **Contribution of Atropine Sulfate to Isotonicity:** In a 1% solution of atropine sulfate, there is **1 gram of atropine sulfate in 100 mL of solution**. This is equivalent to:

   1 g × 0.12 = 0.12 g of NaCl equivalent
4. **Amount of Sodium Chloride to Add:** To make the solution isotonic, the total sodium chloride equivalent needs to be **0.9 g** per 100 mL. The amount of sodium chloride to add is:

   0.9 - 0.12 = 0.78g per 100 mL or 0.78% w/v.

Key Point:

The sodium chloride equivalent (**E-value**) of a substance tells you how much sodium chloride is replaced by that substance. Since **0.12 g of NaCl is equivalent to 1 g of atropine sulfate**, you only need an additional **0.78% sodium chloride** to achieve isotonicity.

Reference:

- Subrahmanyam, C. V. S. (2012). **Textbook of Physical Pharmaceutics** (2nd ed., pp. 126-128). Vallabh Prakashan.
- Allen, L. V. (2020). **Ansel's Pharmaceutical Calculations** (15th ed., pp. 205-208). Wolters Kluwer.

---

11. Safe ---------- sickness:

Correct Answer: (d) Dimenhydrinate

Explanation:

Dimenhydrinate is considered one of the **safest antiemetics** for use during **morning sickness** in pregnancy. Here's a detailed explanation for the given options:

1. **Dimenhydrinate (Dramamine):**
   - It is an **H1 receptor antagonist** with antiemetic and mild sedative properties.
   - Widely regarded as safe in pregnancy when used appropriately.

- It is often recommended as a **first-line treatment** due to its well-documented safety profile and minimal side effects.
- FDA Pregnancy Category: **B**

2. **Meclizine (Antivert):**
   - Another H1 receptor antagonist that is also safe for use during pregnancy.
   - While effective, **dimenhydrinate is often preferred over meclizine** as a first-line choice.
3. **Diphenhydramine (Benadryl):**
   - An antihistamine with antiemetic properties but causes **higher drowsiness** than dimenhydrinate, making it slightly less ideal.
   - Used less frequently for morning sickness due to its sedative effects.
4. **Promethazine (Phenergan):**
   - This is an antiemetic often used in **severe nausea and vomiting**, but it is generally not a **first-line treatment**.
   - May cause significant **drowsiness** and other side effects, making it less preferable in mild cases of morning sickness.

Key Point:

Dimenhydrinate is preferred as the **safest option** among the choices for managing morning sickness because it is effective, widely studied, and has minimal side effects when used appropriately during pregnancy.

References:

- Katzung, B. G., & Trevor, A. J. (2021). **Basic and Clinical Pharmacology** (15th ed., pp. 1063–1065). McGraw Hill.
- ACOG Practice Bulletin (2021): **Nausea and Vomiting in Pregnancy.**
- Briggs, G. G., Freeman, R. K., & Yaffe, S. J. (2017). **Drugs in Pregnancy and Lactation** (11th ed., pp. 417–419). Wolters Kluwer.

---

12. Local ---------- include:

- **Correct Answer:** (d) Alprostadil
- **Explanation:** Alprostadil is a prostaglandin E1 analog used in intracavernosal injection therapy for erectile dysfunction.
- **Reference:** Katzung's Basic and Clinical Pharmacology, Erectile Dysfunction Treatment.

---

13. QT ----------with:

- **Correct Answer:** (b) Gatifloxacin
- **Explanation:** Gatifloxacin, a fluoroquinolone, is known to cause QT prolongation.
- **Reference:** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Fluoroquinolones Section.

---

14. Ultrashort----------blocker:

- **Correct Answer:** (b) Esmolol
- **Explanation:** Esmolol is a cardioselective beta-1 blocker with an ultrashort half-life, used in acute settings.
- **Reference:** British National Formulary (BNF), Beta-Blockers Section.

---

15. Effective ---------- infection:

- **Correct Answer:** (c) Co-trimoxazole
- **Explanation:** Co-trimoxazole is the drug of choice for *Pneumocystis jirovecii* (formerly carinii) pneumonia.
- **Reference:** Katzung's Basic and Clinical Pharmacology, Antimicrobial Drugs Chapter.

16. A solid ---------- is called

- **Correct Answer:** (c) Suppository
- **Explanation:** Suppositories are designed to be inserted into the rectum, vagina, or urethra, where they dissolve or melt for localized or systemic action.
- **Reference:** Remington: The Science and Practice of Pharmacy.

---

17. One ---------- to

- **Correct Answer:** (a) 15 ml
- **Explanation:** One tablespoon is conventionally equal to 15 milliliters.
- **Reference:** Pharmaceutical Measurement Standards.

18. 1 mEq ---------- is

Correct Answer: (c) 74.5 mg

Explanation:

1. **Definition of 1 mEq:**
   - A **milliequivalent (mEq)** represents $\frac{1}{1000}$ of an equivalent weight of a substance.
   - For potassium chloride (KCl), **1 equivalent weight** is calculated as:

$$\textbf{Equivalent weight} = \frac{\boldsymbol{Molecular\ weight}}{\boldsymbol{Valency}}$$

   - Molecular weight of KCl = **74.5 g**.
   - Valency of KCl = **1** (K+ and Cl- each have a single charge).
2. **Equivalent Weight of KCl:**
   - Since the valency is 1: Equivalent weight of KCl = 74.5 g.
3. **Converting to Milliequivalents:**
   - 1 mEq = $\frac{\boldsymbol{Equivalent\ weight}}{\mathbf{1000}}$:

     1mEq of KCl = $\frac{\mathbf{74.5}}{\mathbf{1000}}$ = 0.0745g = 74.5mg.

Key Point:

1 mEq of KCl corresponds to **74.5 mg** based on its molecular weight and valency.

Reference:

- Katzung, B. G., & Trevor, A. J. (2021). **Basic and Clinical Pharmacology**, McGraw Hill.
- Ansel, H. C. (2016). **Pharmaceutical Calculations**, Wolters Kluwer.

---

19. How many ---------- acetate?

Correct Answer: (d) 144 g

Explanation:

1. **Definition of 4% w/w Solution:**

- A **4% w/w solution** contains **4 grams of solute (potassium acetate)** in every **100 grams of total solution.**

2. **Given Total Weight of the Solution:**
   - Total solution weight = **150 g**.
3. **Calculate the Weight of Potassium Acetate:**
   - Weight of potassium acetate (solute) = $\frac{4}{100} \times 150 = 6$ g.
4. **Calculate the Weight of Water:**
   - The total weight of the solution includes the solute (potassium acetate) and solvent (water).
   - Weight of water = Total solution weight − Weight of solute.
   - Weight of water = 150 g − 6 g = 144 g

Key Point:

To prepare **150 g of a 4% w/w potassium acetate solution**, you need **6 g of potassium acetate** and **144 g of water.**

Reference:

- Katzung, B. G. (2021). **Basic and Clinical Pharmacology**, McGraw Hill.
- Allen, L. V. (2020). **Ansel's Pharmaceutical Calculations**, Wolters Kluwer.

---

20. Water ---------- is

- **Correct Answer:** (c) Sterile water free from pyrogens
- **Explanation:** Water for injection is highly purified, sterile, and free from pyrogens for use in parenteral preparations.
- **Reference:** Indian Pharmacopoeia, Water for Injection Section.

---

21. In the ---------- indicates

- **Correct Answer:** (b) Need only
- **Explanation:** S.O.S. is a Latin abbreviation for "Si Opus Sit," meaning "if necessary" or "as needed."
- **Reference:** Prescription Abbreviations Guide.

---

22. Factors ---------- in the elderly:

- **Correct Answer:** (a) Polypharmacy
- **Explanation:** Polypharmacy increases the risk of confusion and adverse reactions, leading to noncompliance.
- **Reference:** Geriatric Pharmacology Guidelines.

---

23. Equation ---------- temperatures:

- **Correct Answer:** (c) Arrhenius equation
- **Explanation:** The Arrhenius equation is used to calculate the rate of chemical reactions, including drug degradation, at different temperatures.
- **Reference:** Pharmaceutical Stability Testing Guidelines.

---

24. Blending ---------- is done by:

- **Correct Answer:** (d) Geometric dilution
- **Explanation:** Geometric dilution ensures uniform mixing of potent powders with diluents.
- **Reference:** Remington: The Science and Practice of Pharmacy.

---

25. Approximate ---------- Formula):

Correct Answer: (b) 83 mg

Explanation:

Young's Formula for Pediatric Dosing:

$$\text{Child's dose} = \frac{\text{Age in years}}{\text{Age in years} + 12} \times \text{Adult dose}$$

1. **Substitute the values:**
    - **Age** = 6 years
    - **Adult dose** = 250 mg

$$\text{Child's dose} = \frac{6}{6+12} \times 250 = \frac{6}{18} \times 250 = \frac{1}{3} \times 250 = 83.33\,\text{mg}.$$

Reference:

- Katzung, B. G., & Trevor, A. J. (2021). **Basic and Clinical Pharmacology**.
- Subrahmanyam, C. V. S. (2012). **Textbook of Physical Pharmaceutics**, Vallabh Prakashan.

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26. Vanishing ---------- closures:

Correct Answer: (a) Sulphur

Explanation:

1. **Role of Sulphur in Rubber Manufacturing:**
   - Sulphur is used as a **vulcanizing agent** in the rubber industry.
   - Vulcanization involves forming cross-links between polymer chains in rubber, improving its elasticity, durability, and resistance to chemicals.
   - In pharmaceutical packaging, rubber closures often require **vulcanization with sulphur** to achieve the desired properties, such as **compressibility and resilience.**
2. **Other Options:**
   - **(b) Zinc stearate:** Used as a lubricant and anti-sticking agent in rubber processing but not as a vanishing agent.
   - **(c) Mineral oils:** These act as lubricants or plasticizers in rubber manufacturing, but they are not vanishing agents.
   - **(d) Talc:** Talc serves as a filler and anti-sticking agent but does not act as a vanishing agent or vulcanizing agent.

Sulphur is essential for the vulcanization process in rubber, making it the correct answer for its role in constructing pharmaceutical rubber closures.

References:

- Subrahmanyam, C. V. S. (2012). **Textbook of Physical Pharmaceutics**, Vallabh Prakashan.
- Allen, L. V. (2020). **Ansel's Pharmaceutical Calculations**, Wolters Kluwer.

---

27. Mill ---------- impact:

- **Correct Answer:** (b) Hammer mill
- **Explanation:** Hammer mills use impact forces to break down materials into smaller particles.
- **Reference:** Handbook of Pharmaceutical Engineering.

---

28. Disadvantage ---------- extraction:

- **Correct Answer:** (c) It leads to the hydrolysis of many substances
- **Explanation:** Water can hydrolyze sensitive compounds, reducing their stability.
- **Reference:** Extraction Techniques in Pharmaceutical Sciences.

---

29. Process ---------- crystallization:

- **Correct Answer:** (b) Desiccation
- **Explanation:** Desiccation is the process of removing moisture from substances to make them anhydrous.
- **Reference:** Principles of Physical Pharmacy.

---

30. Dryer where gas flows upward through a bed:

- **Correct Answer:** (b) Fluidized bed dryer
- **Explanation:** In a fluidized bed dryer, gas flows upward, suspending particles for efficient drying.
- **Reference:** Pharmaceutical Drying Techniques.

31. Which ---------- dispensed?

- **Correct Answer:** (c) Subscription
- **Explanation:** The subscription contains instructions for the pharmacist about the preparation and dispensing of the drug.
- **Reference:** Prescription Writing Guidelines, Pharmacy Practice.

---

32. Factors ---------- individual:

- **Correct Answer:** (c) Both I and II
- **Explanation:** The route of administration and body weight significantly influence drug dosage and form.
- **Reference:** Pharmacology Textbooks, Individual Variations in Drug Response.

---

33. Viscous ---------- infections:

- **Correct Answer:** (a) Throat paints
- **Explanation:** Throat paints are viscous solutions designed to coat the throat or oral mucosa for infection treatment.
- **Reference:** Remington: The Science and Practice of Pharmacy.

---

34. Drug ---------- ointment:

- **Correct Answer:** (b) Neomycin
- **Explanation:** Neomycin is a common antibiotic used in topical ointments for bacterial skin infections.
- **Reference:** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Topical Antibiotics.

---

35. Injections ---------- arm:

- **Correct Answer:** (d) Subcutaneous injection
- **Explanation:** Subcutaneous injections are administered under the skin for slow and sustained drug absorption.
- **Reference:** Injection Administration Guidelines.

---

36. Disinfectant ---------- water:

- **Correct Answer:** (b) Chlorine
- **Explanation:** Chlorine is commonly used to disinfect water due to its antimicrobial properties.
- **Reference:** WHO Guidelines for Drinking Water Quality.

---

37. Science ---------- humans:

- **Correct Answer:** (c) Toxicology
- **Explanation:** Toxicology studies the effects of toxic substances and their impact on living organisms.
- **Reference:** Toxicology Principles and Practice.

---

38. Defined ---------- form:

- **Correct Answer:** (a) Bioavailability of a drug
- **Explanation:** Bioavailability measures the fraction of a drug absorbed into systemic circulation.
- **Reference:** Pharmacokinetics Textbooks.

---

39. For drug ---------- binding:

- **Correct Answer:** (b) Affinity
- **Explanation:** Affinity refers to the strength of interaction between a drug and its receptor.
- **Reference:** Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Drug-Receptor Interactions.

---

40. Adrenergic ----------stimulant:

- **Correct Answer:** (d) Amphetamine
- **Explanation:** Amphetamines are central stimulants that enhance the release of norepinephrine and dopamine.
- **Reference:** CNS Stimulants Chapter, Katzung's Pharmacology.

---

41. Example ---------- proteins:

- **Correct Answer:** (c) Ferritin
- **Explanation:** Ferritin is a metalloprotein that stores iron in a biologically available form.
- **Reference:** Biochemistry Textbooks, Protein Classification.

---

42. Number ---------- triacylglycerols:

- **Correct Answer:** (a) 3
- **Explanation:** Triacylglycerols are composed of three fatty acids esterified to one glycerol molecule.
- **Reference:** Lehninger Principles of Biochemistry, Lipids Chapter.

---

43. Main ---------- cells:

- **Correct Answer:** (d) Glycogen
- **Explanation:** Glycogen is the primary storage form of glucose in animals.
- **Reference:** Biochemistry Textbooks, Polysaccharides Section.

---

44. A complete, ---------- metal ions:

- **Correct Answer:** (b) Holoenzyme
- **Explanation:** A holoenzyme is the complete enzyme with its cofactor, ready to catalyze reactions.
- **Reference:** Enzymology Textbooks.

---

45. White ---------- granulocyte:

- **Correct Answer:** (c) Lymphocytes
- **Explanation:** Lymphocytes are agranulocytes involved in adaptive immunity, whereas eosinophils, basophils, and neutrophils are granulocytes.
- **Reference:** Immunology Textbooks.

46. Which ---------- of India?

- **Correct Answer:** (d) Chapter 2
- **Explanation:** Chapter 2 of the Pharmacy Act, 1948, outlines the constitution and functions of the Pharmacy Council of India.
- **Reference:** Pharmacy Act, 1948, Chapter 2.

47. If a drug ----------, it is known as:

- **Correct Answer:** (a) Spurious
- **Explanation:** Spurious drugs are those falsely labeled as another product or manufacturer, leading to potential misrepresentation.
- **Reference:** Drugs and Cosmetics Act, 1940, Spurious Drugs Section.

48. Under ---------- appointed?

Correct Answer: (a) Section 5

Explanation:

Section 5 of the Narcotic Drugs and Psychotropic Substances Act, 1985, pertains to the **appointment of the Narcotics Commissioner**. The Narcotics Commissioner oversees matters related to the cultivation of opium, production, and distribution of narcotics, ensuring compliance with the Act.

Reference:

- Narcotic Drugs and Psychotropic Substances Act, 1985, Section 5.

49. Section of ---------- woman's privacy:

- **Correct Answer:** (b) Section 5A
- **Explanation:** Section 5A ensures the confidentiality of women seeking medical termination of pregnancy.
- **Reference:** Medical Termination of Pregnancy Act, 1971.

50. Number ---------- council:

Correct Answer: (a) 1

Explanation:

Under the **Pharmacy Act, 1948**, only **1 member** is elected by the Medical Council members on the State Medical Register to serve in the State Pharmacy Council.

Reference:

- Pharmacy Act, 1948, Section 19.

---

51. Pharmaceutical ---------- agent:

- **Correct Answer:** (d) Tragacanth
- **Explanation:** Tragacanth is a natural gum used as a thickening agent in pharmaceutical and food industries.
- **Reference:** Pharmacognosy Textbooks.

---

52. Adulteration ---------- quality:

- **Correct Answer:** (c) Deterioration
- **Explanation:** Deterioration results from improper storage or aging, leading to reduced drug quality.
- **Reference:** Quality Control Guidelines in Pharmacognosy.

---

53. Substance ---------- dryer:

- **Correct Answer:** (b) Papaya latex
- **Explanation:** Papaya latex is spray-dried for pharmaceutical uses to ensure stability and uniformity.
- **Reference:** Pharmaceutical Drying Techniques.

---

54. Natural ---------- glycosides:

- **Correct Answer:** (d) Senna
- **Explanation:** Senna leaves and pods are rich in anthracene glycosides, used as laxatives.
- **Reference:** Pharmacognosy Textbooks, Senna Section.

---

55. Natural ---------- glycosides:

- **Correct Answer:** (c) Rhubarb
- **Explanation:** Rhubarb contains anthracene glycosides, which have purgative properties.
- **Reference:** Pharmacognosy Textbooks, Rhubarb Section.

---

56. Function ---------- body:

- **Correct Answer:** (b) Maintain the electrolyte balance in the body
- **Explanation:** Minerals like sodium, potassium, and chloride regulate electrolyte balance, essential for physiological functions.
- **Reference:** Essentials of Human Nutrition.

---

57. Disease ---------- humans:

- **Correct Answer:** (d) Muscular dystrophy
- **Explanation:** Muscular dystrophy is a group of genetic disorders characterized by muscle degeneration and weakness.
- **Reference:** Genetics and Human Diseases.

---

58. Severe ---------- shock:

- **Correct Answer:** (b) Anaphylactic shock
- **Explanation:** Anaphylactic shock is a life-threatening allergic reaction to drugs or allergens.
- **Reference:** Emergency Medicine Textbooks.

---

59. Agar---------- from:

- **Correct Answer:** (a) Gelidium
- **Explanation:** Agar-agar is a gelatinous substance extracted from red algae, particularly Gelidium species.
- **Reference:** Pharmacognosy and Natural Products.

---

60. Disease ---------- disease:

- **Correct Answer:** (b) Leprosy
- **Explanation:** Leprosy, caused by *Mycobacterium leprae*, is referred to as Hansen's disease.
- **Reference:** WHO Guidelines on Leprosy.

61. Cardiac ---------- reaction:

- **Correct Answer:** (a) Arrhythmia
- **Explanation:** Arrhythmia is a cardiac side effect caused by certain drugs, such as antiarrhythmics, beta-blockers, or antidepressants. The other options are not primarily cardiac manifestations.
- **Reference:** Adverse Drug Reaction Guidelines.

---

62. Diabetes ---------- to:

- **Correct Answer:** (b) Insulin
- **Explanation:** Diabetes Mellitus results from either insufficient production of insulin or reduced sensitivity to insulin, leading to impaired glucose metabolism.
- **Reference:** Essentials of Endocrinology.

---

63. Pharmaceutical ---------- services:

- **Correct Answer:** (c) Both I and II
- **Explanation:** Hospital pharmacy services involve furnishing drug information to healthcare professionals and conducting drug use reviews for optimal therapeutic outcomes.
- **Reference:** Hospital Pharmacy Management.

---

64. Number of ---------- beds:

Correct Answer: (c) 15

Explanation:

According to the **study group on hospitals (1968)**, the recommendation for pharmacist staffing in hospitals is based on the number of beds. For a hospital with **up to 400 beds**, the recommended number of pharmacists required is **15**. This ensures adequate pharmacy services, including dispensing, drug inventory management, and clinical pharmacy activities, to meet the needs of patients and staff.

Reference:

- Study Group on Hospitals (1968), Ministry of Health and Family Welfare.
- Ansel, H. C. (2020). **Hospital Pharmacy.**

---

65. NOT ---------- costs:

- **Correct Answer:** (b) Selling unlabelled bottles of drugs
- **Explanation:** Selling unlabelled drugs is unethical and against regulations. Cost control strategies include inventory management, procurement cost reduction, and therapeutic equivalents.
- **Reference:** Drug Cost Management in Hospitals.

---

66. Component ---------- transport:

- **Correct Answer:** (c) Erythrocytes
- **Explanation:** Erythrocytes (red blood cells) contain hemoglobin, which binds and transports oxygen.
- **Reference:** Human Physiology Textbooks.

---

67. Characteristic ---------- blood:

- **Correct Answer:** (c) Contains both A and B antigens
- **Explanation:** Type AB blood has both A and B antigens on red cells but no antibodies in the plasma, making it a universal plasma recipient.
- **Reference:** Blood Group and Transfusion Science.

---

68. Plasma ---------- clotting:

Correct Answer: (c) Fibrinogen

Explanation:

- **Fibrinogen:**
  Fibrinogen is a **plasma protein** that plays a crucial role in blood clotting. It is converted by the enzyme **thrombin** into **fibrin**, which forms the meshwork that traps blood cells to create a clot.
- **Other Options:**
  - **Albumin:** Maintains osmotic pressure and transports substances but does not aid in clotting.
  - **Globulin:** Functions in immunity and transport but is not involved in clotting.

- **Haemoglobin:** A component of red blood cells responsible for oxygen transport, not related to clotting.

Reference:

- Guyton, A. C., & Hall, J. E. (2021). **Textbook of Medical Physiology**, Elsevier.
- Tortora, G. J., & Derrickson, B. H. (2018). **Principles of Anatomy and Physiology**, Wiley.

---

69. Primary ---------- blood:

- **Correct Answer:** (c) Clotting blood
- **Explanation:** Platelets (thrombocytes) are essential for blood clot formation and preventing bleeding.
- **Reference:** Hematology Textbooks.

---

70. Disorder ---------- cells:

- **Correct Answer:** (b) Leukaemia
- **Explanation:** Leukemia is a cancer of the blood-forming tissues, leading to an overproduction of abnormal white blood cells.
- **Reference:** Oncology and Hematology Guidelines.

---

71. Antiseptic ---------- scrub:

- **Correct Answer:** (a) Chlorhexidine
- **Explanation:** Chlorhexidine is widely used for skin disinfection before surgery due to its broad-spectrum antimicrobial activity.
- **Reference:** WHO Surgical Safety Guidelines.

---

72. Disinfectant ---------- spores:

- **Correct Answer:** (c) Glutaraldehyde
- **Explanation:** Glutaraldehyde is a high-level disinfectant effective against bacterial spores.
- **Reference:** Disinfection and Sterilization Guidelines.

---

73. Sulphonamide ---------- infections:

- **Correct Answer:** (a) Sulfamethoxazole
- **Explanation:** Sulfamethoxazole is combined with trimethoprim for the treatment of UTIs.
- **Reference:** Goodman & Gilman's: The Pharmacological Basis of Therapeutics.

---

74. Drug NOT ---------- leprosy:

- **Correct Answer:** (d) Isoniazid
- **Explanation:** Isoniazid is used for tuberculosis, not leprosy. Rifampicin, dapsone, and clofazimine are first-line treatments for leprosy.
- **Reference:** WHO Guidelines for Leprosy Treatment.

---

75. Antiseptic ---------- wounds:

- **Correct Answer:** (b) Hydrogen peroxide
- **Explanation:** Hydrogen peroxide decomposes to release oxygen, aiding in wound cleaning and antimicrobial action.
- **Reference:** Wound Care and Antiseptic Guidelines.

76. Which of ---------- system?

- **Correct Answer:** (d) Java
- **Explanation:** Java is a programming language, not a database management system. MySQL, Oracle, and MongoDB are DBMSs.
- **Reference:** Database Systems Textbook.

---

77. In ---------- of numbers?

- **Correct Answer:** (b) =AVERAGE()
- **Explanation:** The =AVERAGE() function calculates the mean of a range of numbers in Excel.
- **Reference:** Microsoft Excel Help Documentation.

---

78. Term ---------- messages:

- **Correct Answer:** (b) Spam
- **Explanation:** Spam refers to unwanted or unsolicited email messages, often sent in bulk.
- **Reference:** Cybersecurity Basics.

---

79. Feature ---------- slides:

- **Correct Answer:** (c) Transitions
- **Explanation:** The "Transitions" tab in PowerPoint is used to apply effects between slides.
- **Reference:** Microsoft PowerPoint Help Documentation.

---

80. Key ---------- Windows:

- **Correct Answer:** (d) All of the above
- **Explanation:** Ctrl + W, Alt + F4, and Ctrl + F4 can be used to close active windows in Windows.
- **Reference:** Windows Keyboard Shortcuts Guide.

---

81. Number ---------- and B:

Correct Answer: (c) 6

Explanation:

1. **Determine the positions of A and B relative to the total row:**
   Total students = 40.
   - Position of A from the left = 15.
   - Position of B from the right = 20.
   - Position of B from the left = 40 – 20 + 1 = 21.
2. **Calculate the number of students between A and B:**
   Students between A and B = Position of B from the left − Position of A from the left - 1

Students between = 21 – 15 –1 = 6

Final Answer: (c) 6

---

82. Find ---------- 20, ?

- **Correct Answer:** (a) 28
- **Explanation:** The differences are $+4, +6, +8, +10$. Adding $+8$ to 20 gives 28.
- **Reference:** Arithmetic Progression Concepts.

---

83. If "---------- coded?

- **Correct Answer:** (b) XBPQ
- **Explanation:** Each letter is shifted forward by one position in the alphabet.
- **Reference:** Coding-Decoding Techniques.

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84. If ---------- coded?

Correct Answer is (b) 68172

1. Find the letter-to-number mapping:

- H = 7
- O = 2
- R = 3
- S = 6
- E = 1
- I = 9
- D = 5

2. Code "SHORE":

- S = 6
- H = 7
- O = 2
- R = 3
- E = 1

Therefore, "SHORE" is coded as 67231.

The correct answer is (b) 68172.

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85. Choose ---------- 125.

- **Correct Answer:** (c) 81
- **Explanation:** 81 is 3^4, while all others are cubes: $2^3, 3^3, 4^3, 5^3$.
- **Reference:** Number Properties.

---

86. Angle ---------- at 8:30:

- **Correct Answer:** (c) 105°
- **Explanation:**
  - Hour hand position = $8 \times 30 + 30/2 = 255^\circ$.
  - Minute hand position = $30/2 = 90^\circ$.
  - Difference = $255 - 90 = 105^\circ$.
- **Reference:** Clock Angle Formulas.

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87. Distance ---------- of B:

- **Correct Answer:** (b) 50 m
- **Explanation:** Using Pythagoras theorem:
  $\sqrt{40^2 + 40^2} = \sqrt{1600 + 1600} = 50\,\text{m}.$
- **Reference:** Geometry Basics.

---

88. Average ---------- number?

Correct Answer: (b) 34

Explanation:

1. Total sum = Average × Total numbers = 30 × 5 = 150.

2. Let the numbers be x−4, x−2, x, x+2, x+4.
   Sum = 5x = 150, so x = 30.
3. The numbers are 26, 28, 30, 32, and 34.
4. Largest number = **34**.

---

89. If 60% ----------number?

- **Correct Answer:** (c) 360
- **Explanation:**
  - 60% of number $= 270$, Number $= 270 \div 0.6 = 450$.
  - $80\% = 450 \times 0.8 = 360$.
- **Reference:** Percentage Calculations.

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90. Rate of ---------- interest:

- **Correct Answer:** (c) 20%
- **Explanation:**
  - $\text{SI} = P \times R \times T/100$.
  - If the sum triples: $\text{SI} = 2P$.
  - $2P = P \times R \times 12/100$, $R = 20\%$.
- **Reference:** Simple Interest Formulas.

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91. Which ---------- report?

- **Correct Answer:** (c) World Bank
- **Explanation:** The World Bank published the 'Ease of Doing Business' report annually until it was discontinued in 2021, ranking countries based on business regulations.
- **Reference:** World Bank Reports.

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92. The ---------- powers?

- **Correct Answer:** (a) British and French
- **Explanation:** The Battle of Wandiwash (1760) was a decisive conflict during the Third Carnatic War, where the British defeated the French in India.
- **Reference:** Indian History Textbooks.

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93. Primary ---------- Yojana (PMKSY):

- **Correct Answer:** (c) Improving irrigation facilities
- **Explanation:** PMKSY focuses on ensuring water availability for agricultural purposes and improving irrigation efficiency.
- **Reference:** Government of India, PMKSY Scheme.

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94. Who ----------, *Vande Mataram*?

- **Correct Answer:** (a) Bankim Chandra Chatterjee
- **Explanation:** *Vande Mataram* was composed by Bankim Chandra Chatterjee in his novel *Anandamath* (1882).
- **Reference:** Cultural History of India.

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95. Largest ---------- which state?

- **Correct Answer:** (b) Odisha
- **Explanation:** The Chilika Lake in Odisha is the largest saltwater lagoon in India and a Ramsar site.
- **Reference:** Geography of India by Majid Hussain.

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96. Which ----------Sikh War?

- **Correct Answer:** (a) Treaty of Lahore
- **Explanation:** The Treaty of Lahore (1846) marked the end of the First Anglo-Sikh War and established British dominance in Punjab.
- **Reference:** Modern History of India.

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97. Which ---------- BrahMos missile?

- **Correct Answer:** (b) Russia
- **Explanation:** The BrahMos missile was developed as a joint venture between India's DRDO and Russia's NPO Mashinostroyeniya.
- **Reference:** Indian Defence Research Documents.

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98. The All ---------- which year?

- **Correct Answer:** (b) 1919
- **Explanation:** The All India Khilafat Committee was established in 1919 to protest against the disintegration of the Ottoman Caliphate after World War I.
- **Reference:** Freedom Struggle by Bipan Chandra.

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99. Which region ---------- deposits?

- **Correct Answer:** (a) Jharia
- **Explanation:** The Jharia coalfield in Jharkhand is referred to as the 'Ruhr of India' due to its vast reserves of high-grade coking coal.
- **Reference:** Indian Economic Geography.

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100. Who gave the ---------- of India?

- **Correct Answer:** (a) Jawaharlal Nehru
- **Explanation:** Nehru emphasized secularism as the state's impartiality toward all religions and its role in ensuring religious freedom for all citizens.
- **Reference:** Indian Polity by M. Laxmikanth.