GATE-2004

1. **The structural feature common for Propranolol, Atenolol, Pindolol, Metoprolol in the side chain is**
   (a) Isopropyl amino propan-2-ol
   (b) Dimethyl amino propan-2-ol
   (c) Diethyl amino propan-2-ol
   (d) Dibutylamino propan-2-ol

2. **When N-methyl group of Morphine is replaced with an allyl group, the compound formed is**
   (a) Naloxone-morphine antagonist
   (b) Naltrexone-morphine antagonist
   (c) Nalorphine-morphine antagonist
   (d) Nalbuphine-morphine agonist/antagonist

3. **Nitrazepam can be synthesized from**
   (a) 2-Bromo-5-amino benzophenone
   (b) 2-Nitro-2-chloro acetophenone
   (c) 2-Amino-5-nitro cyclohexanone
   (d) 2-Amino-5 nitro-benzophenone

4. **Clavulanic acid has a beta lactam ring fused to**
   (a) Thienyl system (b) Thiadiazole system
   (c) Thiazolidine system (d) Oxazolidine system

5. **A drug which has antipyretic, anti-inflammatory and antiplatelet activity is**
   (a) Sulfinpyrazone (b) Aspirin
   (c) Ticlopidine (d) Acetaminophen

6. **Wild cherry bark contains prunasin which is a**
   (a) Phenolic glycoside (b) Isothiocyanate glycoside
   (c) Coumarin glycoside (d) Cyanogenetic glycoside

7. **Ephedra sinica and Ephedra equisetina can be distinguished by type of**
   (a) Branching (b) Stomata
   (c) Scaly leaves (d) Alkaloids

8. **Micropropagation of the plants is carried out through**
   (a) Cross fertilization (b) Seed germination
   (c) Plant tissue culture (d) Grafting

9. **Aconitine belongs to the group of**
   (a) Steroidal alkaloids (b) Terpenoidal alkaloid
   (c) Indole alkaloid (d) Quinoline alkaloid

10. **Crude fibre value of a drug is measure of**
    (a) Soft tissue matter (b) Woody matter
    (c) Mineral matter (d) Organic matter

11. **One of the units used for expressing pressure is 'torr' and is equal to**
    (a) cm of Hg (b) mm of mercury (c) psi (d) gauss

12. **Removal of a single electron from a molecule results in the formation of**
    (a) Fragment ion (b) Metastable ion
    (c) Molecular ion (d) Rearrangement ion

13. **Nuclear magnetic movement is NOT shown by**
    (a) ^{13}C (b) ^{16}O (c) ^{1}H (d) ^{15}N

14. **Derivatisation techniques in HPLC are intended to enhance**
    (a) Molecular weight (b) Detectability
    (c) Reversibility (d) Reproducibility

15. **A conductance cell is calibrated by using a solution of known conductivity i. e. usually a solution of**
    (a) NaCI (b) Hg_2CI_2 (c) KCI (d) Na_2SO_4

16. **Metoclopramide is generally used for**
    (a) Prophylaxis of vomiting
    (b) Preventing motion sickness
    (c) Treating irritable bowel syndrome
    (d) Treatment of pancreatic insufficiency

17. **DNA amplification by the polymerase chain reaction uses**
    (a) Thermus aquaticus DNA polymerase
    (b) DNA topoisomerase
    (c) RNA polymerase
    (d) RNA helicase

18. **Identify the non-pathogenic organism**
    (a) Mycobacterium bovis
    (b) Mycobacterium Smegmatis
    (c) Mycobacterium avium
    (d) Mycobacterium intracellulare

19. **Bioassay are carried out to**
    (a) Measure the pharmacological activity of a drug
    (b) Avoid clinical trials for new drugs
    (c) Detect the impurity in a given drug
    (d) Screen for pharmacogenitic influences of new drugs

20. **A direct way of studying idiosyncratic reactions to the given drug is by**
    (a) Changing the route of drug administration
    (b) Change the assay method
    (c) Pharmacogenomics
    (d) Structure activity relationship studies of a family of compounds

21. **An example of haemopoietic growth factor is**
    (a) Platelet derived growth factor
    (b) Epidermal growth factor
    (c) Iron dextran
    (d) Erythropoietin

22. **Safranin is used as a reagent to detect**
    (a) Gram-negative bacteria (b) Gram-positive bacteria
    (c) Acid fast bacteria (d) Myxozoa

23. **Sulphonamides do not have adverse drug interaction with**
    (a) Oral anticoagulants
    (b) Sulfonylurea hypoglycemic agent

(c) Hydantoin anticonvulsant
(d) Dihydrofolate reductase inhibitors

24. Simvastatin belongs to
(a) HMG CoA reductase inhibitor type of antilipidemic agents
(b) HMG CoA reductase inhibitor type of anticoagulant agents
(c) Fibrate type of anticoagulant agents
(d) Fibrate type of antilipidemic agents

25. HIV infection can be clinically controlled with
(a) Cytarabine (b) Acyclovir
(c) Zidovudine (d) Amantadine

26. The measure of cohesive strength of the cross linking that occurs between s molecules and is proportional to the molecular weight of gelatin is so called
(a) Bloom strength (b) Viscosity
(c) Suface tension (d) Partition cofficient

27. A water soluble substance used as coating material in microencapsulation process is
(a) Polyethylene (b) Silicone
(c) Hydroxy ethyl cellulose (d) Paraffin

28. One of the following is used as a solubilizing agent to solubilize testoster pharmaceutical liquid dosage forms
(a) Sucrose monoesters (b) Lanolin esters
(c) Lanoline ethers (d) Tween

29. One of the following is used as a pH dependent controlled release expicient
(a) Carnauba wax
(b) Hydroxy propyl methyl cellulose
(c) Methyl cellulose
(d) Glyceryl monosterate

30. The Schedule in D & C Act that deals with the standards for disinfectant fluids is
(a) Schedule B (b) Schedule F
(c) Schedule O (d) Schedule M

31. The carboxyl group of Aspirin is esterified with N-acetyl-p-aminophenol to get
(a) 3-Acetamidophenyl-o-acetyl salicylate
(b) 4-Acetamidophenyl-o-acetyl salicylate
(c) O-(2-hydroxy benzoyl) salicylic acid
(d) 2-Acetamidophenyl-o-acetyl salicylate

32. IUPAC system of nomenclature for Diclofenac sodium(BP) is
(a) Sodium 2-[(2,6-Dichlorophenyl) amino] phenyl acetate
(b) Sodium 3-[(2,6-Dichlorophenyl)amino] phenyl acetate
(c) Sodium 2-[(2-Chlorophenyl) amino] phenyl acetate
(d) Sodium 2-[(6-Chlorophenyl) amino] phenyl acetate

33. 1-(2-Aminoethyl) perhydroazocine on treatment with S-methyl isothiourea gives rise to anadrenergic neuron blocking agent
(a) Bethanidine (b) Mecamylamine
(c) Guanadrel (d) Guanethidine

34. Quercetin is
(a) 5, 7, 3'-Trihydroxy flavones
(b) 5, 7, 3, 4'-Tetrahydroxy flavones
(c) 3, 5, 7, 3, 4'-Pentahydroxy flavonol
(d) 3, 5, 7, 3, 4'-Pentahydroxy flavonone

35. Meconic acid is a chemical marker for the genus
(a) Piper (b) Pilocarpus (c) Prunus (d) Papaver

36. A novel diterpenoid isolated from the bark of Taxus brevifolia
(a) Demecolcine (b) Paclitaxel
(c) Vinblastin (d) Brevifolicin

37. The absorption maximum for polar compound is usually shifted with change in polarity of the solvents due to
(a) Hydrogen bonding
(b) Chemical reaction
(c) lonization of the compound
(d) Change in the chromophore

38. Aucation in which potential applied across tim electrode is maintained at a cont aloe and the current is measured and plotted against volume of titrant is
(a) Potentiometric titration
(b) Amperometric titration
(c) Displacement titration
(d) Conductometric titration

39. The parameter in the elution curse that is proportional to the concentration of a compound in gas chromatographic effluent is the
(a) Number of peaks (b) Width of the peak
(c) Area under the peak (d) Shape of the peak

40. A drug solution has a half life of 21 days. Assuming that the drag undergoes first order kinetics, how long will it take for the potency to drop to 90% of the initial potency
(a) 3.2 days (b) 9.6 days (c) 16 days (d) 64 days

41. An amphoteric surfactant used in pharmaceutical disperse systems is
(a) Bike salts (b) Lecithin
(c) Sorbitan monolaurate (d) Sorbitan monostearate

42. An abrasive used in dentifrices is
(a) Dicalcium phosphate
(b) Sodium carboxy methyl cellulose
(c) Sodium lauryl sulfate
(d) Dioctyl sodium sulfosuccinate

43. An electrochemical method that enhances the transport of some salute molecules by creating a potential gradient through skin tissue with an applied electrical current or voltage is called
(a) Electrophoresis (b) fontophoresis
(c) Osmosis (d) Implants

44. A patient with rheumatoid arthritis has been taking acetyl salicylic acid regularly. However, recently she has been experiencing stiffness, swelling and pain due to salicylate resistance. She has occult blood in her feaeces. Suggest an appropriate drug suitable for her from those mentioned below
(a) Paracetamol
(b) Celecoxib
(c) Piroxicam
(d) Naproxen

45. The break down of fibrin is catalysed by
(a) Plasmin (b) Renin (c) Urokinase (d) Ptylin

46. Which one of these best describes a process carried out to render a drug pharmacokinetically more acceptable
(a) Enteric coating of Diclofenac
(b) Co-administration of Aspirin with antacids
(c) Use of colloidal suspension or liposomes for administering Amphotericin-B
(d) Synthesis of an analogue to obtain high receptor specificity

47. Azithromycin is clinically administered once daily as compared to Erythromycin which is administered every 6 hours because, Azithromycin
(a) Penetrates into most tissue and is released very slowly
(b) Has a methylated nitrogen in its lactone ring which renders it much more potent than Erythromycin
(c) is a very potent antibiotic but not tolerated well in the gastrointestinal tract
(d) Is usually presented in a sustained release dosage from

48. A patient showing muscle rigidity, bradykinesia, tremors and postural instability was administered Levo-dopa. Which of the properties of Levo-dopa is not true
(a) Levo-dopa is preferred over Dopamine because it can cross the blood brain barrier
(b) Levodopa is the levorotatory stereoisomer of 3, 4-dihydroxy phenylalanine
(c) Levo-dopa gets decarboxylated in the brain to Dopamine
(d) Levo-dopa is administered because of its strong antagonistic action on Dopamine receptors

49. Autoimmunity refers to
(a) An automatic trigger of the immune system directed against a specific pathogen
(b) Failure to distinguish between self and non-self
(c) An automatic segregation of T and B cells
(d) Failure of B-cells to interact with T-cells

50. Which of these is true about the discovery of HB antigen in the blood of people infected with Hepatitis-B
(a) It provided a basis for vaccine design
(b) It indicated that specific vaccines cannot be designed for Hepatitis-B
(c) It has not been of much significance
(d) It indicated that Hepatitis-B is a viral disease

51. Which drug molecule does not have phenylethyl amine moiety
(a) Amphetamine (b) Glyburide
(c) Pheniramine (d) Mescaline

P.Q. R. Sare the options. Two of these options are correct.

Choose the correct combination from among the alternatives a, b, c and d action if insulin may prolonged

52. There are two methods by which the duration of
[P] Binding with resins
[Q] Esterification of amino acid residues
[R] Forming of complex of insulin with protein
[S] Modification of particle size
(a) [Q], [R] (b) [R], [S] (c) [P], [S] (d) [P], [R]

53. The attributes of Cycloserine are
[P] No tautomerism shown
[Q] Exists in equilibrium with its tautomeric enolic form
[R] Stable in alkaline solution, destroyed rapidly at neutral or acidic pH
[S] Stable in neutral solution, destroyed in alkaline pH
(a) [R], [S] (b) [P], [Q] (c) [Q], [R] (d) [P], [R]

54. Compared to benzyl Penicillin, Amoxicillin has the following advantages in biological properties
[P] The amino group renders the antibiotic resistant to acid catalysed degradation
[Q] The spectrum of activity is broadened
[R] The amino group renders penicillinase resistance to the compound
[S] The phenolic group renders penicillinase resistance to the compound
(a) [P], [Q] (b) [P], [R] (c) [P], [S] (d) [Q], [R]

55. The identification of propellants in pharmaceutical aerosols is carried out by
[P] Gas-chromatography
[Q] Tag-open cup apparatus
[R] Pycnometer
[S] IR Spectrophotometer
(a) [P], [Q] (b) [P], [S] (c) [Q], [R] (d) [R], [S]

56. Schedule 'H' and Schedule 'S as per the Drugs & Cosmetics Act deal with the following
[P] Prescription drugs which are required to be sold by retail only on prescription of RMP
[Q] Standard for cosmetics
[R] Biological and special products
[S] List of coal tar colours permitted to be used in cosmetics and soaps
(a) [P], [Q] (b) [P], [R] (c) [Q], [S] (d) [R], [S]

57. Myristica fragrans Houtt. has two of the following characteristics
[P] An indeciduous tree , produces drupaceous, pale yellow fruits
[Q] Each fruit has several round seeds with smooth surface and lignaceous tegument, and the orange red fleshy aril-the mace, is present inside the seed
[R] A deciduous tall tree, which produces lignaceous capsules aline
[S] Each fruit has a unique ovoid seed, with lignified tegument, surrounded by orange red laciniate fleshy aril-the mace
(a) [R], [R] (b) [P], [R] (c) [P], [S] (d) [Q], [S]

58. In size exclusion chromatography the stationary phases used are
[P] Alumina **[Q] Dextran**
[R] Agarose **[S] Styrene**
(a) [P], [S] (b) [Q], [R] (c) [Q], [S] (d) [P], [R]

59.

Group I	Group II
Synthetic Drug	Intermediates from which Group I drugs are synthesized
1. Buclizine	[P] Aziridine and thiophosphoryl chloride
2. Chlorphenesin	[Q] 4-Chlorophenol
3. Thiotepa	[R] 4-Chlorobenzhydryl chloride
4. Alprazolam	[S] 2-Amino-5-chloro benzophenone

(a) 1-[R], 2-[Q], 3-[P], 4-[S]
(b) 1-[S], 2-[Q], 3-[P], 4-[R]
(c) 1-[Q], 2-[S], 3-[R], 4-[P]
(d) 1-[P], 2-[Q], 3-[S], 4-[R]

60.

Group I	Group II
Cardiac Agents	Mechanism of Action
1. Digitoxin	[P] Produces negative inotropic effect by blocking cakium Channels
2. Dobutamine	[Q] Depresses adrenergically enhance calcium influx through beta receptor blockade
3. Sotalol	[R] Causes elevation of CAMP levels p stimulation of adenylate Cyclase
4. Nicardipine	[S] Inhibits membrane bound sodium

(a) 1-[S], 2-[R], 3-[Q], 4-[P]
(b) 1-[R], 2-[S], 3-[P], 4-[Q]
(c) 1-[S], 2-[Q], 3-[R], 4-[P]
(d) 1-[S], 2-[R], 3-[P], 4-[Q]

61.

Group I	Group II
Technique employed	Source of Radiation
1. Visible spectrophotometry	[P] Rf Source transmitter
2. IR spectrophotometry	[Q] Xenon lamp
3. NMR spectrophotometry	[R] Tungsten lamp
4. Fluorescence spectrophotometry	[S] Nernst glower

(a) 1-[Q], 2-[S], 3-[R], 4-[P]
(b) 1-[R], 2-[Q], 3-[P], 4-[S]
(c) 1-[R], 2-[S], 3-[P], 4-[Q]
(d) 1-[S], 2-[P], 3-[R], 4-[Q]

62.

Group I	Group II
Amino acids	Common degradative products that are citric acid cycle intermediates or their precursors
1. Aspartic acid	[P] Succinyl CoA
2. Arginine	[Q] Alpha-Ketoglutarate
3. Serine	[R] Fumarate
4. Methionine	[S] Pyruvate

(a) 1-[R], 2-[Q], 3-[S], 4-[P]
(b) 1-[R], 2-[P], 3-[S], 4-[Q]
(c) 1-[P], 2-[Q], 3-[R], 4-[S]
(d) 1-[R], 2-[P], 3-[S], 4-[Q]

63.

Group I Tablet defects	Group II Explanation
1. Picking	[P] A term used to describe the surface material from a tablet that is sticking to and being removed from the tablet's surface by a punch
2. Sticking	[Q] Term refers to tablet material adhering the die wall
3. Mottling	[R] Term refers to an unequal distribution of colour on a tablet
4. Lamination	[S] Term refers to separation of a tablet int two or more distinct layers

(a) 1-[P], 2-[Q], 3-[R], 4-[S]
(b) 1-[P], 2-[R], 3-[S], 4-[Q]
(c) 1-[Q], 2-[S], 3-[R], 4-[P]
(d) 1-[R], 2-[P], 3-[Q], 4-[S]

64.

Group I	Group II
Lanatosides	Aglycone
1. Lanatoside A	[P] Gitoxigenin
2.Lanatoside B	[Q] Diginatigenin
3. Lanatuside C	[R] Digoxigenin
4. Lanatoside D	[S] Digitoxigenin

(a) 1-[S], 2-[P], 3-[R], 4-[Q]
(b) 1-[P], 2-[Q], 3-[S], 4-[R]
(c) 1-[R], 2-[S], 3-[Q], 4-[P]
(d) 1-[Q], 2-[R],3-[P], 4-[S]

65.

Group I	Group II
Specific chemical test	Phytoconstituents
1. Thalkioquin Test	[P] Hyoscyamine
2. Murexide test	[Q] Barbakin
3. Vitali-Morin test	[R] Quinine
4. Modified Borntrager's test	[S] Theobromine

(a) 1-[Q], 2-[R], 3-[S], 4-[P]
(b) 1-[R], 2-[S], 3-[P], 4-[Q]
(c) 1-[P], 2-[Q], 3-[R], 4-[S]
(d) 1-[S], 2-[P], 3-[Q], 4-[R]

Statement for linked answer Question 66-68

In a formulation development laboratory a tablet is to be formulated. The core tablet has a bad taste and requires physical and chemical protection of the drug from moisture. The ablet should also deliver the drug for the local action in the intestine.

66. Suggest a suitable method
(a) Sugar coating (b) Film coating
(c) Enteric coating (d) Sub coating

67. Choose the correct coating material to be used
(a) Sugar (b) Acacia
(c) Ethyl cellulose (d) Cellulose acetate phthalate

68. Choose the correct solvent for the coating material
(a) Acetone (b) Water
(c) Propylene glycol (d) Glycerine

Statement for linked answer Question 69-70

Compound A with formula C_2H_7N shows the following important bands in the IR spectra (a) 3423cm^{-1} (b) 3236cm^{-1}

69. Assign these bands to the important group in the compound A
(a) – CH_3 (b) - NH2 (c) -CN (d) =C =N-

70. On treatment with nitrous acid the compound A is converted to Bwhich shows a strong band at 3430cm^{-1}. Assign the absorption band for the group formed in the product
(a) -OH (b) =C=N - (c) -COOH (d) - N=N-

Statement for linked answer Question 71-73

In the assay of Sulfamethoxazole L.P ($C_{10}H_{11}N_3O_3S$), 0.2g of the sample of 2M HCl. To this was added 3g of KBr and the titration was carried out

71. Titration was carried out using
(a) $NaNO_2$ to estimate the amino group
(b) $NaNO_2$ to estimate the sulphonam group
(c) NaOH to estimate the amino group
(d) NaOH to estimate the sulphonamid group

72. The end point in the assay was determined by
(a) Conductometric method
(b) Using an indicator
(c) Potentiometric method
(d) Photometric method

73. If the volume of 0.1 M titrant consumed was 7.8 ml calculate the purity of the sample
(a) 99.70% (b) 9.97% (c) 8.87% (d) 98.79%

Statement for linked answer Question 74-75

A drug which is unstable to light, susceptible to oxygen and gets degraded in presence metallic ions, has to be formulated in the form of a solution for injection.

74. Choose a suitable additive to improve the stability of the injection
(a) Preservative (b) Chelating agent
(c) Buffer (d) Tonicity contributor

75. Select the appropriate filling and packing method for the above product
(a) Filling in an amber colored ampoule with an addition of antioxidant, replacing the insi air with nitrogen and sealing
(b) Filling with an antioxidant dissolved in the solution and sealing the ampoule
(c) Filling in an amber colored ampouk with a preservative and sealing
(d) Filling in an ampoule, sealing and giving direction to store it in dark

Statement for linked answer Question 76-77

The usual adulterants for buds are clove stalks and anthophyll

76. Clove stalks can be identified by the presence of
(a) Starch grains
(b) Cystoliths
(c) Lignified sclerelds
(d) Acicular crystals of calcium oxalate

77. Anthophylli can be identified by the presence of
(a) Lignified sclereids
(b) Acicular crystals of calcium oxalate
(c) Cystoliths
(d) Starch grains

Statement for linked answer Question 78-80

Plant tissue culture of carrot is being developed in the laboratory on a semisolid White's medium.

78. The micronutrient essential in the medium is
(a) NaCl (b) $COCI_2$ (c) KCI (d) $CaCI_2$

79. The pH of the medium is
(a) 6.6 (b) 6.0 (c) 5.6 (d) 5.0

80. The tissue growth observed is
(a) Undifferentiated cells suspended in the medium
(b) Undifferentiated cells in clusters distributed in the medium
(c) Differentiated mass of cells
(d) Surface growth of undifferentiated mass of cells

Statement for linked answer Question 81-82

In glucose metabolism , name the enzymes catalyzing the following step

81. Conversion of glucose to glucose-6-phosphate
(a) Hexokinase
(b) Glucose-6-phosphate dehydrogenase
(c) Glycogen phosphorylase
(d) Glycogen synthase

82. Conversion of 2-phosphoglycerate to phosphoenol pyruvate
(a) Pyruvate kinase
(b) Phosphoglycerate mutase
(c) Phosphoglycerate kinase
(d) Enolase

Statement for linked answer Question 83-84

Methotrexate. Trimethoprim and Pyrimethamine are all known to be inhibitors of dihydrofolate reductase. Yet they are classified in different therapeutic categories

83. Trimethoprim has an advantage over methotrexate in its therapeutic category because
(a) Trimethoprim binds to bacterial DHFR about 50,000 times more strongly as compared to thehost DHFR
(b) Trimethoprim can be administered orally
(c) Trimethoprim exhibits no significant adverse effects
(d) Trimethoprim has additional anti-inflammatory properties

84. Methotrexate is thought to exert its actions by
(a) Interfering with purine synthesis
(b) Intracellular formation of an amine adduct
(c) Forming a conjugate with nucleic acids
(d) Inhibiting the synthesis of folic acid

Statement for linked answer Question 85-88

An administrative officer having high blood pressure, gastric acidity and diabetes is prescribed Famotidine, Enalapril and Tolbutamide

85. From the structural features of the drugs, predict which will be ionized in the stomach
(a) Famotidine
(b) Enahpril
(c) Tolbutamide
(d) Enalapril and Tolbutamide

86. The patient cannot tolerate Enalapril Which of the following can be substituted
(a) Omeprazole (b) Losartan
(c) Rosiglitazone (d) Clofibrate

87. Famotidine acts as
(a) H_1-histamine antagonist (b) H_2-histamine antagonist
(c) Proton pump inhibitor (d) H_1agonist

Statement for linked answer Question 88-90

2-Methoxy naphthalene on treatment with acetyl chloride in presence of AICI, gives 2- 6-methoxy naphthalene. This is converted with a set of reagents-X to 6-methoxy-2-naph acetic acid, which is esterified with methanol to the mehyl ester. Ester on treatment w gives DL-2-(6-methoxy-2-naphthyl)-propionic acid methyl ester. This on hydrolysis gives Z (final compound)

88. The set of reagents-X are
(a) Morpholine/Sulphur followed by H_2SO_4/H_2O
(b) Morphine/Sulphur followed by HCl/H_2O
(c) Formic acid/Cu followed by acetic acid
(d) Hydroiodic acid followed by H_2SO_4/H_2O

89. Identify the reagents-Y
(a) $NaOH/CH_3OH$ (b) NaH/CH_3I
(c) $Hydrazine/CH_3I$ (d) $LiAlH_4/CH_3OH$

90. The final compound Z is
(a) Naphazoline (b) Carprofen
(c) Pranoprofen (d) Naproxe

Answer Key

1-a	2-c	3-d	4-d	5-b	6-d	7-c	8-c	9-d	10-b
11-b	12-c	13-b	14-b	15-c	16-a	17-a	18-b	19-a	20-c
21-d	22-a	23-d	24-a	25-c	26-a	27-c	28-d	29-b	30-c
31-b	32-a	33-d	34-c	35-d	36-b	37-a	38-b	39-c	40-a
41-b	42-a	43-b	44-b	45-a	46-c	47-b	48-d	49-b	50-a
51-c	52-b	53-c	54-a	55-b	56-a	57-c	58-c	59-a	60-a
61-c	62-a	63-a	64-a	65-b	66-c	67-d	68-a	69-b	70-a
71-a	72-c	73-d	74-b	75-a	76-c	77-d	78-b	79-c	80-d
81-a	82-d	83-a	84-a	85-a	86-b	87-b	88-a	89-b	90-d

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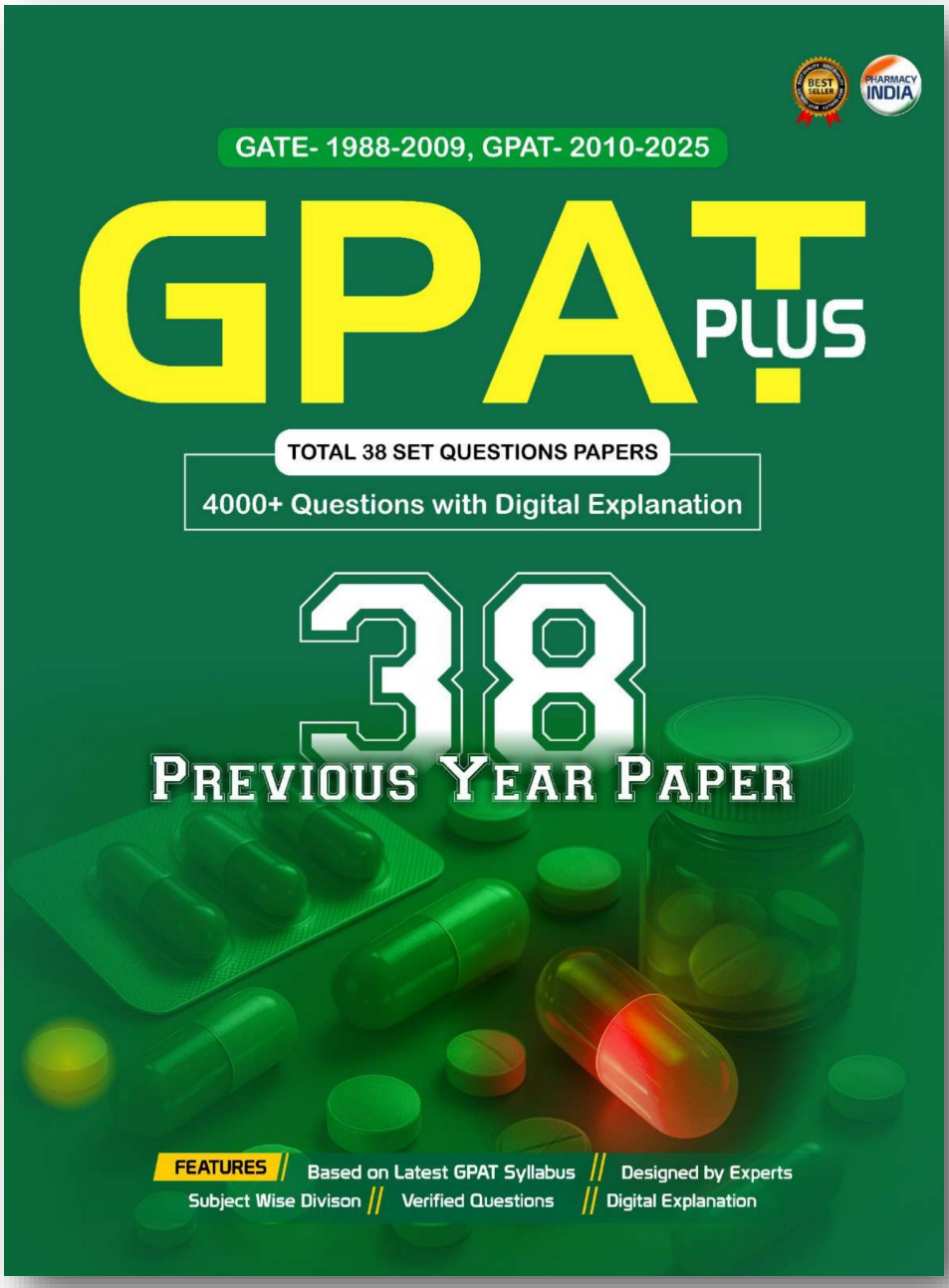

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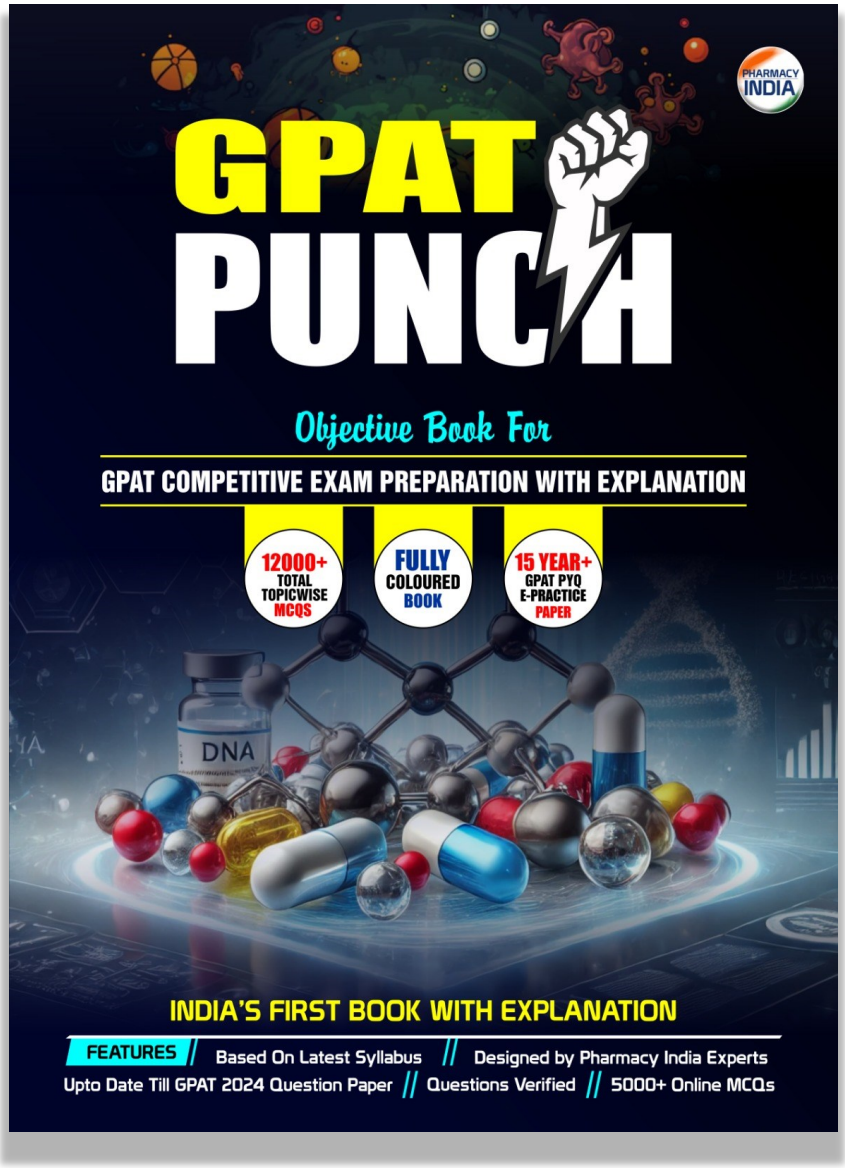

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