

UPSC

DRUG INSPECTOR

Success Kit

FEATURES

- 30 MODEL PAPERS
- SPECIALLY FOR UPSC DRUG INSPECTOR EXAM
- 2000 + SUBJECT WISE ONLINE TESTS
- 4 UPSC PREVIOUS YEAR PAPERS
- AS PER LATEST PATTERN

5000 PRACTICE
MCQs

2000 ONLINE
MCQs



Objective
BOOK



UPSC DRUG INSPECTOR

SUCCESS KIT Objective Book

As Per the Latest UPSC DI Exam Pattern

Useful for
UPSC Drug Inspector Examination

Authors

Utsav Verma

M. Pharma

Director, Pharmacy India

Dhalendra Kothale

M. Pharma

Vinit Kumar

M. Pharma



Pharmacy India Publication

EXAM PATTERN & SCHEME

S. No.	Subjects	Total MCQs	Marks	Time
1.	Pharmaceutical Science, Computer Application & English Language	150	300	2 Hrs
Total		150	300	Hrs

Scheme

1. The test will be of two hours duration.
2. All questions will carry equal marks.
3. The test will be objective type questions with multiple choices of answer.
4. The medium of the test will be English only.
5. There will be penalty for wrong answers. Every wrong answer will carry a deduction of one-third of the marks assigned to that question. If no answer is marked for a question, there will be no penalty for that question.
6. The Test will carry a maximum of 300 marks.

TABLE OF CONTENT

S. NO.	Model Papers	Page No.	S. NO.	Model Papers	Page No.
1.	Model Paper 1	1-11	16.	Model Paper 16	164-174
2.	Model Paper 2	12-22	17.	Model Paper 17	175-185
3.	Model Paper 3	23-33	18.	Model Paper 18	186-196
4.	Model Paper 4	34-44	19.	Model Paper 19	197-207
5.	Model Paper 5	45-54	20.	Model Paper 20	208-218
6.	Model Paper 6	55-64	21.	Model Paper 21	219-230
7.	Model Paper 7	65-75	22.	Model Paper 22	231-241
8.	Model Paper 8	76-86	23.	Model Paper 23	242-252
9.	Model Paper 9	87-97	24.	Model Paper 24	253-263
10.	Model Paper 10	98-108	25.	Model Paper 25	264-274
11.	Model Paper 11	109-119	26.	Model Paper 26	275-284
12.	Model Paper 12	120-130	27.	Model Paper 27	285-294
13.	Model Paper 13	131-141	28.	Model Paper 28	295-304
14.	Model Paper 14	142-152	29.	Model Paper 29	305-314
15.	Model Paper 15	153-163	30.	Model Paper 30	315-324
Previous Year Papers					
31.	UPSC Drug Inspector 2023				325-337
32.	UPSC Drug Inspector 2019				338-349
33.	UPSC Drug Inspector 2015				350-360
34.	UPSC Drug Inspector 2011				361-371

Note:

- 2000+ Subject Wise Online Tests
- Refer last page of the book to Join Online Test

MODEL PAPER - 1

- 1. What is the primary effect of adding electron-donating groups to an aromatic ring in drug molecules?**
 - (a) Decreases lipophilicity
 - (b) Enhances water solubility
 - (c) Alters electronic distribution to increase reactivity
 - (d) Stabilizes drug metabolism
- 2. Which type of bond primarily governs the interaction between drug molecules and hydrophobic pockets of enzymes?**
 - (a) Ionic bonds
 - (b) Covalent bonds
 - (c) Hydrogen bonds
 - (d) Van der Waals forces
- 3. Which physicochemical property is essential for designing drugs targeting the central nervous system (CNS)?**
 - (a) High polarity
 - (b) High molecular weight
 - (c) High lipophilicity
 - (d) Strong hydrogen bonding capacity
- 4. What is the role of isosteres in drug design?**
 - (a) To enhance lipophilicity
 - (b) To modify metabolism pathways
 - (c) To mimic structural properties without altering activity
 - (d) To decrease drug resistance
- 5. Which of the following is a physicochemical property affecting drug solubility?**
 - (a) pKa of the functional groups
 - (b) Lipophilicity of the drug molecule
 - (c) Molecular weight of the compound
 - (d) All of the above
- 6. What is the key pharmacophoric feature in opioid analgesics?**
 - (a) Tertiary amine
 - (b) Hydroxyl group
 - (c) Phenolic group
 - (d) Aromatic ring
- 7. In the synthesis of prodrugs, which of the following chemical modifications is typically used?**
 - (a) Addition of a methyl group
 - (b) Hydrolysis of an ester bond
 - (c) Introduction of a labile ester linkage
 - (d) Removal of polar groups
- 8. Which physicochemical property is most crucial in predicting drug binding to plasma proteins?**
 - (a) Lipophilicity
 - (b) Molecular weight
 - (c) Hydrogen bonding capacity
 - (d) pKa
- 9. What is the primary role of functional groups in drug receptor interactions?**
 - (a) Increasing solubility
 - (b) Forming non-covalent bonds with receptors
 - (c) Stabilizing the drug molecule
 - (d) Enhancing metabolism
- 10. Which chemical property of a drug is crucial for its formulation as an intravenous (IV) preparation?**
 - (a) High molecular weight
 - (b) High melting point
 - (c) Aqueous solubility
 - (d) High pKa
- 11. Which modification is most likely to increase the oral bioavailability of a drug?**
 - (a) Increasing molecular size
 - (b) Reducing hydrogen bond donors
 - (c) Introducing polar groups
 - (d) Decreasing lipophilicity
- 12. Which chemical reaction is commonly employed in the synthesis of β -lactam antibiotics?**
 - (a) Nucleophilic substitution
 - (b) Condensation reaction
 - (c) Cyclization of amino acids
 - (d) Reduction of ketones
- 13. Which of the following enhances the stability of a drug against oxidation?**
 - (a) Introduction of electron-withdrawing groups
 - (b) Addition of polar groups
 - (c) Reduction in molecular weight
 - (d) Elimination of ester bonds
- 14. Which structural feature is essential for selective β_2 -adrenergic receptor agonists?**

- (b) To ensure the safety, identity, strength, quality, and purity of drug products
 (c) To minimize production costs
 (d) To standardize packaging designs
- 63. What does the term 'Batch' mean as defined in CGMP regulations?**
 (a) A set of processes used in production
 (b) A specific quantity of a drug intended to have uniform character and quality
 (c) A container used for drug packaging
 (d) The quality control unit's responsibility
- 64. Which section of the GMP regulations covers "Packaging and Labeling Control"?**
 (a) Subpart B (b) Subpart F
 (c) Subpart G (d) Subpart J
- 65. The International Conference on Harmonization (ICH) introduced guidelines such as Q7A. What does Q7A focus on?**
 (a) Analytical testing
 (b) GMP for active pharmaceutical ingredients (APIs)
 (c) Quality control of drug products
 (d) Labeling regulations
- 66. What is the purpose of the FDA's risk-based inspections under its 21st Century Initiative?**
 (a) To increase the frequency of all inspections
 (b) To reduce enforcement actions
 (c) To focus on areas with the highest public health risks
 (d) To eliminate all CGMP regulations
- 67. Which of the following is a mandatory component in a Quality Management System (QMS)?**
 (a) Risk assessment and management
 (b) Employee satisfaction surveys
 (c) Product advertisement strategies
 (d) Marketing approval procedures
- 68. Under GMP, who has the authority to reject defective materials during manufacturing?**
 (a) Plant Manager
 (b) Sales Department
 (c) Quality Control Unit
 (d) Production Supervisor
- 69. In CGMP terminology, what does 'Acceptance Criteria' mean?**
 (a) Specifications and limits for decision-making on product quality
 (b) Criteria for selecting new employees
 (c) Standards for advertising pharmaceuticals
 (d) Benchmarks for packaging designs
- 70. What is the key focus of GMP guidelines for clinical trial materials?**
 (a) Cost optimization
 (b) Ensuring quality and consistency
 (c) Reducing trial timelines
 (d) Simplifying documentation
- 71. What does 'Quality-by-Design' (QbD) in GMP emphasize?**
 (a) Manual quality checks after production
 (b) Increased reliance on inspections
 (c) Reduction of training programs
 (d) Product quality assurance during the design phase
- 72. What is the primary distinction between GLP and GMP?**
 (a) GLP applies to manufacturing while GMP applies to laboratory studies.
 (b) GLP ensures data quality in non-clinical studies, while GMP focuses on product quality during manufacturing.
 (c) Both GLP and GMP focus solely on post-marketing surveillance.
 (d) GMP emphasizes research integrity, while GLP focuses on clinical trial compliance.
- 73. Which of the following best describes the role of the Quality Assurance Unit (QAU) in GLP?**
 (a) Conducting experiments and analyzing raw data
 (b) Overseeing financial transactions in the laboratory
 (c) Conducting independent inspections and audits to ensure study compliance
 (d) Archiving study reports and raw data
- 74. Why is the characterization of the test item essential in a GLP-compliant study?**
 (a) It ensures the stability and purity of the test item throughout the study.
 (b) It guarantees ethical considerations in animal studies.
 (c) It establishes a financial audit trail for test materials.
 (d) It allows bypassing the need for SOPs during the study.

- (a) 11001 (b) 11010
(c) 10101 (d) 10110

143. Which type of memory is volatile?

- (a) ROM (b) RAM
(c) Hard Drive (d) DVD

144. Which of these is an example of secondary storage?

- (a) Cache Memory (b) USB Flash Drive
(c) CPU Register (d) RAM

145. Which numbering system is used internally by computers?

- (a) Decimal (b) Octal
(c) Hexadecimal (d) Binary

146. Choose the correct synonym for the word "Exemplary."

- (a) Flawed (b) Inferior
(c) Admirable (d) Ordinary

147. Fill in the blank: The new policy was _____ criticized by the public.

- (a) heavily (b) lavishly
(c) dearly (d) mildly

148. Choose the correctly spelled word:

- (a) Commitment (b) Commitmant
(c) Commetment (d) Commitment

149. Choose the correct antonym for the word "Optimistic."

- (a) Hopeful (b) Pessimistic
(c) Confident (d) Enthusiastic

150. Identify the part of speech of the underlined word: "She ran very quickly to catch the bus."

- (a) Adjective (b) Verb
(c) Adverb (d) Preposition

ANSWER KEY

1-c	2-d	3-c	4-c	5-d	6-a	7-c	8-a	9-b	10-c
11-b	12-c	13-a	14-b	15-c	16-b	17-d	18-b	19-a	20-c
21-c	22-a	23-c	24-c	25-b	26-d	27-b	28-b	29-d	30-d
31-d	32-b	33-c	34-a	35-b	36-c	37-d	38-c	39-b	40-c
41-b	42-c	43-a	44-b	45-b	46-b	47-c	48-a	49-a	50-b
51-b	52-b	53-b	54-b	55-c	56-a	57-b	58-c	59-d	60-a
61-a	62-b	63-b	64-c	65-b	66-c	67-a	68-c	69-a	70-b
71-d	72-b	73-c	74-a	75-b	76-c	77-b	78-a	79-d	80-c
81-b	82-b	83-b	84-c	85-d	86-b	87-d	88-b	89-d	90-c
91-c	92-b	93-b	94-a	95-d	96-c	97-b	98-a	99-c	100-b
101-b	102-a	103-b	104-b	105-c	106-b	107-b	108-a	109-d	110-b
111-a	112-d	113-b	114-c	115-b	116-c	117-c	118-c	119-d	120-c
121-a	122-b	123-c	124-a	125-c	126-b	127-c	128-b	129-c	130-b
131-b	132-b	133-c	134-a	135-b	136-d	137-c	138-b	139-b	140-a
141-c	142-a	143-b	144-b	145-d	146-c	147-a	148-d	149-b	150-c

MODEL PAPER - 2

- 1. Which type of intermolecular interaction is most critical for the activity of DNA intercalating agents?**
 - (a) Ionic bonding
 - (b) Hydrogen bonding
 - (c) Van der Waals interactions
 - (d) π - π stacking
- 2. Which of the following factors can increase the metabolic stability of a drug?**
 - (a) Addition of ester groups
 - (b) Introduction of bulky substituents near metabolically labile sites
 - (c) Increasing the hydrogen bond donor count
 - (d) Removal of electron-withdrawing groups
- 3. Which drug primarily acts by inhibiting DNA gyrase and topoisomerase IV?**
 - (a) Quinolones
 - (b) Tetracyclines
 - (c) Azoles
 - (d) Aminoglycosides
- 4. What is the role of bioisosteres in pharmaceutical APIs?**
 - (a) To increase drug hydrophilicity
 - (b) To mimic functional groups while improving drug properties
 - (c) To enhance lipophilicity
 - (d) To modify drug metabolism
- 5. Which physicochemical property most significantly affects a drug's renal clearance?**
 - (a) Molecular weight
 - (b) Lipophilicity
 - (c) Ionization at physiological pH
 - (d) Hydrogen bonding capacity
- 6. Which structural modification is most effective in designing long-acting β -adrenergic agonists?**
 - (a) Addition of polar functional groups
 - (b) Extension of alkyl side chains
 - (c) Introduction of bulky substituents on the amine
 - (d) Substitution at the meta position of the aromatic ring
- 7. Which parameter in QSAR measures a drug's electronic effects?**
 - (a) Log P
 - (b) Hammett constant (σ)
 - (c) Steric parameter (E_s)
 - (d) Hydrophobic constant (π)
- 8. Which statement is true for the primary purpose of a prodrug?**
 - A. To improve target specificity
 - B. To bypass the first-pass metabolism
 - C. To increase lipophilicity for better absorption
 - (a) Only A
 - (b) A and B
 - (c) B and C
 - (d) A, B and C
- 9. What type of reaction is commonly used to synthesize esters in prodrug design?**
 - (a) Condensation reaction
 - (b) Hydrolysis
 - (c) Reduction
 - (d) Oxidation
- 10. Which structural feature in sulfonamides contributes to their antibacterial activity?**
 - (a) Primary amine group
 - (b) Sulfonyl group
 - (c) Aromatic ring
 - (d) Electron-withdrawing substituents
- 11. Which of the following chemical modifications increases a drug's selectivity for a specific receptor subtype?**
 - (a) Introduction of rigid conformations
 - (b) Addition of electron-donating groups
 - (c) Replacement of aromatic rings with heterocycles
 - (d) Substitution of halogens on the aromatic ring
- 12. Which structural feature is critical for the activity of quinolone antibiotics?**
 - (a) β -Lactam ring
 - (b) Piperazine ring
 - (c) Fluorine atom at position 6
 - (d) Hydroxyl group at position 3
- 13. Which physicochemical property significantly influences a drug's passive diffusion across membranes?**
 - (a) Molecular weight
 - (b) Lipophilicity
 - (c) Ionization state
 - (d) Both (b) and (c)
- 14. Which synthetic strategy is employed in the preparation of enantiomerically pure drugs?**

- 85. What is the role of the monitor in a clinical trial?**
- (a) To conduct statistical analysis of trial data
 - (b) To verify compliance with the protocol and GCP
 - (c) To approve the marketing of investigational products
 - (d) To develop the clinical trial protocol
- 86. What is the primary purpose of randomization in a clinical trial?**
- (a) To reduce the cost of the trial
 - (b) To ensure equal treatment allocation among investigators
 - (c) To eliminate bias in treatment allocation
 - (d) To reduce the number of participants required
- 87. Which of the following is NOT a responsibility of the Investigator in a clinical trial?**
- (a) Ensuring the safety of participants
 - (b) Obtaining informed consent
 - (c) Managing investigational product supply
 - (d) Approving the final study report
- 88. According to GCP, what should be done in case of an unanticipated serious adverse event?**
- (a) Delay reporting until the end of the trial
 - (b) Report immediately to the sponsor and IRB/IEC
 - (c) Ignore the event if it is unrelated to the drug
 - (d) Modify the protocol without informing regulatory authorities
- 89. Which of the following best describes the function of a Case Report Form (CRF) in a clinical trial?**
- (a) To document adverse drug reactions only
 - (b) To record trial-related data for each participant
 - (c) To communicate trial results to regulatory authorities
 - (d) To serve as a legal agreement between sponsor and investigator
- 90. What is the minimum number of members recommended for an Independent Ethics Committee (IEC)?**
- (a) 3 (b) 10
 - (c) 7 (d) 5
- 91. According to the New Drugs and Clinical Trials Rules, 2019, what is the primary objective of Phase II clinical trials?**
- (a) To determine the pharmacokinetics of a drug
 - (b) To evaluate the effectiveness of a drug for a particular indication
 - (c) To assess long-term safety of the drug
 - (d) To establish market feasibility
- 92. What is the maximum validity period of an Ethics Committee's registration under the New Drugs and Clinical Trials Rules, 2019?**
- (a) 2 years (b) 3 years
 - (c) 5 years (d) 10 years
- 93. Which of the following is NOT required for the registration of a bioequivalence study center?**
- (a) Approval of clinical trial protocol
 - (b) Registration with the Clinical Trial Registry of India
 - (c) Approval of study design by the Ethics Committee
 - (d) Marketing authorization for the drug
- 94. What is the penalty for failing to provide compensation for injury or death during a clinical trial?**
- (a) Warning notice
 - (b) Suspension or cancellation of the clinical trial
 - (c) A fine imposed by the Central Licencing Authority
 - (d) Both (b) and (c)
- 95. What is the time frame for reporting a serious adverse event (SAE) during a clinical trial?**
- (a) 24 hours (b) 72 hours
 - (c) 7 days (d) 14 days
- 96. What type of study does the term "academic clinical trial" refer to?**
- (a) A trial conducted exclusively for regulatory approval
 - (b) A trial involving only new chemical entities
 - (c) A trial conducted for academic or research purposes without marketing intentions
 - (d) A trial focused on bioavailability studies
- 97. What is the primary function of the Drugs Consultative Committee (DCC)?**
- (a) To regulate the import of drugs
 - (b) To ensure uniform administration of the Act across India
 - (c) To grant licenses for drug manufacturing
 - (d) To conduct drug inspections
- 98. Which schedule under the Drugs and Cosmetics Rules prescribes the list of substances to be used only under medical supervision?**
- (a) Schedule M (b) Schedule D

- (c) A number of students has been shortlisted.
- (d) The committee have decided on the new policy.

150. What is the figure of speech in the phrase "Time is a thief"?
- (a) Metaphor
 - (b) Simile
 - (c) Personification
 - (d) Hyperbole

ANSWER KEY

1-d	2-b	3-a	4-b	5-c	6-c	7-b	8-d	9-a	10-b
11-a	12-c	13-d	14-b	15-c	16-d	17-c	18-b	19-a	20-b
21-b	22-d	23-b	24-b	25-c	26-b	27-b	28-c	29-b	30-c
31-a	32-b	33-b	34-a	35-a	36-c	37-b	38-d	39-b	40-b
41-a	42-c	43-d	44-c	45-a	46-b	47-b	48-a	49-a	50-a
51-a	52-b	53-a	54-b	55-d	56-c	57-b	58-c	59-a	60-d
61-c	62-b	63-a	64-b	65-a	66-b	67-b	68-d	69-a	70-c
71-b	72-b	73-b	74-c	75-a	76-b	77-b	78-c	79-c	80-b
81-c	82-c	83-b	84-d	85-b	86-c	87-d	88-b	89-b	90-d
91-b	92-c	93-d	94-d	95-a	96-c	97-b	98-c	99-b	100-a
101-c	102-b	103-a	104-b	105-b	106-c	107-b	108-d	109-a	110-c
111-c	112-b	113-a	114-c	115-b	116-b	117-b	118-c	119-c	120-b
121-d	122-b	123-a	124-b	125-a	126-b	127-c	128-d	129-b	130-a
131-b	132-c	133-c	134-d	135-b	136-b	137-c	138-a	139-b	140-c
141-d	142-c	143-b	144-c	145-d	146-b	147-c	148-a	149-b	150-a

MODEL PAPER - 6

- 1. What is the key structural feature of ACE inhibitors that binds to the active site of angiotensin-converting enzyme?**
 - (a) Sulfhydryl group (-SH)
 - (b) Ester group (-COOR)
 - (c) Aromatic ring system
 - (d) Amine group
- 2. Which structural feature differentiates first-generation cephalosporins from third-generation cephalosporins?**
 - (a) Increased hydrophilicity due to amino groups in the side chain
 - (b) Presence of a β -lactamase-resistant moiety
 - (c) Modification of the dihydrothiazine ring to enhance gram-negative activity
 - (d) Addition of a methyl group at the 7th position
- 3. Which chemical modification increases the lipophilicity of local anesthetics?**
 - (a) Addition of an aromatic ring
 - (b) Methylation of the amine group
 - (c) Saturation of the ester bond
 - (d) Substitution of a hydroxyl group with a keto group
- 4. Which functional group in benzodiazepines is essential for binding to the GABA receptor?**
 - (a) Diazepine ring
 - (b) Electron-withdrawing group at position 7
 - (c) Hydroxyl group at position 3
 - (d) Fluorine substitution at position 2
- 5. What is the role of the piperazine ring in second-generation antihistamines?**
 - (a) Improves selectivity for peripheral H1 receptors
 - (b) Increases blood-brain barrier penetration
 - (c) Enhances metabolism by CYP enzymes
 - (d) Reduces receptor desensitization
- 6. Which chemical feature allows selective serotonin reuptake inhibitors (SSRIs) to block serotonin transporters?**
 - (a) Electron-rich aromatic ring
 - (b) Amine-containing side chains
 - (c) Fluorine substitution on the aromatic ring
 - (d) Ketone group in the side chain
- 7. What structural feature of sulfonamides mimics para-aminobenzoic acid (PABA)?**
 - (a) Sulfonyl group attached to an aromatic ring
 - (b) Keto group attached to a nitrogen atom
 - (c) Hydroxyl group on the aromatic ring
 - (d) Amine group at the para position
- 8. What is the chemical name of metformin?**
 - (a) 1,1-Dimethylbiguanide hydrochloride
 - (b) 1,1-Dimethylguanidine sulfate
 - (c) 2-Hydroxy-1,1-dimethylguanidine
 - (d) 1,1-Dimethylaminoacetamide
- 9. What modification in β -blockers enhances β_1 receptor selectivity?**
 - (a) Ether linkages in the side chain
 - (b) Para substitution on the aromatic ring
 - (c) Hydroxyl group at the meta position
 - (d) Methylation of the amine group
- 10. Which functional group in opioids is crucial for receptor binding and analgesic activity?**
 - (a) Phenolic hydroxyl group
 - (b) Ether group in the ring structure
 - (c) Carboxylic acid group
 - (d) Methyl group on the nitrogen
- 11. Type I-hypersensitivity reactions are mediated predominantly by:**
 - (a) Ig M antibodies
 - (b) Ig G antibodies
 - (c) Ig E antibodies
 - (d) T lymphocytes
- 12. Therapeutic index is:**
 - (a) Maximum non-toxic dose/Maximum effective dose
 - (b) Maximum toxic dose/Minimum effective dose
 - (c) Maximum effective/Minimum non-toxic dose
 - (d) Maximum effective dose/Maximum non-toxic dose
- 13. Reye's syndrome in children seen with administration of:**
 - (a) Paracetamol
 - (b) Aspirin
 - (c) Ibuprofen
 - (d) Indomethacin
- 14. A vitamin that work in reducing bad cholesterol:**
 - (a) Vitamin B₆
 - (b) Vitamin B₃
 - (c) Vitamin B₁₂
 - (d) Vitamin B₂

- (b) DNA polymerase
(c) RNA polymerase
(d) Ligase
- 68. Which of the following techniques is commonly used to assess sterility in vaccine production?**
(a) Polymerase Chain Reaction (PCR)
(b) Membrane filtration method
(c) Mass spectrometry
(d) Flow cytometry
- 69. Which of the following is a key requirement for adjuvants in vaccine formulations?**
(a) High antigenicity
(b) High thermal stability
(c) Short half-life in the body
(d) Low toxicity and high safety profile
- 70. Which of the following is a critical advantage of using yeast-based expression systems for vaccine production?**
(a) High expression levels of recombinant proteins
(b) Ability to produce complex polysaccharides
(c) No need for downstream processing
(d) Direct incorporation of antigens into viral vectors
- 71. What is the role of excipients in vaccine formulations?**
(a) To neutralize the antigen
(b) To enhance the stability and efficacy of the vaccine
(c) To inactivate the pathogen
(d) To reduce the immune response
- 72. Which quality assurance test ensures the immunogenic potency of vaccines?**
(a) Antigenicity test
(b) Stability test
(c) Pyrogenicity test
(d) Neutralization assay
- 73. What is the primary objective of using a 'preventive maintenance' program in GMP?**
(a) To reduce downtime due to equipment failure
(b) To eliminate the need for equipment qualification
(c) To ensure uninterrupted marketing activities
(d) To replace routine cleaning
- 74. What is the key purpose of a Finished Product Specification (FPS) document?**
(a) To list financial costs associated with production
(b) To define the quality attributes of the final drug product
(c) To approve marketing strategies for the product
(d) To determine distribution timelines
- 75. Which of the following is mandatory for GMP-compliant warehouse storage?**
(a) Use of automated robotics for material handling
(b) Controlled temperature and humidity conditions
(c) Open shelving for easy access
(d) Immediate dispatch of received materials
- 76. What is a 'bracketing approach' used for in stability testing under GMP?**
(a) Testing only the smallest and largest pack sizes
(b) Testing products at all time intervals
(c) Eliminating the need for stability studies
(d) Using a single storage condition for all products
- 77. Which of the following is required during validation of computer systems in GMP?**
(a) Stress testing only
(b) Eliminating manual processes entirely
(c) Ensuring the system is used by trained personnel only
(d) Documenting user requirements and test protocols
- 78. In GMP, what is the primary role of an internal audit program?**
(a) To enforce disciplinary actions
(b) To identify gaps and ensure continuous improvement in compliance
(c) To train external inspectors
(d) To reduce the number of documents required
- 79. What is the key role of the facility management in a GLP-compliant laboratory?**
(a) Ensuring financial audits are regularly conducted
(b) Overseeing the training of study sponsors
(c) Maintaining adequate resources and infrastructure to support studies
(d) Writing the study plan for individual experiments

- (c) ARP (d) HTTP
- 141. Which device is responsible for managing data flow between a computer and a network?**
 (a) Switch
 (b) Router
 (c) Network Interface Card (NIC)
 (d) Hub
- 142. What is the function of a firewall in a computer network?**
 (a) To monitor and control incoming and outgoing network traffic
 (b) To encrypt files
 (c) To store data securely
 (d) To increase network speed
- 143. What does DNS stand for in networking?**
 (a) Domain Name System
 (b) Data Network System
 (c) Digital Name System
 (d) Distributed Network System
- 144. Choose the correct sentence:**
 (a) Neither of the candidates are eligible for the post.
 (b) Each of the participants were given a certificate.
 (c) The jury has reached its verdict.
 (d) A herd of cattle was grazing in the field.
- 145. Identify the correct meaning of the idiom "Break the ice":**
 (a) To begin a difficult conversation
 (b) To create tension in a discussion
 (c) To escape an awkward situation
 (d) To criticize someone severely

- 146. Choose the most appropriate synonym for "Evanescent":**
 (a) Eternal (b) Transparent
 (c) Unique (d) Fading
- 147. Select the grammatically correct sentence:**
 (a) She is married to a doctor
 (b) He is addicted with coffee
 (c) I am angry on you
 (d) The book comprises of five chapters
- 148. Which part of the sentence contains an error?**
 "Everyone in the team / are working hard / to achieve their goals."
 (a) Everyone in the team
 (b) Are working hard
 (c) To achieve their goals
 (d) No error
- 149. What is the antonym of "Verbose"?**
 (a) Talkative (b) Concise
 (c) Wordy (d) Prolix
- 150. Choose the sentence that best combines the following two sentences:**
 "The weather was pleasant. We went for a walk."
 (a) Since the weather was pleasant, we went for a walk
 (b) The weather was pleasant; but we went for a walk
 (c) Because the weather was pleasant, so we went for a walk
 (d) The weather being pleasant, we went for a walk

ANSWER KEY

1-a	2-c	3-a	4-b	5-a	6-c	7-d	8-a	9-b	10-a
11-c	12-b	13-b	14-b	15-d	16-d	17-d	18-a	19-b	20-d
21-d	22-a	23-d	24-b	25-b	26-a	27-b	28-a	29-a	30-d
31-c	32-b	33-c	34-d	35-a	36-b	37-a	38-a	39-b	40-a
41-a	42-b	43-b	44-d	45-d	46-c	47-c	48-c	49-a	50-a
51-a	52-b	53-a	54-c	55-d	56-c	57-c	58-c	59-b	60-a
61-b	62-d	63-b	64-c	65-c	66-a	67-c	68-b	69-d	70-a
71-b	72-d	73-a	74-b	75-b	76-a	77-d	78-b	79-c	80-d
81-c	82-a	83-b	84-d	85-b	86-a	87-a	88-d	89-b	90-b
91-a	92-d	93-b	94-d	95-b	96-c	97-b	98-b	99-a	100-a
101-b	102-a	103-d	104-d	105-b	106-a	107-b	108-b	109-d	110-c
111-c	112-c	113-a	114-d	115-c	116-d	117-c	118-c	119-b	120-d
121-b	122-a	123-b	124-c	125-c	126-d	127-b	128-d	129-b	130-b
131-c	132-d	133-d	134-b	135-b	136-d	137-a	138-c	139-b	140-c
141-b	142-a	143-a	144-c	145-a	146-d	147-a	148-b	149-b	150-a

MODEL PAPER - 8

- 1. Which functional group in thiazide diuretics enhances their ability to inhibit the Na⁺/Cl⁻ symporter?**
 - (a) Sulfonamide group (-SO₂NH₂)
 - (b) Carboxylic acid group (-COOH)
 - (c) Amino group (-NH₂)
 - (d) Keto group
- 2. Which structural feature in SSRIs like fluoxetine enhances their selectivity for serotonin transporters?**
 - (a) Hydroxyl group on the side chain
 - (b) Carboxylic acid group at position 2
 - (c) Amino group at position 7
 - (d) Fluorine substitution on the aromatic ring
- 3. What is the primary mechanism of action of aminoglycosides?**
 - (a) Binding to the 50S ribosomal subunit and causing mRNA misreading
 - (b) Disrupting cell membrane integrity
 - (c) Binding to the 30S ribosomal subunit and causing mRNA misreading
 - (d) Blocking peptidoglycan crosslinking
- 4. Which chemical feature of opioids enhances their binding to μ-opioid receptors?**
 - (a) Phenolic hydroxyl group
 - (b) Ether group in the ring structure
 - (c) Carboxylic acid group on the side chain
 - (d) Fluorine atom at position 7
- 5. What is the role of the methyl group substitution on the nitrogen atom in naloxone?**
 - (a) Converts it into an opioid antagonist
 - (b) Enhances receptor binding
 - (c) Reduces CNS side effects
 - (d) Increases metabolic stability
- 6. Which structural feature in proton pump inhibitors (PPIs) like esomeprazole allows their activation in acidic conditions?**
 - (a) Hydroxyl group at position 6
 - (b) Sulfinyl group on the benzimidazole ring
 - (c) Imidazole group on the side chain
 - (d) Fluorine atom at position 7
- 7. Which chemical modification enhances the absorption of prodrugs like enalapril?**
 - (a) Addition of a hydroxyl group
 - (b) Fluorine substitution on the aromatic ring
 - (c) Substitution with a sulfonamide group
 - (d) Esterification of the carboxylic acid group
- 8. What is the chemical mechanism of action of allopurinol in the treatment of gout?**
 - (a) Chelation of uric acid
 - (b) Competitive inhibition of xanthine oxidase
 - (c) Covalent bonding with purines
 - (d) Inhibition of pyrimidine synthesis
- 9. What is the role of the guanidine group in the antihypertensive drug clonidine?**
 - (a) Enhances CNS penetration
 - (b) Reduces metabolism by CYP enzymes
 - (c) Blocks β-adrenergic receptors
 - (d) Binds to α₂-adrenergic receptors
- 10. What chemical property allows amphotericin B to bind to ergosterol in fungal membranes?**
 - (a) Polyene structure with conjugated double bonds
 - (b) Presence of a sulfonamide group
 - (c) Keto group at position 6
 - (d) Hydroxylation of the aromatic ring
- 11. Which is the preferred drug for prophylaxis against malaria in chloroquine-resistant areas?**
 - (a) Chloroquine
 - (b) Primaquine
 - (c) Doxycycline
 - (d) Quinine
- 12. Which of the following drugs is a competitive antagonist of aldosterone?**
 - (a) Furosemide
 - (b) Hydrochlorothiazide
 - (c) Mannitol
 - (d) Spironolactone
- 13. Which drug is used as a premedication for anesthesia to reduce secretions?**
 - (a) Atropine
 - (b) Midazolam
 - (c) Fentanyl
 - (d) Ketamine
- 14. Which of the following drugs is an antiplatelet agent that inhibits ADP-mediated platelet aggregation?**
 - (a) Aspirin
 - (b) Clopidogrel
 - (c) Warfarin
 - (d) Heparin
- 15. Which antitubercular drug is associated with optic neuritis as a side effect?**
 - (a) Rifampin
 - (b) Isoniazid

- (c) List of drugs that are exempted from the provisions of import
(d) Guidelines for Good Laboratory Practices
- 98. The penalty for the manufacture of adulterated drugs is prescribed under:**
(a) Section 17A (b) Section 27(b)
(c) Section 26A (d) Section 28
- 99. Under the Drugs and Cosmetics Rules, which schedule deals with the requirements for Good Laboratory Practices (GLP)?**
(a) Schedule M (b) Schedule T
(c) Schedule Q (d) Schedule L1
- 100. The main aim of the Drugs and Cosmetics Act, 1940, and Rules 1945 is to:**
(a) Ensure drug exports meet international standards
(b) Maintain the import, manufacture, distribution, and sale of drugs and cosmetics
(c) Regulate the price of all drugs in India
(d) Promote luxury cosmetic products
- 101. The Central Government's power to apply the Act in relation to Jammu and Kashmir was included after which amendment?**
(a) Drugs and Cosmetics (Amendment) Act, 1972
(b) Drugs and Cosmetics (Amendment) Act, 1988
(c) Drugs and Magic Remedies Act, 1954
(d) Drugs (Price Control) Act, 1985
- 102. Schedules M and Y were established in:**
(a) 1982 (b) 1945
(c) 1972 (d) 1988
- 103. Under the Drugs and Cosmetics Act, Ayurvedic, Siddha, and Unani medicines described as patent or proprietary formulations:**
(a) Must include all ingredients listed in the First Schedule
(b) Are regulated under the same rules as allopathic drugs
(c) Cannot be marketed under a registered trademark
(d) Can include only ingredients from the authoritative books listed in the First Schedule
- 104. A drug is deemed misbranded if:**
(a) It contains contaminants affecting its sterility
(b) It is improperly labeled or accompanied by misleading claims
(c) It fails to meet potency requirements
(d) It is not covered under the pharmacopoeia
- 105. Patent or proprietary medicine excludes:**
(a) Any formulation mentioned in the First Schedule of the Act
(b) Ayurvedic formulations marketed under trademarks
(c) Medicines for external use not listed in the pharmacopoeia
(d) Drugs presented in ready-to-administer forms
- 106. Under the definition of a "drug," empty gelatin capsules are:**
(a) Excluded from the definition
(b) Included as a drug component
(c) Regulated under food safety laws
(d) Considered cosmetics
- 107. A drug is deemed adulterated if its container:**
(a) Is made of permissible materials
(b) Is properly labelled
(c) Is composed of poisonous or deleterious substances
(d) Meets pharmacopoeial standards
- 108. The schedules of the Drugs and Cosmetics Rules include Proforma for application for licenses and renewals under which appendix?**
(a) Appendix I (b) Appendix II
(c) Appendix III (d) Appendix A
- 109. The Drugs and Cosmetics Rules consist of how many chapters?**
(a) 15 (b) 16
(c) 6 (d) 20
- 110. The Drugs Consultative Committee (DCC) is primarily responsible for:**
(a) Ensuring uniformity in the administration of the Act across states
(b) Reviewing clinical trial reports
(c) Issuing licenses for new drug manufacturing
(d) Monitoring drug prices
- 111. Schedule R under the Drugs and Cosmetics Rules refers to:**
(a) Standards for condoms
(b) Standards for disinfectant fluids
(c) Standards for ophthalmic preparations
(d) Good Manufacturing Practices

- (a) Higher storage capacity
- (b) Lower cost
- (c) Faster data access speed
- (d) Uses optical storage technology

142. What is the primary role of a router in a network?

- (a) Amplify signals
- (b) Connect different networks
- (c) Store data temporarily
- (d) Encrypt data packets

143. Which of the following is an advantage of a star topology?

- (a) Easy to install and expand
- (b) High cost of implementation
- (c) Failure of one device affects the entire network
- (d) No redundancy

144. Choose the correct sentence:

- (a) He do not likes apples
- (b) He does not likes apples
- (c) He does not like apples
- (d) He do not like apples

145. Identify the meaning of the idiom: "Break the ice."

- (a) To start a conversation in a social setting.
- (b) To damage something accidentally.
- (c) To reveal a secret.
- (d) To solve a problem.

146. Which of the following is a synonym for "meticulous"?

- (a) Careless
- (b) Careful
- (c) Ignorant
- (d) Generous

147. Fill in the blank: "Neither of the players _____ happy with the decision."

- (a) is
- (b) are
- (c) were
- (d) have been

148. Which of the following sentences is in the passive voice?

- (a) She is writing a book.
- (b) The book is being written by her.
- (c) She will write a book.
- (d) She writes a book.

149. Choose the word that is spelled correctly:

- (a) Accomodation
- (b) Acommodation
- (c) Accommodation
- (d) Accomodation

150. What is the superlative form of "bad"?

- (a) Badder
- (b) Worse
- (c) Baddest
- (d) Worst

ANSWER KEY

1-a	2-d	3-c	4-a	5-a	6-b	7-d	8-b	9-d	10-a
11-c	12-d	13-a	14-b	15-c	16-a	17-b	18-b	19-c	20-b
21-b	22-d	23-a	24-a	25-a	26-c	27-b	28-c	29-d	30-d
31-b	32-a	33-d	34-a	35-c	36-b	37-c	38-c	39-a	40-c
41-b	42-b	43-a	44-d	45-b	46-b	47-b	48-a	49-d	50-c
51-a	52-d	53-c	54-d	55-a	56-b	57-a	58-b	59-b	60-a
61-b	62-a	63-b	64-b	65-d	66-b	67-d	68-d	69-b	70-a
71-b	72-c	73-b	74-a	75-d	76-b	77-a	78-b	79-c	80-b
81-c	82-d	83-a	84-b	85-b	86-c	87-b	88-a	89-d	90-b
91-c	92-b	93-d	94-a	95-b	96-a	97-c	98-b	99-d	100-b
101-a	102-d	103-d	104-b	105-a	106-b	107-c	108-d	109-c	110-a
111-a	112-c	113-b	114-a	115-b	116-a	117-b	118-c	119-b	120-d
121-a	122-c	123-c	124-b	125-a	126-b	127-c	128-a	129-a	130-c
131-b	132-c	133-c	134-a	135-b	136-d	137-c	138-b	139-a	140-c
141-c	142-b	143-a	144-c	145-a	146-b	147-a	148-b	149-c	150-d

MODEL PAPER - 10

- 1. What is a potential drawback of micronizing drug powders?**
 - (a) Enhanced solubility
 - (b) Increased air adsorption
 - (c) Decreased static charges
 - (d) Uniform content across dosage forms
- 2. Why are dissolution tests significant in drug development?**
 - (a) To assess pharmacokinetics in vivo
 - (b) To predict in vitro drug metabolism
 - (c) To establish a relationship between in vitro and in vivo results
 - (d) To calculate static charge build-up in powder formulations
- 3. Which of the following factors primarily affects the absorption of weak acidic or basic drugs?**
 - (a) Their dissociation constant (pKa) and the pH at the absorption site
 - (b) Their particle size and density
 - (c) Their rate of hydrolysis
 - (d) Their crystalline structure
- 4. Why is the octanol-water partition coefficient widely used in formulation studies?**
 - (a) It determines the molecular weight of drugs.
 - (b) It predicts the solubility of drugs in hydrophilic excipients.
 - (c) It indicates the lipophilicity of drugs, affecting membrane permeability.
 - (d) It measures the dissociation constant of ionizable drugs.
- 5. Which antioxidant is particularly used in oleaginous (oily) preparations?**
 - (a) Ascorbic acid
 - (b) Alpha-tocopherol
 - (c) Sodium bisulfite
 - (d) Sodium citrate
- 6. Which of the following is an example of an emulsifying agent**
 - (a) Cetomacrogol
 - (b) Glycerin
 - (c) FD&C Blue No. 2
 - (d) Mineral oil
- 7. Which method uses light scattering to determine particle size?**
 - (a) Microscopy
 - (b) Laser holography
 - (c) Light energy diffraction
 - (d) Sedimentation rate
- 8. Which particle size range is ideal for powders intended for inhalation to reach the respiratory tract?**
 - (a) 0.5 to 10 μm
 - (b) 50 to 100 μm
 - (c) 10 to 50 μm
 - (d) 1 to 5 μm
- 9. What is the recommended method to blend powders that form eutectic mixtures?**
 - (a) Use a mortar and pestle
 - (b) Mix with a bulky powder adsorbent
 - (c) Perform heavy trituration
 - (d) Sift through a fine mesh
- 10. Which of the following is an example of a deliquescent powder?**
 - (a) Sodium chloride
 - (b) Talc
 - (c) Light magnesium carbonate
 - (d) Calcium bromide
- 11. What is the term for the undesirable separation of powder components in a blend?**
 - (a) Trituration
 - (b) Segregation
 - (c) Levigation
 - (d) Homogenization
- 12. What is the typical moisture content in a soft gelatin capsule?**
 - (a) 0-2%
 - (b) 6-10%
 - (c) 10-15%
 - (d) 20-25%
- 13. According to the USP weight variation test, what is the acceptable individual weight range for a capsule in the initial test, based on the average weight?**
 - (a) 85% to 115%
 - (b) 90% to 110%
 - (c) 95% to 105%
 - (d) 80% to 120%
- 14. Which process involves rapid evaporation of solvent for microencapsulation?**
 - (a) Spray drying
 - (b) Pan coating
 - (c) Air suspension
 - (d) Multiorifice centrifugal
- 15. Which factor influences the choice of coating material?**
 - (a) Compatibility with core material

- (c) The Pharmacy Council of India (PCI)
(d) State Licensing Authorities
- 100. Under the Drugs and Cosmetics Act, mercury ointment can only be imported if:**
- (a) It meets Indian Pharmacopoeia standards for mercury content
(b) It is sold under a proprietary brand name
(c) It is used exclusively for veterinary purposes
(d) It is manufactured under GMP-certified facilities
- 101. Under the Act, sub-standard bandages supplied to hospitals can be prosecuted if:**
- (a) They are labeled as high-quality products
(b) They do not meet the ISI (Indian Standard Institute) standards
(c) They were sold without a prescription
(d) They were imported under a different trademark
- 102. What must be displayed on the label of imported drugs or proprietary medicines?**
- (a) Only the active ingredients
(b) The full formula and list of active ingredients with quantities
(c) The manufacturing date only
(d) Details of the importer only
- 103. What is the provision for importing drugs for examination, test, or analysis?**
- (a) No license is required
(b) Only Schedule X drugs can be imported
(c) Import is completely prohibited
(d) A special permit must be obtained
- 104. Under which form can drugs be imported for examination, test, or analysis?**
- (a) Form 9 (b) Form 10
(c) Form 11 (d) Form 12
- 105. What is the responsibility of an authorized inspector regarding imported drugs for examination?**
- (a) Monitor the import process only
(b) Enter premises and inspect imported substances
(c) Approve the substances without inspection
(d) Oversee the sale of imported drugs
- 106. Under what conditions can drugs for personal use be imported in small quantities?**
- (a) Must be a part of the passenger's luggage
(b) Should be declared to the Customs Collector, if directed
(c) Quantity should not exceed 100 average doses
(d) Both (a) and (b)
- 107. What form is required to apply for the import of drugs for personal use that are not part of a passenger's luggage?**
- (a) Form 9 (b) Form 12A
(c) Form 11 (d) Form 36
- 108. What authority checks whether drugs comply with the Act and Rules for import?**
- (a) Licensing Authority
(b) Central Drug Standard Control Organization (CDSCO)
(c) Director of the appointed laboratory
(d) Customs Collector
- 109. What action may the Customs Collector take if a drug consignment is found non-compliant?**
- (a) Detain the consignment until an analysis report is received
(b) Issue a temporary permit for sale
(c) Destroy the consignment immediately
(d) Transfer the consignment to the Licensing Authority
- 110. What happens if the analysis report finds the drug non-standard or in breach of the rules?**
- (a) The drug is destroyed by Customs
(b) The importer must export the consignment back within two months
(c) The Licensing Authority automatically cancels the import permit
(d) The Customs Collector confiscates the drugs permanently
- 111. What is the maximum fine for the first conviction of importing drugs without a license?**
- (a) ₹500 (b) ₹1,000
(c) ₹5,000 (d) ₹10,000
- 112. Which action leads to a penalty of imprisonment up to 5 years and a fine of ₹10,000 upon subsequent conviction?**
- (a) Importing adulterated or spurious drugs
(b) Importing drugs without a license
(c) Importing drugs not packed or labelled as prescribed
(d) All of the above
- 113. Which of the following is NOT considered an offense under the Act?**

- (a) impressed (b) depress
- (c) impress (d) impressing

146. Which of the following is an example of a simile?

- (a) Life is a rollercoaster
- (b) He is as brave as a lion
- (c) The sun smiled at the earth
- (d) Time flew away

147. Which word is spelled incorrectly?

- (a) Guarantee (b) Acquaintance
- (c) Priviledge (d) Rehearsal

148. Choose the sentence that uses the correct preposition:

- (a) She is good in mathematics
- (b) She is good at mathematics
- (c) She is good on mathematics
- (d) She is good for mathematics

149. What is the meaning of the idiom 'burning the midnight oil'?

- (a) Wasting time
- (b) Working late into the night
- (c) Relaxing after work
- (d) Ignoring responsibilities

150. Choose the correctly punctuated sentence:

- (a) My brother who lives in New York is coming to visit
- (b) My brother, who lives in New York is coming to visit
- (c) My brother who lives in New York, is coming to visit
- (d) My brother, who lives in New York, is coming to visit

ANSWER KEY

1-b	2-c	3-a	4-c	5-b	6-a	7-c	8-d	9-b	10-d
11-b	12-b	13-b	14-a	15-d	16-b	17-d	18-b	19-d	20-b
21-a	22-d	23-a	24-b	25-a	26-d	27-a	28-c	29-a	30-c
31-a	32-b	33-a	34-b	35-a	36-a	37-d	38-b	39-a	40-c
41-d	42-a	43-c	44-b	45-b	46-d	47-b	48-c	49-b	50-a
51-b	52-d	53-b	54-d	55-a	56-b	57-a	58-a	59-b	60-b
61-a	62-b	63-b	64-c	65-d	66-b	67-c	68-b	69-b	70-b
71-a	72-b	73-d	74-b	75-a	76-a	77-b	78-a	79-b	80-c
81-d	82-b	83-a	84-b	85-d	86-a	87-b	88-d	89-b	90-b
91-a	92-a	93-b	94-c	95-b	96-a	97-b	98-b	99-a	100-a
101-b	102-b	103-d	104-c	105-b	106-d	107-b	108-b	109-a	110-b
111-a	112-d	113-a	114-a	115-c	116-a	117-b	118-d	119-b	120-b
121-c	122-b	123-c	124-c	125-b	126-b	127-c	128-d	129-b	130-d
131-a	132-b	133-c	134-b	135-c	136-a	137-b	138-c	139-a	140-c
141-b	142-a	143-b	144-b	145-a	146-b	147-c	148-b	149-b	150-d

MODEL PAPER - 13

- 1. Which structural feature in rosuvastatin enhances its hydrophilicity and selectivity for hepatic HMG-CoA reductase?**
 - (a) Sulfonamide group
 - (b) Pyrimidinyl group
 - (c) Fluorophenyl group
 - (d) Hydroxyl group at position 7
- 2. What is the structural feature in aripiprazole that allows it to act as a partial agonist at dopamine D2 receptors?**
 - (a) Quinolinone ring
 - (b) Imidazole group
 - (c) Sulfonamide group
 - (d) Carboxylic acid group
- 3. Which structural feature in levetiracetam contributes to its antiepileptic activity?**
 - (a) Fluorine substitution
 - (b) Hydroxyl group at position 5
 - (c) Pyrrolidone ring
 - (d) Sulfonyl group in the side chain
- 4. Which chemical group in dapagliflozin facilitates its inhibition of the sodium-glucose co-transporter 2 (SGLT2)?**
 - (a) C-glucoside structure
 - (b) Hydroxyl group at position 4
 - (c) Sulfonamide group
 - (d) Fluorine substitution
- 5. What is the structural feature of cisatracurium that reduces its dependence on renal elimination?**
 - (a) Isoquinoline core
 - (b) Ester groups
 - (c) Fluorine atom at position 6
 - (d) Sulfonamide group
- 6. Which functional group in rivaroxaban allows it to inhibit Factor Xa?**
 - (a) Oxazolidinone core
 - (b) Sulfonamide group
 - (c) Fluorine substitution on the aromatic ring
 - (d) Hydroxyl group at position 3
- 7. What is the mechanism of action of dabigatran in anticoagulation therapy?**
 - (a) Inhibition of Factor Xa
 - (b) Enhancement of antithrombin activity
 - (c) Prevention of platelet aggregation
 - (d) Direct inhibition of thrombin
- 8. Which structural feature in olmesartan enhances its binding to angiotensin II receptors?**
 - (a) Tetrazole ring
 - (b) Hydroxyl group at position 3
 - (c) Fluorine substitution
 - (d) Sulfonamide group
- 9. Which chemical feature in sofosbuvir allows it to act as a prodrug for hepatitis C treatment?**
 - (a) Sulfonyl group in the side chain
 - (b) Phosphoramidate linkage
 - (c) Fluorine atom on the pyrimidine ring
 - (d) Hydroxyl group at position 3
- 10. What is the structural feature in etoposide that allows it to stabilize the DNA-topoisomerase II complex?**
 - (a) Podophyllotoxin core
 - (b) Sulfonamide group
 - (c) Fluorine atom at position 7
 - (d) Hydroxyl group at position 4
- 11. Which of the following drugs is a synthetic analog of prostacyclin used in pulmonary arterial hypertension?**
 - (a) Bosentan
 - (b) Sildenafil
 - (c) Tadalafil
 - (d) Epoprostenol
- 12. Which of the following drugs inhibits sodium-glucose co-transporter-2 (SGLT2)?**
 - (a) Metformin
 - (b) Pioglitazone
 - (c) Canagliflozin
 - (d) Glipizide
- 13. Which drug is used as a prophylactic against Pneumocystis jirovecii pneumonia (PCP) in immunocompromised patients?**
 - (a) Amphotericin B
 - (b) Trimethoprim-sulfamethoxazole
 - (c) Fluconazole
 - (d) Clindamycin
- 14. Which drug inhibits xanthine oxidase and is used in chronic gout management?**
 - (a) Allopurinol
 - (b) Colchicine
 - (c) Probenecid
 - (d) Indomethacin
- 15. Which of the following drugs is a dopamine agonist used in Parkinson's disease?**
 - (a) Levodopa
 - (b) Bromocriptine
 - (c) Entacapone
 - (d) Selegiline

- (b) To evaluate and document adverse events and ensure ongoing participant safety
 (c) To replace the Investigator's Brochure
 (d) To track participant recruitment numbers
- 90. Which of the following is an example of indirect participant data collected during a trial?**
 (a) Vital signs recorded during visits
 (b) Lab test results submitted by external facilities
 (c) Participant-reported outcomes via electronic diaries
 (d) Investigational product dispensing logs
- 91. What is the purpose of "Good Documentation Practices (GDP)" in clinical trials?**
 (a) To ensure accurate, complete, and traceable trial records
 (b) To outline the ethical guidelines for clinical trials
 (c) To standardize trial participant recruitment processes
 (d) To manage trial finances effectively
- 92. What is a "non-randomized trial"?**
 (a) A trial where participants are assigned to treatments without randomization
 (b) A trial where all participants receive the same treatment
 (c) A trial that does not use a control group
 (d) A trial that excludes any blinding procedures
- 93. What is the primary goal of "feasibility studies" in clinical trials?**
 (a) To determine the cost of the trial
 (b) To evaluate the long-term safety of a drug
 (c) To assess the logistical and operational feasibility of a trial
 (d) To finalize the marketing strategy for the drug
- 94. What is "risk minimization" in clinical trial management?**
 (a) A strategy to reduce trial costs
 (b) An approach to mitigate potential risks to participants and data integrity
 (c) A process to reduce the number of trial participants
 (d) A method to avoid regulatory inspections
- 95. What is "population pharmacokinetics" in the context of clinical trials?**
 (a) A study of drug interactions in a small group of individuals
 (b) A technique to evaluate drug efficacy in rare diseases
 (c) A study focused only on paediatric populations
 (d) A method to study drug behavior across diverse populations
- 96. What is the significance of "adverse event reporting timelines" in clinical trials?**
 (a) To delay the reporting of minor side effects
 (b) To ensure timely communication of adverse events to stakeholders
 (c) To provide a framework for publishing trial results
 (d) To establish long-term follow-up procedures
- 97. Which of the following conditions defines a spurious drug?**
 (a) The drug contains a permissible coloring agent
 (b) The drug is imported under a name belonging to another drug
 (c) The drug is labelled according to pharmacopoeial standards
 (d) The drug is prepared under sanitary conditions
- 98. What is the main objective of the Drugs and Cosmetics Act?**
 (a) Ensuring high standards for medical treatment through control of drugs and cosmetics
 (b) Regulating drug prices across India
 (c) Promoting Ayurvedic and Siddha medicines over allopathic drugs
 (d) Encouraging import of drugs to increase competition
- 99. Appendix IV in the Drugs and Cosmetics Rules is related to:**
 (a) Patient consent forms
 (b) Marketing of new drugs
 (c) Standards for clinical trial reports
 (d) Format for long-term toxicity studies
- 100. Schedule N under the Drugs and Cosmetics Rules pertains to:**
 (a) Good Manufacturing Practices (GMP)
 (b) List of minimum equipment for efficient running of a pharmacy
 (c) List of substances under medical supervision
 (d) List of diseases prohibited from making curative claims

148. Fill in the blank with the appropriate conjunction: "He failed ___ he worked hard."

- (a) because (b) although
(c) unless (d) or

149. What does the idiom "beat around the bush" mean?

- (a) To avoid the main topic
(b) To be very direct

- (c) To create a problem
(d) To exaggerate an issue

150. Select the grammatically correct sentence.

- (a) Everyone are invited to the party.
(b) Neither of the books is available in the store.
(c) Each of the players have done well.
(d) There is many reasons to explain this.

ANSWER KEY

1-b	2-a	3-c	4-a	5-b	6-a	7-d	8-a	9-b	10-a
11-d	12-c	13-b	14-a	15-b	16-b	17-a	18-c	19-a	20-c
21-c	22-c	23-b	24-c	25-b	26-c	27-a	28-b	29-a	30-b
31-b	32-a	33-d	34-b	35-a	36-a	37-d	38-a	39-a	40-c
41-a	42-b	43-d	44-b	45-a	46-b	47-c	48-d	49-a	50-c
51-c	52-c	53-b	54-a	55-b	56-c	57-a	58-b	59-a	60-b
61-c	62-b	63-c	64-b	65-b	66-c	67-b	68-b	69-a	70-c
71-b	72-c	73-a	74-b	75-d	76-b	77-d	78-b	79-c	80-b
81-a	82-d	83-b	84-a	85-b	86-d	87-a	88-a	89-b	90-b
91-a	92-a	93-c	94-b	95-d	96-b	97-b	98-a	99-d	100-b
101-b	102-c	103-d	104-c	105-c	106-a	107-b	108-a	109-a	110-b
111-b	112-a	113-b	114-a	115-b	116-d	117-a	118-a	119-c	120-b
121-a	122-c	123-c	124-b	125-b	126-a	127-c	128-b	129-a	130-c
131-a	132-b	133-d	134-c	135-b	136-a	137-b	138-d	139-b	140-b
141-d	142-c	143-b	144-a	145-b	146-b	147-a	148-b	149-a	150-b

MODEL PAPER - 14

- 1. Which structural feature in erlotinib allows it to inhibit the epidermal growth factor receptor (EGFR)?**
 - (a) Quinazoline core
 - (b) Imidazole ring
 - (c) Hydroxyl group at position 4
 - (d) Fluorine atom on the aromatic ring
- 2. Which functional group in pregabalin contributes to its activity as a calcium channel modulator?**
 - (a) Aminobutyric acid structure
 - (b) Sulfonyl group in the side chain
 - (c) Fluorine substitution at position 6
 - (d) Hydroxyl group at position 3
- 3. Which structural feature in bortezomib allows it to inhibit proteasome activity?**
 - (a) Imidazole ring
 - (b) Boronic acid group
 - (c) Keto group at position 5
 - (d) Hydroxyl group on the aromatic ring
- 4. What is the structural feature in pioglitazone that activates PPAR- γ receptors?**
 - (a) Sulfonamide group
 - (b) Hydroxyl group at position 4
 - (c) Fluorine atom at position 5
 - (d) Thiazolidinedione ring
- 5. What is the mechanism of action of osimertinib in cancer therapy?**
 - (a) Irreversible inhibition of mutant EGFR
 - (b) Inhibition of topoisomerase I
 - (c) Blocking VEGF receptor signalling
 - (d) Activation of PPAR- γ
- 6. Which structural feature in mebendazole allows it to bind to tubulin in helminths?**
 - (a) Benzimidazole core
 - (b) Imidazole group
 - (c) Fluorine substitution on the aromatic ring
 - (d) Hydroxyl group at position 3
- 7. Which chemical feature in deferasirox allows it to act as an iron chelator?**
 - (a) Sulfonamide group
 - (b) Hydroxyl group at position 5
 - (c) Tridentate ligand structure
 - (d) Fluorine atom at position 6
- 8. What is the structural feature in bisphosphonates like alendronate that inhibits osteoclast activity?**
 - (a) Phosphonate groups
 - (b) Hydroxyl group at position 3
 - (c) Sulfonyl group in the side chain
 - (d) Imidazole ring
- 9. Which structural feature in bosentan allows it to block endothelin receptors?**
 - (a) Sulfonamide group
 - (b) Diaryl-substituted pyrimidine core
 - (c) Hydroxyl group at position 4
 - (d) Fluorine atom at position 5
- 10. Which chemical modification in travoprost enhances its affinity for prostaglandin F receptors?**
 - (a) Isopropyl ester group
 - (b) Fluorine substitution at position 6
 - (c) Hydroxyl group at position 3
 - (d) Sulfonamide group
- 11. Which of the following drugs is an antagonist of the interleukin-6 receptor used in rheumatoid arthritis?**
 - (a) Etanercept
 - (b) Tocilizumab
 - (c) Adalimumab
 - (d) Infliximab
- 12. Which drug is used for the treatment of narcolepsy and acts as a central nervous system stimulant?**
 - (a) Methylphenidate
 - (b) Modafinil
 - (c) Amphetamine
 - (d) All of the above
- 13. Which of the following is a potassium channel opener used in the treatment of severe hypertension?**
 - (a) Minoxidil
 - (b) Hydralazine
 - (c) Prazosin
 - (d) Methyldopa
- 14. Which of the following drugs inhibits the hepatitis C NS5B RNA-dependent RNA polymerase?**
 - (a) Sofosbuvir
 - (b) Ribavirin
 - (c) Tenofovir
 - (d) Lamivudine
- 15. Which of the following drugs is a monoclonal antibody that binds to vascular endothelial growth factor (VEGF)?**
 - (a) Trastuzumab
 - (b) Rituximab
 - (c) Bevacizumab
 - (d) Cetuximab

- (d) Potassium ferricyanide solution
- 61. What is the purpose of neutralizing hydrolysates during dextran preparation?**
- (a) To stabilize molecular weight
(b) To remove excess salts
(c) To reduce osmotic pressure
(d) To improve solubility
- 62. What is a disadvantage of dextran molecules with a molecular weight below 60,000?**
- (a) They cause rouleaux formation
(b) They are rapidly excreted in the urine
(c) They interfere with blood viscosity
(d) They are prone to bacterial contamination
- 63. Which method is commonly used for reducing dextran molecular weight and viscosity during production?**
- (a) Seeding the fermenter
(b) Ultrasonic disintegration
(c) Acid hydrolysis
(d) Fractional precipitation
- 64. What is the significance of the 1963 British Pharmacopoeia standard for Dextran 150?**
- (a) Introduced low molecular weight dextran
(b) Provided longer plasma expansion effects
(c) Prevented rouleaux formation in blood vessels
(d) Eliminated production of high-molecular-weight dextran
- 65. What is a key drawback of dextran molecules exceeding 250,000 molecular weight?**
- (a) High viscosity interferes with plasma tests
(b) Leads to severe osmotic pressure
(c) Causes allergic reactions and renal damage
(d) Decreases blood volume
- 66. What are the contaminants commonly removed during dextran purification?**
- (a) Reducing sugars and salts
(b) Fructose and phosphates
(c) Proteins and ions
(d) Salts and cellulose derivatives
- 67. Which assay is used to evaluate the thermal stability of vaccines?**
- (a) Differential Scanning Calorimetry (DSC)
(b) ELISA
(c) Western blotting
(d) Agglutination assay
- 68. Which of the following is a characteristic of virosome-based vaccines?**
- (a) They are inactivated vaccines.
(b) They mimic the structure of viruses without genetic material.
(c) They are produced using plant-based systems.
(d) They do not require adjuvants.
- 69. Which vaccine component can reduce oxidative stress during storage?**
- (a) Preservatives
(b) Stabilizers
(c) Antioxidants
(d) Adjuvants
- 70. Which statistical test is commonly used to assess the consistency of vaccine batches?**
- (a) Chi-square test
(b) Analysis of Variance (ANOVA)
(c) Paired t-test
(d) Kaplan-Meier analysis
- 71. What is the function of polysorbate 80 in vaccine formulations?**
- (a) It acts as a preservative.
(b) It stabilizes lipid emulsions.
(c) It prevents protein aggregation.
(d) It enhances antigen solubility.
- 72. Which method is used to quantify viral particles in vaccine production?**
- (a) PCR
(b) Plaque-forming unit assay
(c) Flow cytometry
(d) Spectrophotometry
- 73. Which of the following ensures the sterility of equipment used in aseptic manufacturing?**
- (a) Routine maintenance
(b) Batch release testing
(c) Environmental monitoring only
(d) Sterilization-in-place (SIP) systems
- 74. What is the main purpose of container-closure integrity testing (CCIT) in sterile products?**
- (a) To evaluate packaging appearance
(b) To confirm that the container maintains sterility and prevents contamination
(c) To reduce the cost of packaging
(d) To test product stability
- 75. What is the purpose of a Validation Master Plan (VMP) in GMP?**

147. Select the correct sentence in the active voice.

- (a) The cake was eaten by the children
- (b) The cake is eaten by the children
- (c) The children ate the cake
- (d) The cake had been eaten by the children

148. Fill in the blank with the correct article:

"He bought ___ hourglass as a gift."

- (a) a
- (b) an
- (c) the
- (d) no article

149. Choose the sentence with proper subject-verb agreement.

- (a) Each of the students were given a book.
- (b) The team is ready for the match.
- (c) The books on the table is mine.
- (d) The players has started the game.

150. Identify the part of speech of the

underlined word: "He writes very neatly."

- (a) Adjective
- (b) Verb
- (c) Adverb
- (d) Pronoun

ANSWER KEY

1-a	2-a	3-b	4-d	5-a	6-a	7-c	8-a	9-b	10-a
11-b	12-d	13-a	14-a	15-c	16-c	17-d	18-b	19-c	20-d
21-d	22-c	23-b	24-c	25-b	26-b	27-b	28-b	29-d	30-a
31-a	32-b	33-b	34-a	35-a	36-c	37-d	38-d	39-d	40-d
41-d	42-d	43-a	44-b	45-b	46-c	47-b	48-d	49-b	50-d
51-c	52-b	53-b	54-b	55-a	56-d	57-a	58-b	59-b	60-a
61-c	62-b	63-c	64-b	65-c	66-b	67-a	68-b	69-c	70-b
71-c	72-b	73-d	74-b	75-a	76-b	77-b	78-a	79-b	80-d
81-a	82-b	83-d	84-b	85-b	86-d	87-b	88-c	89-b	90-b
91-a	92-a	93-c	94-b	95-a	96-b	97-c	98-b	99-a	100-b
101-b	102-d	103-c	104-a	105-a	106-b	107-c	108-c	109-d	110-b
111-d	112-a	113-c	114-a	115-b	116-b	117-d	118-b	119-d	120-a
121-b	122-c	123-a	124-c	125-c	126-c	127-b	128-b	129-a	130-c
131-b	132-d	133-c	134-a	135-c	136-b	137-b	138-c	139-b	140-b
141-d	142-a	143-b	144-b	145-a	146-b	147-c	148-b	149-b	150-c

MODEL PAPER - 17

- Which functional group in safinamide contributes to its dual mechanism of MAO-B inhibition and glutamate release modulation?**
 - α -Aminamide moiety
 - Fluorine atom at position 6
 - Hydroxyl group at position 4
 - Sulfonyl group in the side chain
- Which structural feature in evolocumab enables it to lower LDL cholesterol levels?**
 - Sulfonyl group in the side chain
 - Fully human monoclonal antibody structure
 - Imidazole group at position 3
 - Fluorine atom at position 5
- What is the key functional group in baloxavir marboxil that enables its inhibition of the influenza cap-dependent endonuclease?**
 - Fluorine substitution at position 6
 - Sulfonamide group in the side chain
 - Hydroxyl group at position 3
 - Dioxaborolane moiety
- Which chemical modification in pemigatinib increases its selectivity for FGFR1, FGFR2, and FGFR3 kinases?**
 - Quinazoline core
 - Fluorine atom at position 7
 - Hydroxyl group at position 4
 - Sulfonyl group in the side chain
- Which structural feature in selinexor allows it to inhibit nuclear export in cancer cells?**
 - Fluorine substitution at position 6
 - Hydroxyl group at position 3
 - Sulfonyl group in the side chain
 - Triazole ketone structure
- Which functional group in selezipag contributes to its activity as a prostacyclin receptor agonist?**
 - Fluorine atom at position 7
 - Hydroxyl group at position 5
 - Benzimidazole core
 - Sulfonamide group in the side chain
- What is the primary chemical feature in brexpiprazole that differentiates it from aripiprazole?**
 - Extended side chain with an ether oxygen
 - Fluorine substitution at position 6
 - Hydroxyl group at position 4
 - Sulfonyl group in the side chain
- Which functional group in bictegravir allows it to inhibit HIV integrase?**
 - Fluorine atom at position 7
 - Hydroxyl group at position 5
 - Sulfonyl group in the side chain
 - Diketo acid moiety
- Which structural feature in zanubrutinib enhances its selectivity for Bruton's tyrosine kinase (BTK)?**
 - Pyrimidine core
 - Fluorine substitution at position 6
 - Hydroxyl group at position 3
 - Sulfonyl group in the side chain
- Which chemical property in fostemsavir allows it to act as an HIV-1 attachment inhibitor?**
 - Prodrug ester group
 - Fluorine atom at position 6
 - Hydroxyl group at position 3
 - Sulfonyl group in the side chain
- Which of the following drugs is an endothelin receptor antagonist used in pulmonary arterial hypertension?**
 - Bosentan
 - Ambrisentan
 - Sildenafil
 - Both (a) and (b)
- Which of the following drugs is a calcineurin inhibitor used in organ transplantation to prevent rejection?**
 - Sirolimus
 - Mycophenolate mofetil
 - Cyclosporine
 - Azathioprine
- Which of the following is a selective estrogen receptor modulator (SERM) used for osteoporosis?**
 - Raloxifene
 - Tamoxifen
 - Clomiphene
 - Anastrozole
- Which of the following drugs is used as an antidote for benzodiazepine overdose?**
 - Naloxone
 - Flumazenil
 - Atropine
 - N-acetylcysteine
- Which of the following drugs is an irreversible proteasome inhibitor used in**

- (c) Limiting personnel involvement in the study
- (d) Randomization of study participants
- 80. In GLP-compliant studies, why is it essential to document the qualifications of laboratory personnel?**
- (a) To comply with financial reporting requirements
- (b) To reduce the need for SOPs
- (c) To ensure that only qualified individuals perform critical study tasks
- (d) To ensure personnel are trained in using laboratory equipment only
- 81. Which of the following is required when a GLP-compliant laboratory uses computerized systems for data management?**
- (a) Periodic data destruction to avoid data overload
- (b) Free access to all laboratory personnel for system monitoring
- (c) Validation of the system to ensure its accuracy, reliability, and security
- (d) Complete automation of the final report writing
- 82. What is the role of the Study Plan in a GLP-compliant study?**
- (a) To approve the study's financial budget
- (b) To outline the study objectives, methodology, and procedures
- (c) To assign roles and responsibilities to all laboratory personnel
- (d) To manage the data entry process
- 83. Why must deviations from the study protocol be recorded and assessed in GLP-compliant studies?**
- (a) To simplify data analysis
- (b) To evaluate their potential impact on study integrity and results
- (c) To enhance the effectiveness of quality assurance
- (d) To reduce the need for final report preparation
- 84. Which of the following best describes the purpose of test system characterization in GLP studies?**
- (a) To evaluate the economic feasibility of the study
- (b) To avoid the use of test systems that are unsuitable for the research
- (c) To provide financial records for the test items used
- (d) To ensure that the test system meets the required standards and is suitable for the study
- 85. Why is randomization important in clinical research?**
- (a) To allow participants to choose their treatment
- (b) To avoid bias in treatment allocation
- (c) To simplify the study design
- (d) To ensure that all treatments are tested equally
- 86. What is a requirement for selecting auditors in a clinical study?**
- (a) Auditors must be independent and qualified
- (b) Auditors should be part of the study team
- (c) Auditors must have prior experience in marketing
- (d) Auditors must focus solely on participant recruitment
- 87. What should the investigator submit at the end of a study?**
- (a) Only participant records
- (b) A progress report and final report
- (c) A financial report to the Ethics Committee
- (d) Marketing plans for the investigational product
- 88. What must the Sponsor provide for participants in accordance with guidelines?**
- (a) Financial incentives
- (b) Insurance or medical care for study-related injuries
- (c) Direct compensation for attending study briefings
- (d) Legal representation for study-related disputes
- 89. What must be addressed in clinical trials involving marginalized communities?**
- (a) Their exclusion to avoid complexity
- (b) Limiting their involvement to non-therapeutic studies
- (c) The structural barriers limiting their access to health care and participation
- (d) Prioritizing participants from urban areas
- 90. Under what circumstances must an issue be brought to the attention of the EC?**
- (a) Any serious adverse event requiring additional steps to manage risks

150. The politician's speech was full of _____ statements designed to appeal to the emotions of the public rather than presenting concrete facts.

(a) Pedantic

(b) rhetorical

(c) Concise

(d) insipid

ANSWER KEY

1-a	2-b	3-d	4-a	5-d	6-c	7-a	8-d	9-a	10-a
11-d	12-c	13-a	14-b	15-b	16-a	17-a	18-c	19-d	20-b
21-c	22-b	23-a	24-c	25-c	26-a	27-c	28-b	29-b	30-a
31-b	32-a	33-d	34-b	35-b	36-c	37-b	38-a	39-d	40-b
41-b	42-a	43-b	44-b	45-b	46-d	47-b	48-d	49-a	50-b
51-a	52-c	53-c	54-a	55-c	56-b	57-c	58-a	59-a	60-c
61-b	62-d	63-d	64-b	65-b	66-c	67-c	68-b	69-c	70-d
71-a	72-b	73-c	74-b	75-d	76-b	77-a	78-b	79-a	80-c
81-c	82-b	83-b	84-d	85-b	86-a	87-b	88-b	89-c	90-a
91-b	92-d	93-c	94-a	95-b	96-c	97-b	98-a	99-b	100-a
101-b	102-d	103-b	104-c	105-b	106-b	107-d	108-b	109-a	110-b
111-c	112-c	113-c	114-b	115-b	116-c	117-b	118-d	119-c	120-a
121-a	122-a	123-b	124-d	125-a	126-b	127-d	128-c	129-d	130-b
131-b	132-c	133-b	134-a	135-d	136-b	137-c	138-b	139-c	140-b
141-a	142-d	143-b	144-a	145-c	146-a	147-d	148-d	149-a	150-b

MODEL PAPER - 20

1. What is the chemical name of loratadine?

- (a) 4-(8-Chloro-5,6-dihydro-11H-benzo[5,6]cyclohepta[1,2-b]pyridin-11-ylidene)-1-piperidinecarboxylate
- (b) 2-(4-Isobutylphenyl)propanoic acid
- (c) 1,1-Dimethylbiguanide
- (d) 4-Hydroxybenzoic acid

2. Which chemical modification enhances the potency of sulfonamide antibiotics?

- (a) Hydroxylation at position 3
- (b) Esterification of the sulfonyl group
- (c) Reduction of the amino group
- (d) Addition of an electron-withdrawing group at position 4

3. Which reaction is commonly used in the synthesis of quinolones?

- (a) Conrad-Limpach reaction
- (b) Friedel-Crafts alkylation
- (c) Claisen condensation
- (d) Grignard reaction

4. What is the primary structural feature in β -lactamase-resistant penicillins?

- (a) Hydroxylation at position 3
- (b) Keto substitution on the β -lactam ring
- (c) Bulky side chain at position 6
- (d) Fluorination of the thiazolidine ring

5. Which functional group in statins is essential for HMG-CoA reductase inhibition?

- (a) Sulfonyl group in the side chain
- (b) β -Hydroxy acid moiety
- (c) Fluorine atom at position 5
- (d) Imidazole ring

6. Which modification in anthracyclines like doxorubicin increases DNA intercalation?

- (a) Introduction of a fluorine atom
- (b) Hydroxylation of the sugar moiety
- (c) Sulfonylation of the side chain
- (d) Addition of a planar tetracyclic ring

7. What is the key functional group in remdesivir that allows it to inhibit viral RNA polymerase?

- (a) Phosphoramidate prodrug moiety
- (b) Sulfonyl group in the side chain
- (c) Fluorine substitution at position 5
- (d) Hydroxyl group at position 3

8. Which modification in atypical antipsychotics like olanzapine reduces extrapyramidal side effects?

- (a) Fluorine atom at position 6
- (b) Dihydrothiazepine ring
- (c) Hydroxyl group at position 5
- (d) Sulfonylation of the side chain

9. Which physicochemical property of a drug influences its renal excretion?

- (a) Ionization state
- (b) Plasma protein binding
- (c) Lipophilicity
- (d) All of the above

10. What is the chemical name of omeprazole?

- (a) 5-Methoxy-2-[[[4-methoxy-3,5-dimethylpyridin-2-yl)methyl]sulfinyl]-1H-benzimidazole
- (b) 4-Hydroxybenzoic acid
- (c) 2-(4-Isobutylphenyl)propanoic acid
- (d) 1,1-Dimethylbiguanide

11. Which of the following drugs is an antagonist of the mineralocorticoid receptor used in heart failure?

- (a) Eplerenone
- (b) Spironolactone
- (c) Both (a) and (b)
- (d) Triamterene

12. Which of the following drugs is an IL-17A inhibitor used in psoriasis?

- (a) Ustekinumab
- (b) Secukinumab
- (c) Infliximab
- (d) Adalimumab

13. Which drug is used to prevent chemotherapy-induced myelosuppression by stimulating granulocyte production?

- (a) Erythropoietin
- (b) Filgrastim
- (c) Thrombopoietin
- (d) Oprelvekin

14. Which of the following drugs is an RNA-dependent RNA polymerase inhibitor used in hepatitis C?

- (a) Ribavirin
- (b) Ledipasvir
- (c) Sofosbuvir
- (d) Boceprevir

15. Which of the following drugs is an aldosterone synthase inhibitor being investigated for resistant hypertension?

- (a) Finerenone
- (b) Spironolactone
- (c) Eplerenone
- (d) Amiloride

- (c) To simplify personnel training programs
- (d) To minimize the need for study protocol revisions

82. What is the role of the Quality Assurance Unit (QAU) in GLP compliance?

- (a) To directly perform laboratory tests
- (b) To independently review the study protocols, data, and reports to ensure adherence to GLP principles
- (c) To manage the study's financial resources
- (d) To train laboratory personnel in SOPs

83. What is the primary reason for documenting test system characteristics in GLP-compliant studies?

- (a) To ensure the test system meets the study requirements and is suitable for the planned research
- (b) To minimize study costs by eliminating unnecessary tests
- (c) To streamline data analysis and interpretation
- (d) To ensure that financial audits are conducted properly

84. Which of the following best describes the role of the Study Director in a GLP study?

- (a) Overseeing the study's execution, ensuring compliance with GLP principles, and being responsible for study reporting
- (b) Managing the financial aspects of the study and approving the study plan
- (c) Conducting routine inspections of laboratory facilities
- (d) Reviewing and modifying study protocols regularly

85. What is ancillary care in the context of clinical research?

- (a) Financial support provided to participants
- (b) Free medical care for conditions unrelated to research but arising during participation
- (c) Marketing assistance for investigational products
- (d) Legal assistance for disputes arising from the study

86. What is one of the basic responsibilities of the EC?

- (a) Approving marketing strategies for the investigational product
- (b) Recruiting participants for the study

- (c) Conducting the clinical trials
- (d) Protecting the dignity, rights, and well-being of participants

87. What must investigators disclose to participants about potential risks?

- (a) Only risks that have been confirmed by previous studies
- (b) Any foreseeable risk or discomfort associated with the study
- (c) Risks must not be disclosed to avoid participant anxiety
- (d) Only physical risks, excluding emotional risks

88. What is the maximum duration allowed for the expert committee to provide recommendations for compensation after receiving a report of a serious adverse event?

- (a) 7 days
- (b) 14 days
- (c) 30 days
- (d) 90 days

89. What instructions must be provided to all individuals involved in the study/research conduct?

- (a) Handling, storing, and disposing of the investigational product(s)
- (b) Marketing guidelines for the investigational product
- (c) Financial implications of the study
- (d) Methods for participant recruitment

90. What is a key requirement for the security of computerized systems in clinical studies?

- (a) Use of advanced financial tracking features
- (b) Implementation of user authentication and backup procedures
- (c) Development of systems without validation
- (d) Minimizing user access controls

91. Under the new Drug and Clinical Trials Rules, 2019, what is the maximum duration for clinical trial approval in India?

- (a) 45 days
- (b) 90 days
- (c) 120 days
- (d) 180 days

92. Which of the following is NOT considered a category under the new rules for clinical trials in India?

- (a) Post-market surveillance trials
- (b) Investigator-sponsored trials
- (c) International multi-center trials

ANSWER KEY

1-a	2-d	3-a	4-c	5-b	6-d	7-a	8-b	9-d	10-a
11-c	12-b	13-b	14-c	15-a	16-b	17-b	18-d	19-c	20-b
21-c	22-c	23-a	24-c	25-a	26-b	27-d	28-b	29-a	30-c
31-a	32-a	33-a	34-b	35-d	36-a	37-a	38-c	39-a	40-c
41-b	42-c	43-b	44-c	45-b	46-d	47-c	48-b	49-b	50-c
51-a	52-b	53-d	54-c	55-a	56-b	57-c	58-c	59-a	60-a
61-d	62-c	63-d	64-a	65-b	66-c	67-b	68-a	69-c	70-b
71-a	72-b	73-a	74-a	75-b	76-a	77-c	78-b	79-d	80-b
81-a	82-b	83-a	84-a	85-b	86-d	87-b	88-c	89-a	90-b
91-b	92-d	93-b	94-d	95-b	96-b	97-b	98-d	99-c	100-b
101-a	102-a	103-b	104-a	105-d	106-c	107-d	108-b	109-a	110-a
111-b	112-c	113-b	114-d	115-b	116-a	117-b	118-a	119-b	120-d
121-a	122-c	123-c	124-b	125-d	126-a	127-b	128-c	129-c	130-a
131-b	132-c	133-b	134-d	135-b	136-c	137-b	138-d	139-a	140-b
141-c	142-c	143-a	144-c	145-c	146-d	147-b	148-a	149-b	150-b

MODEL PAPER - 22

- 1. Which modification in barbiturates increases their lipophilicity and rapid onset of action?**
 - (a) Alkylation at position 5
 - (b) Fluorine substitution at position 6
 - (c) Hydroxylation at position 3
 - (d) Sulfonylation of the side chain
- 2. What is the chemical name of ranitidine?**
 - (a) N-[2-[[[(5-(dimethylamino)methyl-2-furanyl)methyl]thio]ethyl]-N'-methyl-2-nitro-1,1-ethenediamine
 - (b) 2-(4-Isobutylphenyl)propanoic acid
 - (c) 1,1-Dimethylbiguanide
 - (d) 4-Hydroxybenzoic acid
- 3. What was one of the key findings from the study of methylation's effects on biologic activity?**
 - (a) Methylation always enhances drug activity
 - (b) Methylation can convert a compound from an agonist to an antagonist
 - (c) Methylation reduces drug absorption
 - (d) Methylation only affects hydrophobic drugs
- 4. What type of molecular interaction contributes significantly to water solubility?**
 - (a) Hydrophobic interactions
 - (b) Ion-dipole interactions
 - (c) π - π stacking interactions
 - (d) Van der Waals forces
- 5. Which functional groups contribute to the acid-base properties of ciprofloxacin?**
 - (a) Only carboxylic acid
 - (b) Only amines
 - (c) A combination of carboxyl, amines, and aryl functionalities
 - (d) Only hydroxyl groups
- 6. What is a major reason for screening drug metabolites during drug discovery?**
 - (a) Metabolites may have better pharmacokinetics than the parent drug
 - (b) Metabolites are always inactive and need to be removed
 - (c) Metabolites always cause toxicity
 - (d) Metabolites have no therapeutic value
- 7. Which chemical group in paclitaxel stabilizes microtubules and prevents mitotic division?**
 - (a) Fluorine atom at position 7
 - (b) Hydroxyl group at position 3
 - (c) Sulfonyl group in the side chain
 - (d) Benzoyl ester moiety
- 8. What functional groups are generally considered neutral under physiological conditions?**
 - (a) Alkyl alcohols, ethers, esters
 - (b) Carboxylic acids and sulfonic acids
 - (c) Guanidines and amidines
 - (d) Arylamines and imines
- 9. What was the "paradox" related to acetylcholine and tubocurarine?**
 - (a) They both have similar effects despite different structures
 - (b) Acetylcholine is an agonist while tubocurarine is an antagonist at the same receptor
 - (c) Tubocurarine enhances acetylcholine activity
 - (d) Acetylcholine and tubocurarine are chemically identical
- 10. What is the significance of the quaternary ammonium functional group in pharmacologic activity?**
 - (a) It makes drugs lipid-soluble
 - (b) It helps drugs pass through the blood-brain barrier
 - (c) It allows drugs to mimic natural neurotransmitters
 - (d) It enhances protein binding
- 11. What structural modification distinguishes prazosin, doxazosin, and terazosin from nonselective α -antagonists like phentolamine?**
 - (a) Presence of an imidazoline ring
 - (b) Piperazine-linked quinazoline structure
 - (c) Addition of a catechol moiety
 - (d) Replacement of amine with hydroxyl groups
- 12. What is the major metabolite of norepinephrine degradation via monoamine oxidase (MAO)?**
 - (a) DOPGAL
 - (b) L-DOPA
 - (c) Dopamine

- (d) In enclosed areas as per Central and State Legislations
- 75. In production areas, cross-contamination can be avoided by:**
- (a) Allowing mixed operations for cost efficiency
 - (b) Using separate dedicated and self-contained facilities
 - (c) Disregarding the need for specific facilities
 - (d) Keeping materials and equipment unsegregated
- 76. Service lines for pipework, electrical fittings, and ventilation must:**
- (a) Be identified by colors and supply direction markings
 - (b) Be designed to create accessible recesses
 - (c) Allow unmarked installations for flexibility
 - (d) Be loosely fixed for easy repositioning
- 77. Production areas should be designed to:**
- (a) Allow multi-directional operations
 - (b) Maintain unflow with a logical sequence
 - (c) Avoid logical positioning of equipment
 - (d) Permit simultaneous unrelated processes
- 78. Instructions on personnel hygiene practices must be:**
- (a) Displayed in strategic locations
 - (b) Limited to supervisors
 - (c) Optional for production staff
 - (d) Based solely on personal discretion
- 79. What is required for laboratory equipment under GLP standards?**
- (a) Equipment must be used without maintenance throughout the study
 - (b) Equipment must be calibrated, maintained, and validated regularly to ensure proper functioning
 - (c) Equipment must be purchased from a single supplier
 - (d) Equipment must be operated by laboratory managers only
- 80. Why must the Study Director be responsible for the GLP-compliant study?**
- (a) To oversee the financial management of the study
 - (b) To train all laboratory personnel in GLP standards
 - (c) To ensure all aspects of the study follow GLP principles and guidelines
 - (d) To conduct the study without any outside interference
- 81. What significant issue led to the introduction of GLP in the United States?**
- (a) Increased costs of laboratory testing
 - (b) Fraudulent data submission by pharmaceutical companies
 - (c) Environmental pollution from laboratories
 - (d) Lack of new drug approvals
- 82. Which organization produced the international standards for GLP in 1981?**
- (a) World Health Organization (WHO)
 - (b) International Organization for Standardization (ISO)
 - (c) OECD (Organisation for Economic Co-operation and Development)
 - (d) Food and Drug Administration (FDA)
- 83. Which of the following is NOT one of the key areas addressed by GLP regulations?**
- (a) Organisation, personnel, facilities, and equipment
 - (b) Test items and test systems
 - (c) Cost and budget planning for research studies
 - (d) Quality assurance procedures
- 84. Which aspect of GLP ensures that studies are conducted in compliance with established standards and protocols?**
- (a) General Provisions
 - (b) Quality Assurance
 - (c) Results: Raw data, final reports, and archives
 - (d) Resources: Organisation, personnel, facilities, and equipment
- 85. What is included in a Case Record Form (CRF)?**
- (a) Only the participant's medical history
 - (b) Laboratory test results exclusively
 - (c) Input, presentation, verification, and approval of data in a specified format
 - (d) The consent forms signed by the participants
- 86. What is an Audit Certificate?**
- (a) A written assurance from the investigator about protocol compliance
 - (b) A declaration of confirmation by the auditor that an audit has taken place
 - (c) A report of a study's financial records
 - (d) A certificate of drug approval
- 87. What is an Escape/Rescue Medication?**
- (a) Medication used to treat unrelated illnesses during a study

ANSWER KEY

1-a	2- a	3-b	4-b	5-c	6- a	7-d	8- a	9-b	10-c
11-b	12- a	13-d	14- a	15-d	16-d	17-b	18- c	19-c	20-b
21-b	22-d	23- a	24-d	25-c	26-c	27- a	28-b	29-d	30-b
31-c	32-d	33-b	34-d	35-b	36-c	37- a	38- a	39- a	40-b
41-c	42-d	43-b	44- a	45-c	46- a	47- a	48-d	49-b	50-b
51-c	52-c	53-a	54-b	55-d	56-c	57-b	58-c	59-c	60-a
61-b	62-b	63-c	64-d	65-b	66-c	67-b	68-c	69-a	70-b
71-c	72-a	73-b	74-d	75-b	76-a	77-b	78-a	79-b	80-c
81-b	82-c	83-b	84-b	85-c	86-b	87-c	88-b	89-d	90-b
91-a	92-b	93-c	94-b	95-b	96-b	97-c	98-b	99-d	100-c
101- a	102-c	103-c	104- a	105-d	106-d	107-b	108-c	109-b	110-c
111-b	112-c	113-c	114-b	115-b	116-d	117-b	118-d	119-c	120-d
121-c	122-c	123-b	124-c	125-b	126-a	127-d	128-c	129-b	130-b
131-a	132-c	133-c	134-d	135-b	136-a	137-b	138-c	139-c	140-b
141-d	142-d	143-c	144-b	145-b	146-c	147-b	148-a	149-d	150-a

MODEL PAPER - 24

- Which of the following drugs is classified as a Non-Depolarizing Neuromuscular Blocker (NDNMB)?**
(a) Succinylcholine (b) Rocuronium
(c) Nicotine (d) Neostigmine
- The IUPAC name of Chlorpromazine is:**
(a) 3-(2-chlorophenothiazin-10-yl)propan-1-amine
(b) 10-(3-dimethylaminopropyl)-2-chlorophenothiazine
(c) 2-Chloro-N-(3-dimethylaminopropyl)phenothiazine
(d) 2-Chloro-10-(3-dimethylaminopropyl)phenothiazine
- Which of the following drugs is highly water-soluble due to the presence of a quaternary ammonium group?**
(a) Atropine (b) Neostigmine
(c) Diazepam (d) Propranolol
- Which modification in sulfonamides increases their antibacterial activity?**
(a) Introduction of an electron-donating group at the para position
(b) Replacement of the SO₂ group with a ketone
(c) Addition of a bulky hydrophobic group
(d) Substitution at the aniline nitrogen
- Which intermediate is involved in the synthesis of aspirin?**
(a) Acetyl chloride (b) Salicylic acid
(c) Benzophenone (d) Phenylacetic acid
- Which receptor is blocked by Ondansetron, an antiemetic drug?**
(a) Dopamine D₂ receptor
(b) Histamine H₁ receptor
(c) 5-HT₃ receptor
(d) Muscarinic M₁ receptor
- Which of the following drugs causes Red Man Syndrome as a common side effect?**
(a) Vancomycin (b) Linezolid
(c) Amikacin (d) Clindamycin
- Which drug is metabolized by N-acetylation, leading to genetic polymorphism in metabolism?**
(a) Isoniazid (b) Rifampin
(c) Metoprolol (d) Phenytoin
- Which drug interaction occurs when Tetracyclines are taken with milk or antacids?**
(a) Increased tetracycline absorption
(b) Decreased tetracycline absorption
(c) No effect on absorption
(d) Increased renal clearance of tetracycline
- Which drug is used for the treatment of Wilson's disease?**
(a) Penicillamine (b) Deferoxamine
(c) Atropine (d) Methotrexate
- Which of the following drugs acts by inhibiting the Na⁺/K⁺-ATPase pump?**
(a) Amiodarone (b) Digoxin
(c) Verapamil (d) Lidocaine
- A drug with a high therapeutic index (TI) indicates:**
(a) Low efficacy
(b) High potency
(c) Slow elimination
(d) High safety margin
- Which of the following drugs undergoes extensive first-pass metabolism?**
(a) Metoprolol (b) Gentamicin
(c) Furosemide (d) Dobutamine
- Which of the following drugs is a CYP3A4 inhibitor?**
(a) Rifampin (b) Ketoconazole
(c) Phenobarbital (d) Carbamazepine
- Which of the following factors increases the volume of distribution (Vd) of a drug?**
(a) High plasma protein binding
(b) Large molecular weight
(c) Lipophilicity
(d) Hydrophilicity
- The most effective antidote for benzodiazepine overdose is:**
(a) Naloxone (b) Atropine
(c) Flumazenil (d) Physostigmine
- Which of the following is true regarding drugs eliminated primarily via the kidneys?**
(a) They are usually lipophilic
(b) Their elimination is increased in renal failure
(c) They have a long half-life

- (c) Multiple batches sharing the same number
(d) Exclusion of packaging stage traceability
- 78. Records of batch numbers must include:**
(a) Only the batch size
(b) Allocation date, product identity, and batch size
(c) Product identity without allocation date
(d) Batch size without allocation details
- 79. What is a Test Item in the context of GLP?**
(a) A reference standard used for calibration
(b) An article that serves as a carrier in a study
(c) An article that is the subject of a study
(d) A batch of chemicals used in a study
- 80. What is the function of a Reference or Control Item in GLP studies?**
(a) To be the primary subject of the study
(b) To serve as a comparative standard for the Test Item
(c) To facilitate the administration of the Test Item
(d) To act as a storage medium for experimental data
- 81. Why should a test facility be located away from manufacturing areas?**
(a) To maintain direct access to personnel
(b) To avoid contamination of the test system
(c) To increase operational efficiency
(d) To ensure all employees are present in one location
- 82. Why should laboratories involved in the control of biologicals, microbiologicals, and radioisotopes be separated from each other?**
(a) To reduce costs of maintaining different laboratories
(b) To prevent unauthorized personnel from entering
(c) To avoid cross-contamination between different types of studies
(d) To allow laboratory personnel to conduct multiple studies at the same time
- 83. What qualification should personnel in a test facility possess as per GLP?**
(a) No specific qualification is required
(b) Educational qualification, training, and experience relevant to their function
(c) Only a formal certification in quality control
(d) Experience in manufacturing and industrial practices
- 84. Why should personnel in a GLP facility undergo medical examinations?**
(a) To assess their professional competency
(b) To prevent the spread of infections that could contaminate the test system
(c) To verify their educational qualifications
(d) To determine their ability to operate laboratory equipment
- 85. What is the role of a biostatistician in clinical research?**
(a) To manage participant recruitment
(c) To oversee marketing strategies
(d) To conduct audits on data integrity
(b) To prepare a statistical model for the study
- 86. What is an essential aspect of study design in clinical research?**
(a) Avoiding all forms of randomization
(b) Defining the target difference between treatments
(c) Prioritizing financial outcomes over data integrity
(d) Using unverified statistical models
- 87. How should computerized systems be validated during the study lifecycle?**
(a) Systems should be validated based on risk assessment and intended use
(b) Validation should occur only after study completion
(c) Validation should focus solely on financial metrics
(d) Validation should exclude user access configurations
- 88. What procedures should be in place to handle system failure?**
(a) Automatic deletion of study data
(b) Contingency procedures to prevent data loss and maintain study continuity
(c) Integration of marketing tools into the system
(d) Complete reliance on external technical teams
- 89. Who is responsible for ongoing safety evaluation during a study?**
(a) Investigator only
(b) Sponsor only
(c) Regulatory Authority only
(d) Sponsor and investigator

147. Select the correct synonym of "Reluctant":

- (a) Unwilling (b) Eager
(c) Enthusiastic (d) Willing

148. Fill in the blank with the correct article:

She adopted ___ orphan child.

- (a) a (b) an
(c) the (d) no article

149. Identify the correct sentence:

- (a) She do not like coffee.

(b) She does not likes coffee.

(c) She does not like coffee.

(d) She did not liking coffee.

150. Choose the correct form of the verb:

When I arrived, they ___ dinner.

- (a) have eaten (b) were eating
(c) will be eating (d) eats

ANSWER KEY

1-b	2-d	3-b	4-a	5-b	6-c	7-a	8-a	9-b	10-a
11-b	12-d	13-a	14-b	15-c	16-c	17-d	18-b	19-c	20-b
21-c	22-a	23-c	24-c	25-c	26-d	27-c	28-a	29-b	30-d
31-b	32-a	33-c	34-a	35-c	36-b	37-c	38-d	39-b	40-c
41-b	42-a	43-c	44-a	45-b	46-c	47-c	48-b	49-c	50-c
51-b	52-c	53-b	54-a	55-b	56-d	57-b	58-c	59-b	60-a
61-b	62-b	63-c	64-b	65-c	66-d	67-b	68-a	69-c	70-c
71-b	72-c	73-b	74-d	75-a	76-b	77-a	78-b	79-c	80-b
81-b	82-c	83-b	84-b	85-b	86-b	87-a	88-b	89-b	90-b
91-b	92-a	93-c	94-b	95-d	96-b	97-d	98-b	99-b	100-a
101-a	102-d	103-c	104-c	105-b	106-c	107-b	108-c	109-a	110-b
111-d	112-b	113-b	114-a	115-a	116-b	117-d	118-a	119-b	120-b
121-c	122-c	123-b	124-c	125-a	126-a	127-d	128-a	129-c	130-a
131-c	132-b	133-b	134-c	135-b	136-d	137-c	138-b	139-a	140-a
141-b	142-c	143-c	144-d	145-b	146-d	147-a	148-b	149-c	150-b

MODEL PAPER - 28

- The antidote for methanol or ethylene glycol poisoning is:**
 - N-acetylcysteine
 - Ethanol or Fomepizole
 - Flumazenil
 - Sodium thiosulfate
- Which drug is contraindicated in Myasthenia Gravis (MG)?**
 - Neostigmine
 - Aminoglycosides
 - Pyridostigmine
 - Edrophonium
- Which receptor is involved in the vomiting reflex and is the target of antiemetic drugs?**
 - NMDA receptor
 - Beta-2 adrenergic receptor
 - Nicotinic receptor
 - Dopamine D2 receptor
- Which of the following drugs has the highest plasma protein binding?**
 - Phenytoin
 - Digoxin
 - Metformin
 - Lithium
- Which of the following statements about Phase I and Phase II metabolism is TRUE?**
 - Phase I reactions always convert drugs into inactive metabolites
 - Phase II reactions involve oxidation and reduction
 - Phase I metabolism includes oxidation, reduction, and hydrolysis
 - Phase II metabolism makes drugs more lipophilic
- Which of the following drugs has a wide therapeutic index?**
 - Warfarin
 - Penicillin
 - Digoxin
 - Theophylline
- Which of the following drugs acts through intracellular nuclear receptors?**
 - Insulin
 - Epinephrine
 - Cortisol
 - Dopamine
- Which of the following factors INCREASES renal clearance of weak acidic drugs?**
 - Acidic urine
 - Alkaline urine
 - High plasma protein binding
 - CYP450 induction
- Which of the following drugs is eliminated by zero-order kinetics at high doses?**
 - Ciprofloxacin
 - Atenolol
 - Metoprolol
 - Ethanol
- Which drug is most commonly associated with drug-induced ototoxicity?**
 - Vancomycin
 - Ciprofloxacin
 - Metformin
 - Ibuprofen
- Which of the following drugs is classified as a monoclonal antibody used in cancer therapy?**
 - Methotrexate
 - Imatinib
 - Paclitaxel
 - Trastuzumab
- Which of the following is the IUPAC name of Aspirin?**
 - 2-Acetoxybenzoic acid
 - 4-Hydroxybenzoic acid
 - Acetylbenzophenone
 - Methylsalicylic acid
- Which of the following drugs is highly ionized at physiological pH (7.4), leading to poor CNS penetration?**
 - Morphine
 - Gentamicin
 - Diazepam
 - Propranolol
- Which of the following modifications in sulfonyleas enhances their hypoglycemic potency?**
 - Removal of the sulfonyl group
 - Reduction of the benzene ring
 - Addition of an arylalkyl group at N3
 - Introduction of an acidic group
- Which of the following is a key intermediate in the synthesis of Propranolol?**
 - Catechol
 - Aniline
 - Acetophenone
 - 1-Naphthol
- Which drug acts by blocking the mineralocorticoid receptor, leading to potassium retention?**
 - Spirolactone
 - Furosemide
 - Hydrochlorothiazide
 - Mannitol
- Which drug is known to cause phototoxicity, requiring patients to avoid sunlight exposure?**
 - Vancomycin
 - Ceftriaxone
 - Tetracycline
 - Erythromycin
- Which of the following drugs undergoes enterohepatic circulation, prolonging its half-life?**
 - Rifampin
 - Paracetamol
 - Penicillin G
 - Atenolol

- (a) To allow flexibility in how studies are conducted
 (b) To provide retrospective documentation of planned activities
 (c) To increase the number of test items used in studies
 (d) To replace the need for Standard Operating Procedures (SOPs)
- 85. What is included in the Evaluation section of a protocol?**
 (a) Marketing outcomes
 (b) Methods for assessing and calculating effects
 (c) Financial expenditures
 (d) Data collection tools for investigators
- 86. What is the purpose of the principle of transparency and accountability in research?**
 (a) To guarantee financial backing from sponsors
 (b) To limit access to research outcomes to institutional stakeholders
 (c) To prevent external audits of research protocols
 (d) To ensure research outcomes are shared publicly while safeguarding participant privacy
- 87. What must be outlined for studies involving minimal or no risk?**
 (a) Plans to handle risk if it escalates during the study
 (b) A justification for bypassing ethical review
 (c) Details of invasive procedures planned
 (d) Immediate discontinuation of the study
- 88. What type of expertise should the Sponsor ensure is readily available during the study?**
 (a) Legal expertise
 (b) Financial expertise
 (c) Medical expertise
 (d) Regulatory expertise
- 89. What factors should the Sponsor consider for appropriate monitoring of a study?**
 (a) Financial reports and marketing impact
 (b) Study design, objectives, and safety profile
 (c) Participant demographics only
 (d) Investigator's compensation plan
- 90. What is the first step in risk management during clinical studies?**
 (a) Implementing risk control measures immediately
 (b) Identifying risks that may impact critical study processes
 (c) Reviewing previous audit reports
 (d) Reporting all risks to the Ethics Committee
- 91. What is the role of post-licensure studies in accelerated approval?**
 (a) To expand marketing rights for the drug
 (b) To bypass additional regulatory requirements
 (c) To reduce production costs
 (d) To validate the anticipated clinical benefit of the drug
- 92. What is essential during the conduct of a clinical trial?**
 (a) Adherence to the clinical trial protocol
 (b) Inclusion of all population groups regardless of the study design
 (c) Avoidance of serious adverse event reporting
 (d) Amendments without justification
- 93. What is the primary purpose of conducting non-clinical studies before clinical trials?**
 (a) To assess market viability of the drug
 (b) To ensure the new drug is safe for the proposed clinical trial
 (c) To determine the cost of the new drug
 (d) To predict public acceptance of the drug
- 94. Within how many days can an appeal be made to the Central Government against suspension or cancellation of a license under Rule 87?**
 (a) 30 days (b) 45 days
 (c) 60 days (d) 90 days
- 95. Which form must be submitted to obtain a license for manufacturing an unapproved new drug under clinical trial for life-threatening diseases?**
 (a) Form CT-24 (b) Form CT-25
 (c) Form CT-27 (d) Form CT-26
- 96. What documentation must accompany each consignment of imported drugs?**
 (a) Customs clearance certificate
 (b) Invoice of purchase
 (c) Import-export code
 (d) Test or analysis report
- 97. According to Schedule P, at what temperature should insulin injections be stored?**
 (a) Below 0°C
 (b) Between 2°C and 8°C
 (c) At room temperature
 (d) Below -20°C
- 98. Which of the following conditions is NOT listed under Schedule J?**
 (a) Cancer (b) Appendicitis

UPSC DRUG INSPECTOR 2023

1. Which one of the following is not applicable to non-linear pharmacokinetics?

- (a) The elimination or absorption half-lives change as doses are increased.
- (b) The area under the curve (AUC) increase in a proportional manner to the administered dose.
- (c) The composition and/or ratio of the metabolites of a drug may be affected by a change in the dose.
- (d) Elimination or absorption of drug does not follow simple first-order kinetics.

2. Presystemic metabolism:

- i. Occurs in liver as first-pass metabolism.
- ii. Occurs in intestine and its walls.
- iii. Occurs when drug is administered transdermally or by inhalation.
- iv. Results in decrease in bioavailability.

Select the correct answer using the code given below:

- (a) 1, 2 and 4
- (b) 1, 3 and 4
- (c) 1, 2 and 3
- (d) 2, 3 and 4

3. An IV dose of 500 mg is administered to a patient. It was observed that 70% of the dose was recovered unchanged in the urine. The AUC (area under the curve) was found to be 362 mg.hr/L. What will be the total clearance rate (TCR), metabolic clearance rate (MCR) and renal clearance rate (RCR)?

- (a) TCR = 23 mL/min.; RCR = 16-1 mL/min.; MCR = 9-2 mL/min.
- (b) TCR = 63 mL/min.; RCR = 44-1 mL/min.; MCR = 8.1 mL/min.
- (c) TCR = 23 mL/min.; RCR = 16-1 mL/min.; MCR = 6-9 mL/min.
- (d) TCR = 46 mL/min.; RCR = 32-2 mL/min.; MCR = 13-8 mL/min.

4. Which of the following statements are not correct regarding dissolution testing of solid dosage forms?

1. Dissolution tests are used to aid formulation development, check product quality and performance and to assess batch-to-batch quality of a

drug with respect to drug product specifications.

2. Dissolution test conditions are not selected based on properties of the drug and the type of drug form.

3. Dissolution is often the rate-limiting step in the absorption of drugs with poor water solubility.

4. M Dissolution cannot be correlated to oral bioavailability whilst disintegration of dosage form is a strong indicator of oral bioavailability.

Select the correct answer using the code given below:

- (a) 1 and 3 only
- (b) 1 and 2 only
- (c) 2 and 4 only
- (d) 1 and 4 only

5. Which one of the following is not correct for dosage forms prepared using protein based drugs?

- (a) Trehalose and sucrose are ineffective in preventing protein denaturation
- (b) Low pH, i.e. pH 3-6 prevents chemical degradation
- (c) Cyclization of proteins makes them less susceptible to gut amino and carboxy peptidases
- (d) Metal chelating agents can be used to enhance the stability

6. Which one of the following represents the correct sequential arrangement in the transdermal patch (rate-limiting membrane-type) from top to bottom?

(BL backing layer, DR = drug reservoir, AD = adhesive; RRL - removable release liner, RLM - Rate-limiting membrane)

- (a) BL→AD→DR→RLM→RRL
- (b) BL→RLM→AD DR→RRL
- (c) BL→DR→RLM→AD→RRL
- (d) BE→RRL→DR→RLM→AD

7. Inhalation aerosols should have particles which are:

- (a) Porous with large physical diameter and small aerodynamic diameter
- (b) Porous with small physical diameter and large aerodynamic diameter
- (c) Non-porous with large physical diameter and small aerodynamic diameter

retention time of unretained peak is 2.0 minutes?

- (a) 2.0 (b) 3.0
(c) 60 (d) 8.0

41. What will be the concentration of methyltestosterone solution in ethanol if its absorbance in 1 cm cell at 241 nm was found to be 0.890?

(the A (1%, 1 cm) of methyltestosterone is 540 at 241 nm)

- (a) 0.020 g/100 mL
(b) 0.010 g/100 mL
(c) 0.001 g/100 mL
(d) 0.100 g/100 mL

42. In an assay of ferrous sulphate by titration against ceric sulphate using ferroin as an internal redox indicator, a red colour of solution in titration vessel before end point is due to:

- (a) 1,10-phenanthroline ferric ion complex
(b) 1,10-phenanthroline ferrous ion complex
(c) Oxidation product of ferrous sulphate
(d) Reduction product of ceric sulphate

43. Head space gas chromatographic analysis is a very effective technique for the analysis of:

- (a) Non-volatile compounds
(b) Mixture of volatile compounds
(c) Non-volatile compounds in presence of high proportion volatile compounds.
(d) Volatile compounds in presence of high proportion non-volatile compounds

44. Iodine value of oils and fats is a measure of:

- (a) Average molecular weight of fatty acids
(b) Degree of unsaturation present in fatty acids
(c) Free fatty acids
(d) Unsaponifiable matter

45. In an assay of boric acid by aqueous acid-base titration, glycerin is added:

- (a) To dissolve boric acid
(b) To enhance the strength of boric acid
(c) To suppress the ionization of boric acid
(d) To prevent precipitation of reaction product of titration

46. Which one of the following does not provide passive immunity?

- (a) Inactivated micro-organisms

- (b) Humanized monoclonal antibodies
(c) Natural mother antibody transferred to foetus
(d) Antitoxin

47. Consider the following vaccines:

- DNA vaccine
- mRNA vaccine
- Live attenuated vaccine
- Inactivated vaccine

The correct order of stability of vaccines given above is:

- (a) 1>3>4>2 (b) 2>4>3>1
(c) 1>4>3>2 (d) 2>3>4>1

48. Which one of the following Human Leukocyte Antigens (HLA) encodes histocompatibility complex-II for major

- (a) HLA-A (b) HLA-B
(c) HLA-C (d) HLA-D

49. Which one of the following clotting factors does not require vitamin K during blood coagulation process?

- (a) Factor IX (b) Factor V
(c) Factor VII (d) Factor X

50. Which one of the following proteins is mainly responsible for binding with drugs in plasma?

- (a) Apolipoproteins (b) Albumin
(c) Transferrin (d) Immunoglobulin G

51. Which one of the following methods is not used for the separation of plasma proteins?

- (a) Flow cytometer
(b) Precipitation by salting out technique
(c) Ultracentrifugation
(d) Electrophoresis

52. Match the List I with List II and select the correct answer using the code given below the lists:

List I (Type of Globulin)	List II (Function)
A. High density lipoprotein	1. Carries triglycerols from liver to adipose tissue
B. Low density lipoprotein	2. Collects cholesterol from body tissues and brings it back to liver
C. Very low density	3. Involved in cell-cell interactions

- (a) It damages the RNA
(b) It damages the DNA
(c) It inhibits the cell wall synthesis
(d) It inhibits the protein synthesis
71. **Enteric coating of tablets can be made by using which one of the following compounds?**
(a) Povidone
(b) Hydroxy propyl methyl cellulose
(c) Cellulose acetate phthalate
(d) Carboxy methyl cellulose
72. **Which one of the following Schedules of Drugs and Cosmetics Rules, 1945 gives the requirements of factory premises, plant, and equipment etc. for manufacture of medical devices?**
(a) Schedule - M
(b) Schedule - M (I)
(c) Schedule - M (II)
(d) Schedule - M (III)
73. **Which one of the following activities is NOT true in the case of "Current Good Manufacturing Practice"?**
(a) Maintenance of complaint files
(b) Study of stability of finished drug products
(c) Non requirement of equipment for the processing activity
(d) Testing of product containers
74. **Which one of the following statements is correct for Karl fisher test?**
(a) It is performed to detect the quality of a capsule
(b) It is performed with iodine and sulphur dioxide in pyridine and methanol
(c) It is performed with sodium thiosulphate and iodine in methanol
(d) It is performed with NaOH and iodine in pyridine and ethanol
75. **Assay of Aspirin IP is based on which one of the following methods of titration?**
(a) Acid base (b) Redox
(c) Complexometric (d) Potentiometric
76. **Which one of the following is an universal detector in HPLC?**
(a) PDA (b) UB
(c) ELSD (d) RI
77. **Quantitative TLC can better be performed by which one of the following?**
(a) HPLC (b) HPTLC
(c) VLC (d) GC
78. **What are the chemicals involved in Libermann Burchard's test?**
(a) Acetic acid and conc. H_2SO_4
(b) Acetic anhydride and conc. H_2SO_4
(c) Acetic anhydride and conc. HCl
(d) Acetic acid and conc. HCl
79. **What should be the density of an object with a volume of 15 ml and a mass of 42 grams?**
(a) 0.552 g/ml (b) 650 g/ml
(c) 2.80 g/ml (d) 0.820 g/ml
80. **The FDA requires that all clinical trial records be maintained and accessible at the trial sites for a minimum of:**
(a) 1 year (b) 2 years
(c) 3 years (d) 4 years
81. **Which one of the studies does not form part of clinical trials to provide unbiased reports of prevalence and incidence rates of adverse events?**
(a) Randomization (b) Placebo control
(c) Blinding (d) Quality variation
82. **Atropine is:**
1. Obtained from Atropa belladonna
2. Used in hypertension
3. Tropane alkaloid
4. Used in treatment of glaucoma
Which of the statements given above are correct?
(a) 1 and 2 (b) 1 and 3
(c) 2 and 3 (d) 2 and 4
83. **Following therapeutic benefits are rightly paired with the respective inorganic molecule EXCEPT:**
(a) Laxative: Magnesium
(b) Vitamin B_{12} formation: Cobalt
(c) Teeth health: Fluorine
(d) Bone formation: Iron
84. **Silica gel used in chromatography**

secretary (R). No error (S). Which part denoted (by P, Q and R) of the above sentence has an error? If there is no error, mark it as S:

(a) P (b) Q (c) R (d) S

149. Consider the following sentence:

The teacher was angry (P), when he found that (Q), none of the two boys had done their homework (R). No error (S). Which part denoted (by P, Q and R) of the above sentence has an error? If there is no error, mark it as S:

(a) P (b) Q (c) R (d) S

150. Read the following passage and answer the item that follows. Your answer to this passage should be based on the passage only.

There are a lot of things which are necessary before a person gets the chance to think freely. For instance, he must have security; nobody can think about things, if he is afraid of being robbed or murdered at any moment. Also he

must have leisure to think; and he won't have that if he has to give all his attention to getting food to eat and clothes to wear, that is to say, he spends all his time earning his living. And he must have other people to talk to, so that you may say that security, leisure and society, which are all necessary for free thinking, are necessary for civilization.

On the basis of the above passage, the following assumptions have been made:

1. A person should have security in order to think in a free and relaxed manner.
2. A society cannot be called 'civilized' if there is no leisure and security.
3. A person who is busily engaged in social services has no leisure to think freely.

Which of the above assumptions is/are valid?

- (a) 1 only (b) 2 and 3 only
(c) 1 and 2 only (d) 1, 2 and 3

ANSWER KEY

1-c	2-c	3-d	4-b	5-d	6-d	7-b	8-a	9-c	10-c
11-c	12-a	13-b	14-b	15-a	16-a	17-d	18-b	19-d	20-b
21-b	22-c	23-d	24-c	25-d	26-d	27-c	28-b,d	29-c	30-b
31-a	32-b	33-a	34-a	35-b	36-a	37-a	38-b	39-d	40-a
41-d	42-c	43-b	44-d	45-d	46-c	47-b	48-d	49-b	50-a
51-c	52-b	53-b	54-d	55-b	56-c	57-b	58-d	59-a	60-d
61-a	62-a	63-a	64-b	65-b	66-b	67-c	68-a	69-c	70-b
71-c	72-d	73-c	74-b	75-a	76-d	77-b	78-b	79-c	80-c
81-b	82-b	83-d	84-c	85-a	86-c	87-d	88-d	89-a	90-a
91-a	92-b	93-b	94-a	95-c	96-a	97-d	98-a	99-d	100-a
101-b	102-b	103-b	104-c	105-b	106-a	107-c	108-b	109-d	110-b
111-c	112-b	113-d	114-b	115-c	116-c	117-b	118-d	119-b	120-a
121-d	122-a	123-a	124-b	125-d	126-b	127-d	128-b	129-b	130-c
131-c	132-d	133-d	134-b	135-a	136-d	137-b	138-b	139-d	140-b
141-b	142-d	143-b	144-b	145-d	146-a	147-b	148-b	149-c	150-c

UPSC DRUG INSPECTOR 2011

1. Assume that for a digoxin, the therapeutic range is cited as $C_{avg} 5.5 = 0.8 - 2 \text{ mg/ml}$. If the patient is assumed to have an estimated digoxin $t_{1/2}$ of 48 hours, how long would you wait to take serum digoxin concentration measurement and when during the dosing interval would you schedule it?
 - (a) 28 days then 3-4 hours after the dose is administered
 - (b) 14 days then 6-8 hours after the dose is administered
 - (c) 7 days then 10-14 hours after the dose is administered
 - (d) 3 days then 1-2 hours after the dose is administered
2. Which drug is used to prevent embolism in lungs and also during myocardial infarction?
 - (a) Human growth hormone
 - (b) Alteplase
 - (c) Epogen (EPO)
 - (d) Granulocyte macrophage colony stimulating factor (GM-CSF)
3. Which enzyme is used by the human immunodeficiency virus (HIV) to form deoxyribonucleic acid (DNA) in the host cell?
 - (a) Restriction endonuclease
 - (b) DNA-directed polymerase only
 - (c) Reverse transcriptase only
 - (d) Both (b) and (c)
4. For two drug products, generic and brand to be considered bioequivalent, the 90% confidence intervals about the ratio of the means of the C_{max} and AUC values for generic/brand product must be within
 - (a) 80%-120% of the brand product
 - (b) 80%-100% of the brand product
 - (c) 80%-85% of the brand product
 - (d) 80%-90% of the brand product
5. The renal clearance of inulin is used as a
 - (a) Effective renal blood flow
 - (b) Active renal secretion
 - (c) Glomerular filtration rate
 - (d) Intrinsic enzyme activity
6. Which condition usually increases the rate of drug dissolution from a tablet?
 - (a) Increases in the particle size of the drug
 - (b) Use of the ionized or salt form of the drug
 - (c) Decreases in the surface area of the drug
 - (d) Use of the free acid or free base form of the drug
7. The amount of nitroglycerine that a transdermal patch delivers within a 24 hours period will not depend on
 - (a) Occlusive backing on the patch
 - (b) Diffusion rate of nitroglycerine from the patch
 - (c) Surface area of the patch
 - (d) Dissolution rate of nitroglycerine from the patch
8. A very fine powdered chemical/drug is defined as one that
 - (a) Completely passes through a sieve #240
 - (b) Completely passes through a sieve #120
 - (c) Completely passes through a sieve #60
 - (d) Passes through a sieve #60 and not more than 40% through a sieve #120
9. Which equation is used to predict the stability of a drug product at room temperature from experiment at accelerated temperature?
 - (a) The Stokes equation
 - (b) The Arrhenius equation
 - (c) The Michaelis-Menten equation
 - (d) The Hixson-Crowell equation

- of India (DCGI) can issue an order to ban a drug on the recommendation of
- (a) Indian Council of Medical Research
 (b) Pharmacy council of India
 (c) Drug Technical Advisory Board
 (d) National Pharmaceutical Advisory Board
- 81. Pregnancy test kits are designed to detect which substance?**
- (a) Luteinizing Hormone
 (b) Progesterone
 (c) Human Chorionic Gonadotropin
 (d) Estrogen
- 82. Which one among the following is neither an input nor output device?**
- (a) CD-ROM (b) Floppy disk
 (c) Hard disk (d) Pen drive
- 83. Which among the following is/are units of RAM?**
- Giga byte and Mega byte
 - RPM
 - GBPS and MBPS
- Select the correct answer the using the code given below:
- (a) 1,2 and 3 (b) 1 and 2 only
 (c) 2 and 3 only (d) 1 only
- 84. If you mix four parts of 40% with 1 part of 90% alcohol you will get**
- (a) 45.7% alcohol (b) 40% alcohol
 (c) 50% alcohol (d) 57% alcohol
- 85. The loading dose (DL) of a drug is usually based on the**
- (a) Total body clearance of the drug
 (b) Fraction of drug excreted unchanged in the urine
 (c) Apparent volume of distribution (V_d) and desired drug concentration in plasma
 (d) Area under the plasma drug concentration versus time curve (AUC)
- 86. The activity of which one of the following drugs is dependent on a p-phenyl-N-alkylpiperidine moiety?**
- (a) Phenobarbital (b) Chlorpromazine
 (c) Imipramine (d) Meperidine
- 87. Flurazepam has pKa of 8.2. What percentage of flurazepam will be ionized at a urine pH of 5.2?**
- (a) 0.1% (b) 1%
 (c) 99% (d) 99.9%
- 88. Recrudescence of malaria refers to the**
- (a) Re-infection of patient by mosquito bite
 (b) Re-infection by exoerythrocytic hypozoites
 (c) Incomplete clearance of sporozoites from blood
 (d) Incomplete clearance of schizonts from blood
- 89. Which one of the following drugs should not be prepared in a horizontal laminar flow hood?**
- (a) Ampicillin (b) Dopamine
 (c) Cisplatin (d) Nitroglycerine
- 90. Prostaglandin plays a major role in the biological activity of proton pump inhibitor such as omeprazole and Esomeprazole. The protonation takes place on the**
- (a) Aromatic Methyl chain
 (b) Benzimidazole ring
 (c) Methoxy side chain
 (d) The ring that has dimethyl groups
- 91. The carboxyl group aspirin after esterification with N-acetyl-P-aminophenol gives**
- (a) 3-acetamidophenyl-O-acetyl salicylate
 (b) 4-acetamidophenyl-O-acetyl salicylate
 (c) O-(2-hydroxybenzoyl) salicylic acid
 (d) 2-acetamidophenyl-O-acetyl salicylate
- 92. A prescription order calls for 500 ml 2.0% aminosalicylic acid, but the pharmacy has 8.0% solution in stock. How much of the 8.0% solution is required to prepare 500 ml of above solution?**
- (a) 120 ml (b) 147 ml
 (c) 125 ml (d) 250 ml
- 93. Which of the following is/are the symptoms of venous thrombosis?**
- Oedema

2. Lower leg becoming bluish in colour
3. Dry skin

Select the correct answer using the code given below:

- (a) 1, 2 and 3 (b) 1 and 2 only
(c) 2 and 3 only (d) 1 only

94. Interferon beta

1. Can be administered orally.
2. May cause myalgia
3. Is used in multiple sclerosis

Which of the above statement is/are correct?

- (a) 1, 2 and 3 (b) 1 and 2 only
(c) 2 and 3 only (d) 1 only

95. Which of the following is/are the side effect associated with testosterone?

1. Headache
2. Hirsutism
3. Gynaecomastia

Select the correct answer using the code given below:

- (a) 1, 2 and 3 (b) 1 and 2 only
(c) 2 and 3 only (d) 1 only

96. Rosiglitazone

1. Should be used with caution in patients with cardiovascular disease.
2. Should not be used with glicazide.
3. Is a biguanide.

Which of the above statement is/are correct?

- (a) 1, 2 and 3 (b) 1 and 2 only
(c) 2 and 3 only (d) 1 only

97. Iron salts

1. Should always be taken on empty stomach.

2. Should be given by mouth unless there are good reasons for using another route.

3. In the form of ferric salts are better absorbed than the ferrous salts.

Which of the above statement is/are correct?

- (a) 1, 2 and 3 (b) 1 and 2 only
(c) 2 and 3 only (d) 1 only

98. Doxycycline

1. Is bacteriostatic
2. Is a broad spectrum antibacterial drug.
3. May be administered in renal impairment.

Which of the above statement is/are correct?

- (a) 1, 2 and 3 (b) 1 and 2 only
(c) 2 and 3 only (d) 1 only

99. Testosterone may be used

- (a) To treat breast and endometrial cancer in females
- (b) To treat hypogonadism in males
- (c) To suppress postpartum breast enlargement

- (a) a, b and c (b) a and b only
(c) b and c only (d) a only

100. Following adverse effect are rightly paired with a causative anti-malarial drug except

- (a) Lichenoid skin eruption: Chloroquine
- (b) Steven Johnson syndrome: Quinine
- (c) Hallucinations: Mefloquine
- (d) Prolongation of QT interval: Halofantrine

ANSWER KEY

1-b	2-b	3-c	4-c	5-c	6-b	7-a	8-b	9-b	10-a
11-c	12-d	13-d	14-b	15-a	16-d	17-b	18-b	19-b	20-b
21-c	22-b	23-c	24-d	25-a	26-b	27-c	28-a	29-a	30-b
31-d	32-c	33-b	34-a	35-c	36-c	37-b	38-b	39-c	40-b



ABOUT PHARMACY INDIA

Our classes set up with an aim to provide coaching to the aspiring students who are dedicated and want to achieve excellence in their career. we nurture aspirants and facilitated achievement and we specialized in providing correct and relevant information related to Pharma institute admission for higher education.



PHARMACY INDIA

Street no.-4, Dayalpuram, Khatauli, Muzaffarnagar, 251201

-  8171313561, 8006781759
-  pharmacyindia24@gmail.com
-  Pharmacyindia.co.in

ISBN : 978-93-342-3322-3



NOW WE ARE AVAILABLE ON
 

PRICE:- ₹599.00/-

