

GATE-1990

PART - A Section-I (Choose The Correct Answer)

1. Multiple choice question

i. Reserpine on hydrolysis gives

- (a) Reserpic acid Methyl alcohol Trimethoxy cinnamic acid
- (b) Reserpic acid acetic acid Trimethoxy benzaldehyde
- (c) Reserpic acid Methyl alcohol Trimethoxy benzoic acid
- (d) Reserpic acid Methyl alcohol - Trimethoxy cinnamaldehyde

ii. Papaverine is

- (a) 6, 7-dimethoxy-1-(3, 4-dimethoxy benzyl) isoquinoline
- (b) 6, 7 dimethoxy-1-(3, 4-dimethyl benzyl) isoquinoline
- (c) 6, 7-dimethoxy-1-(3, 4' dimethoxy benzyl) quinolone
- (d) 6, 7-dimethoxy-1-(3, 4-dimethyl benzyl) quinolone

iii. Titanium dioxide is commonly present in

- (a) Vanishing cream (b) Sunscreen cream
- (c) Aqueous calamine cream (d) Ophthalmic cream

iv. Powder ergot when treated with sodium hydroxide solution develops

- (a) A strong odour of ammonia
- (b) A strong odour of trimethyl amine
- (c) A strong odour of indole
- (d) A strong odour of urea

v. Salbutamol sulphate IP is assayed by

- (a) Direct titration with standard sodium hydroxide solution
- (b) Direct titration with standard sodium hydrochloric acid
- (c) A known amount of standard acid is added and excess is titrated with standard alkali
- (d) Dissolve in glacial acetic acid and titrated with standard perchloric acid using orcerts blue

vi. Heparin prevent blood coagulation by

- (a) Inhibiting thrombin catalyzed conversion of fibrinogen to fibrin
- (b) Precipitate blood calcium thereby prevent coagulation reactions
- (c) Inhibiting enzyme reactions
- (d) Converting ionized calcium into chelation

vii. For the registration of pharmacist in the various states, the Pharmacy Act provide for the constitution of

- (a) Registration tribunals
- (b) Registrar of Co-operative societies
- (c) Registrar of state pharmacy council
- (d) Registrar of central pharmacy council

viii. Powdered this is dried at temperature

- (a) Not exceeded 60°C (b) 65 °C
- (c) 75°C (d) 100 °C

- ix. **Prazepam differ in structure from diazepam by**
 - (a) N-methyl group (b) N-cyclopropyl group
 - (c) N-cyclopropyl methyl group (d) N-propyl group
- x. **The mechanism of action of Rifampicin involve**
 - (a) Inhibition of bacterial DNA directed RNA polymerase
 - (b) Inhibition of mycolic acid synthesis
 - (c) Inhibition of protein synthesis
 - (d) Inhibition of trans peptidase
- xi. **The UV visible region in the electromagnetic spectrum of radiation is**
 - (a) 200-400 nm (b) 300-660 nm
 - (c) 400-800 nm (d) 200-800 nm
- xii. **The Mantoux test uses**
 - (a) Okt tuberculin (b) Diphteria toxins
 - (c) Serum antigens (d) Polysaccharide antigens
- xiii. **Rutesort is a machine used to sort out**
 - (a) Coated tablets (b) Filled capsule
 - (c) Sealed ampoules (d) Sealed containers
- xiv. **The volume of distribution of drugs is**
 - (a) An expression of total body volume
 - (b) A measure of total fluid volume
 - (c) A relationship between the total amount of drug in the body and the concentration of the drug in the blood
 - (d) Proportional to bioavailability of the drug
- xv. **Resolution of a spectrophotometer is**
 - (a) Its wave length range
 - (b) Its ability to distinguish adjacent absorption bands
 - (c) Its capacity for its continuous use
 - (d) Its power to gather light according to source
- xvi. **Haloperidol is a major tranquillizer. It belongs to the class of**
 - (a) Carbamates (b) Propanediol
 - (c) Butyrophenone (d) Phenothiazine
- xvii. **Glandular hair growing having a unicellular or occasionally a short uniseriate pedicel with a unicellular or bicellular terminal gland is characteristics of**
 - (a) Senna leaves
 - (b) Belladonna leaves
 - (c) Datura stramonium leaves
 - (d) Digitalis Purpurea leaves
- xviii. **Skeletal muscle relaxation produced by the drug is effectively antagonized by**
 - (a) Diazepam (b) Succinylcholine
 - (c) Tubocurarine (d) Aminophylline
- xix. **Vitamin D₂ is**
 - (a) 22, 23-dihydro -5, 6 cis-ergocalciferol
 - (b) 5, 6 cis- cholecalciferol
 - (c) 7-dehydrocholesterol
 - (d) 21, 24-dihydro 5, 6 cis ergocalciferol

xx. R.W.C. is used to identify the strength of an
 (a) Antibiotics (b) Antipyretics
 (c) Antiseptic (d) Anti-inflammatory

xi. The colligative property of a solution is related to the
 (a) Total number of solute particles
 (b) pH
 (c) Number of ions
 (d) Number of ingredients

xii. The essential structural unit for the anthelmintics activity of Mebendazole is
 (a) Benzoyl group (b) Benz imidazole
 (c) Methyl carbamates (d) Imidazole

xiii. The anticoagulant activity of heparin sodium injection IP is estimated by using
 (a) Female rats (b) Male rats
 (c) Rabbits (d) Sheep

xiv. The biological half-life of a drug (first order kinetics) is represented by
 (a) $1/K$ (b) $\log K$ (c) $0.693/K$ (d) $2.303/K$

xv. Infra-red spectrometry is a convenient
 (a) Drug receptor interaction method for understanding of
 (b) Functional group identification
 (c) Physiochemical properties
 (d) Conformational properties

xvi. Most commonly used antimicrobial agent for intraperitoneal dialysis fluid is
 (a) Chlorocresol (b) Benzalkonium chloride
 (c) Isopropyl alcohol (d) None of the above

xvii. In the steroid nucleus, there are octane
 (a) Six chiral center with nucleus i.e. 5,8,9,10,13 and 14
 (b) Seven chiral center with nucleus i.e. 3,8,9,10,11, 12 and 14
 (c) Six chiral center with nucleus i.e. 3,8,9,10,11, and 12
 (d) Six chiral center with nucleus i.e. 5,7,9,10,13, and 16

xviii. Thermo labile immiscible liquid can be separated by
 (a) Decantation
 (b) Dilution
 (c) Capacity centrifugation
 (d) Counter current distribution

xix. Sulphamethoxazole is an antibacterial drug. It is a
 (a) Short acting drug (b) Intermediate acting drugs
 (c) Long acting drugs (d) Mixed acting drugs

xx. Wave number is the number of waves
 (a) Per second (b) Per centimeter
 (c) Per inch (d) Per centimeter

xxi. The raw material for the synthesis of propranolol is
 (a) α - Naphthylamine (b) β - Naphthol
 (c) α - Naphthol (d) 1- Naphthaklehyde

xxii. All the statement mentioned below about chloral hydrate is true EXCEPT that it
 (a) Produces hypnosis
 (b) Produces analgesia
 (c) Produce dependence
 (d) Irritate gastric mucosa

xxiii. In drug and cosmetics act and rules under their, list of substances that should be sold by retail only on prescription of registered medical practitioner is given in
 (a) Schedule H (b) Schedule V
 (c) Schedule X (d) Schedule Q

xxiv. Which is ideal combination for testing the solubility of an enteric coated capsule in alkaline medium?
 (a) Sodium bicarbonate + Potassium hydroxide + Pepsin
 (b) Sodium bicarbonate + Sodium tauroglycocholate + Papain
 (c) Sodium bicarbonate + Pancreatin + Sodium tauroglycocholate
 (d) Sodium bicarbonate + Billirubin.

xxv. Oxazepam is used in relief of psychoneurosis. It has lower incidents of side effects and reduced toxicity due to
 (a) N-demethylation
 (b) Ring oxidation
 (c) Aromatic hydroxylation
 (d) Conjugation of 3- hydroxyl group

xxvi. The rate of diffusion of drug across biological membrane is
 (a) Directly proportional to the concentration gradients
 (b) Dependant on route of administration
 (c) Indirectly proportional to membrane thickness
 (d) None of the above

xxvii. In sugar coating of tablets sub coating is done
 (a) To prevent moisture deposition
 (b) To round the edge and build tablet size
 (c) To smoothen the surface
 (d) To prevent the tablet from breaking due to vibration

xxviii. One of the detectors used in gas chromatography
 (a) Bolometer (b) Thermal conductivity detector
 (c) Golay detectors (d) Giger Counter

xxix. Alkaloids in cinchona bark are detected by
 (a) Iodine test
 (b) Thallequine test
 (c) Liebermann -Burchard test
 (d) Nessler's test

xxx. Of 2-amino-5-chlorobenzophenone is the convenient starting material for the synthesis
 (a) Nitrazepam (b) Diazepam
 (c) Chloramphenicol (d) Trimethoprim

SECTION-II (Match The Following)

2. Multiple choice question

i. Given below are some of the associate colloids. Match the correct type from the list [F] to [5]

1. Sodium lauryl sulphate [P] Anionic
2. Cetyl trimethyl ammonium bromide [Q] Cationic
3. Polyoxy ethylene lauryl ether [R] Nonionic

4. Dimethyl dodecyl ammonio propane sulphate
 (a) 1-[Q], 2-[P], 3-[S], 4-[R]
 (b) 1-[P], 2-[Q], 3-[R], 4-[S]
 (c) 1-[R], 2-[S], 3-[P], 4-[Q]
 (d) 1-[P], 2-[Q], 3-[S], 4-[R]

[S] Ampliolytics

ii. Given below are the essential pharmacophore for the drugs mentioned from [P] to [T]. match them

1. 1,4 benzodiazepine	[P] Pindolol
2. B-lactum fused with thiazolidine	[Q] Amoxycillin
3. Ethylene diamine	[R] Ethambutol
4. Aryloxypropanolamine	[S] Salbutamol
	[T] Oxazepam

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

iii. The drugs mentioned below are produced by species mentioned from [P] to [T]

1. Rifampicin	[P] Streptomyces griseus
2. Nystatin	[Q] Bacillus polymyxa
3. Amphotericin B	[R] Streptomyces mediterranei
4. Candicidin	[S] Streptomyces nodosus
	[T] Streptomyces noursei

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

iv. Given below are some important drugs. Find out the correct constitution listed [P] to [T] derived from them

1. Cephalis ipecacuanha	[P] Cineole
2. Papaver somniferum	[Q] Safrole and myresticin
3. Cascara sagrada	[R] Morphine
4. Myristica fragrans	[S] Antraquinone glycoside
	[T] Emetine

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

v. The side chain responsible for the biological activity of drug listed from [P] to [T] are given below. Match them correctly

1. <chem>NH-CH(CH2-CH2-CH2-CH2)-N(C2H5)2</chem>	[P] Amodiaquine
2. <chem>CH2-CH2-SO2-CH2-CH3</chem>	[Q] Tinidazole
3. <chem>0-CH2-CH2-N(CH3)2</chem>	[R] Chloroquine
4. <chem>NH-CH(OH)CH2N(C2H5)2</chem>	[S] Diphenhydramine
	[T] Chlorpromazine

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

vi. The following form under schedule A of the drug and cosmetics act utilized for applying for licenses listed [P] to [T], match them

1. Form 8 [P] Application to import drugs for personal use

2. Form 12 A [Q] Applications for grant of license to sell stock or distribute drug
 3. Form 19 [R] Application to import biological products
 4. Form 24 C [S] Application to manufacture homeopathy Drugs
 [T] Application to import drugs for research purposes

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

vii. Listed below are the instruments used for measuring the factors given in [P] to [T]. Match them

1. Rotational viscometer	[P] Shear rate/shear stress and viscosity
2. Penetrometer	[Q] Melting point
3. Hanson-paddle equipment	[R] for consistency and hardness of relatively Rigid semisolids
4. Glass electrode	[S] Dissolution of granules and tablets
	[T] pH indicating electrode

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

viii. Symptoms for the following diseases are indicated from [P] to [S]. Match them

1. Cushing's syndrome	[P] Hyperthyroidism
2. Addison's disease	[Q] Inflammatory bowel
3. Grave's disease	[R] Decreases production of cortisol
4. Crohn's disease	[S] Increased production of cortisol

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

ix. Some possible causes are mentioned in [P] to [T] for the following defects during the film coating of tablets, match them

1. Chipping	[P] poor spreading of sprayed droplets
2. Cracking	[Q] Over heating during spraying
3. Orange peel	[R] High internal stresses in film
4. Blistering	[S] Excess coating process
	[T] Precipitate of polymer due to high Temperature or poor solvent

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

x. Match the biological activity listed under [P] to [S] for following drugs

1. 0-2-naphthyl m, N-dimethylthio carbanilate [P] Antineoplastic

2. Trans-1, 4, 5, 6-tetrahydro-1-methyl-2-[2-(2-thienyl) vinyl] Pyrimidine
 3. 2, 4-diamino-5-(p-chorophenyl)-6-ethylpyrimidine
 4. p-(di-2-chloroethyl) aminophenyl butyric acid
 (a) 1-[S], 2-[Q], 3-[R], 4-[P]
 (b) 1-[P], 2-[Q], 3-[R], 4-[S]
 (c) 1-[Q], 2-[S], 3-[R], 4-[P]
 (d) 1-[R], 2-[P], 3-[Q], 4-[S]

[Q] Anthelmentic
 [R] Antimalarial
 [S] Antifungal

x. Match the correct method of sterilization listed [P] to [T] for the following drugs

1. Tetracycline injection [P] Sterilized by dry heat
 2. Insulin injection [Q] Sterilized by heating with bactericide
 3. Quinine injection [R] Sterilized by bacterial filtration
 4. Morphine injection [S] Sterilized by aseptic method
 [T] Sterilized by heating in an autoclave
 (a) 1-[Q], 2-[P], 3-[S], 4-[R]
 (b) 1-[P], 2-[Q], 3-[R], 4-[S]
 (c) 1-[T], 2-[Q], 3-[R], 4-[P]
 (d) 1-[S], 2-[R], 3-[T], 4-[Q]

xii. Given below are the receptors and their antagonists.

Match them correctly

1. GABA receptors
 2. Histamine H₁ receptors
 3. Opioid receptors
 4. B-adrenergic receptors

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

[P] Buprenorphine
 [Q] Diazepam
 [R] Ranitidine
 [S] Nifedipine
 [T] Atenolol

xiii. The names of equations for various expressions are given below. Match them correctly

1. $id = 607n CD \frac{1}{2} m \frac{2}{3} t \frac{1}{6}$
 2. $V = \frac{\pi r^4 t \Delta P}{8I.n}$
 3. $[n] = kM^\alpha$
 4. $T_g = (0.5-0.67) T_m$

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

[P] Mark-Houwink
 [Q] Ilkovic
 [R] Poiseuille
 [S] Boyer-Beaman
 [T] Beer-Lambert

xiv. The various equipments are used for size reduction of material of different nature Match them correctly

1. Rod mill
 2. Fluid energy mill
 3. Cutting mill
 4. Revolving mill

[P] Sticky material
 [Q] Abrasive material
 [R] Thermo labile material
 [S] Fibrous material
 [T] Thermostable material

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

xv. Match the drugs in [P] to [T] which inhibit the following enzymes

1. Carbonic anhydrase [P] Dicloxacillin
 2. Dihydrofolate synthetase [Q] Physostigmine
 3. -lactamase [R] Acetazolamide
 4. Acetylholinesterase [S] Sulphanilamide
 [T] Ibuprofen

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

xvi. Given below are some of the important drugs. Appropriate tests are listed in [P] to [T]. Match them correctly

1. Cardiac glycoside [P] p-dimethyl amino benzaldehyde
 2. Ergot alkaloids [Q] Fluorescence test
 3. Quinidine sulphate [R] Liebermann Burchard test
 4. Camphor [S] 2, 4 dinitrophenyl hydrazine
 [T] Benedict's test

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

xvii. The undesirable effects of the antibiotics are listed in [P] to [T] match them

1. Tetracycline [P] Gray-baby syndrome
 2. Streptomycin [Q] Discolouration of teeth
 3. Chloramphenicol [R] Jaundice
 4. Rifampicin [S] Obesity
 [T] Ototoxicity

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

xviii. Choose the most appropriate starting material listed in [P] to [T] for the synthesis of the following

1. Riboflavin [P] p-anisidine
 2. Progesterone [Q] 3, 4-diemthylaniline and D- ribose
 3. Isoniazide [R] Diosgenin
 4. Indomethacin [S] - picoline
 [T] Lumiflavine

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

xix. Absorption frequency (cm⁻¹) in IR spectroscopy for carbonyl group are given in [P] to [T] match them

1-COCl [P] 1720
 2. $\text{---O---C} \parallel$ [Q] 1735
 3.-CHO [R] 1750

24. (a) What is drug regimen in combination therapy of leprosy?

(b) Why chemotherapy leprosy is hampered?

25. Give reasons for the following

(a) In the determination of Ca^{++} ions by complexometry using Erichrome black T as indicated a little magnesium EDTA is added

(b) Tetrabutyl ammonium hydroxide is the preferred titration in the titration of acidic substance by nonaqueous method

(c) Ammonia and EDTA forms complexes with metal ions like Cu^{+2} . Ag but ammonia is not used as a titrant in complexometry.

26. Write the merits and demerits of anabolic steroids. Mention the names of two official preparations

27. What happens when? Give equations

(a) Sodium salt of toluene p- sulphonamide is condensed with n-butyl isocynate

(b) Benzhydryl bromide is treated with 2-dimethyl amino ethanol in presence of alkali.

(c) m-nitrobenzakiehyde is treated with butyric anhydride, the resulting compound is reduced and iodinated

Answer Key

PART (SECTION - I)

i - c	ii - a	iii - b	iv - b	v - d	vi - a	vii - c	viii - a	ix - c	x - a
xi - d	xii - a	xiii - b	xiv - c	xv - b	xvi - c	xvii - c	xviii - b	xix - a	xx - c
xxi - a	xxii - c	xxiii - d	xxiv - c	xxv - b	xxvi - d	xxvii - a	xxviii - a	xxix - b	xxx - b
xxxi - c	xxxii - a	xxxiii - a	xxxiv - c	xxxv - d	xxxvi - a	xxxvii - b	xxxviii - b	xxxix - b	xi - c

PART (SECTION - II)

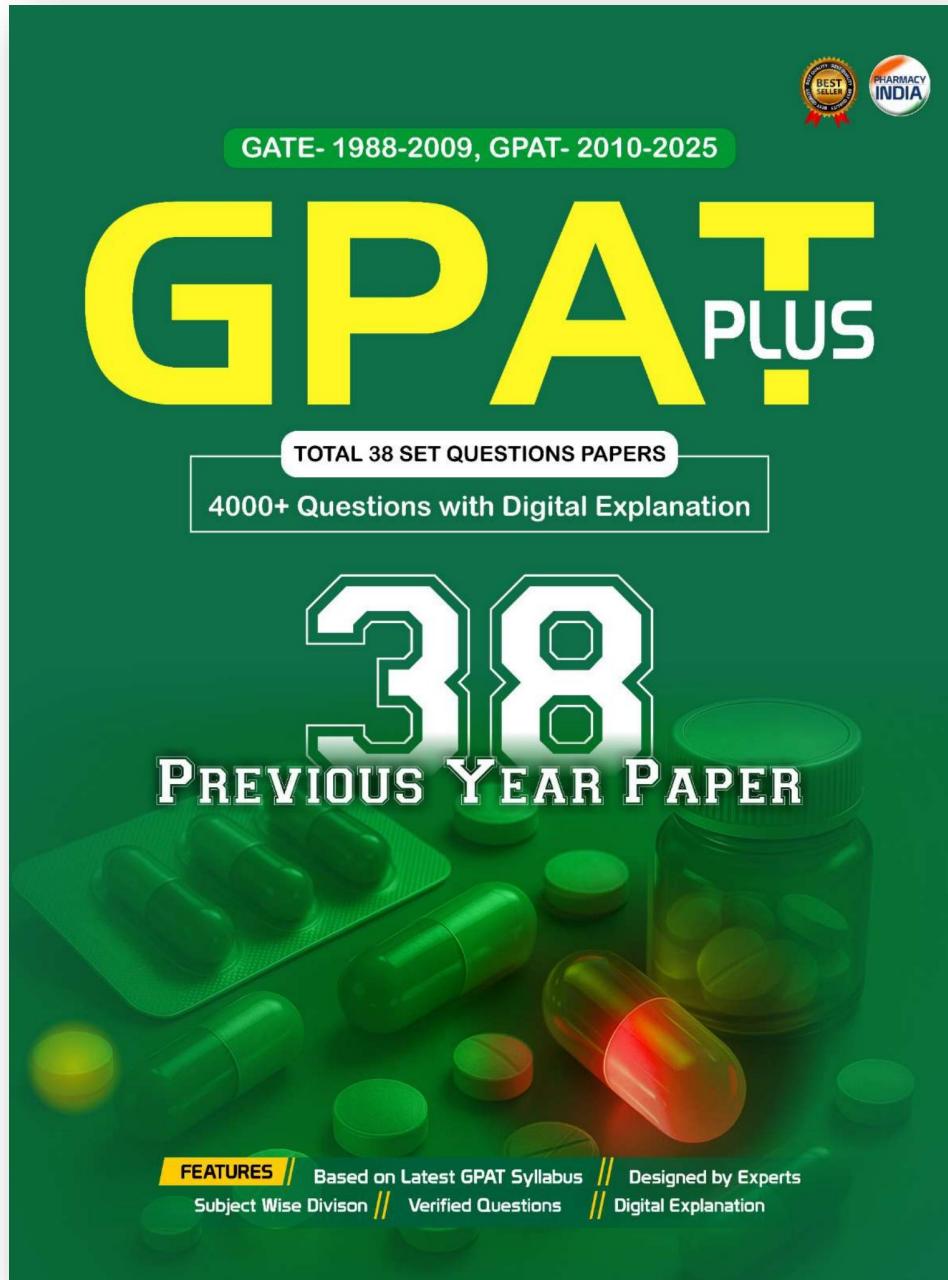
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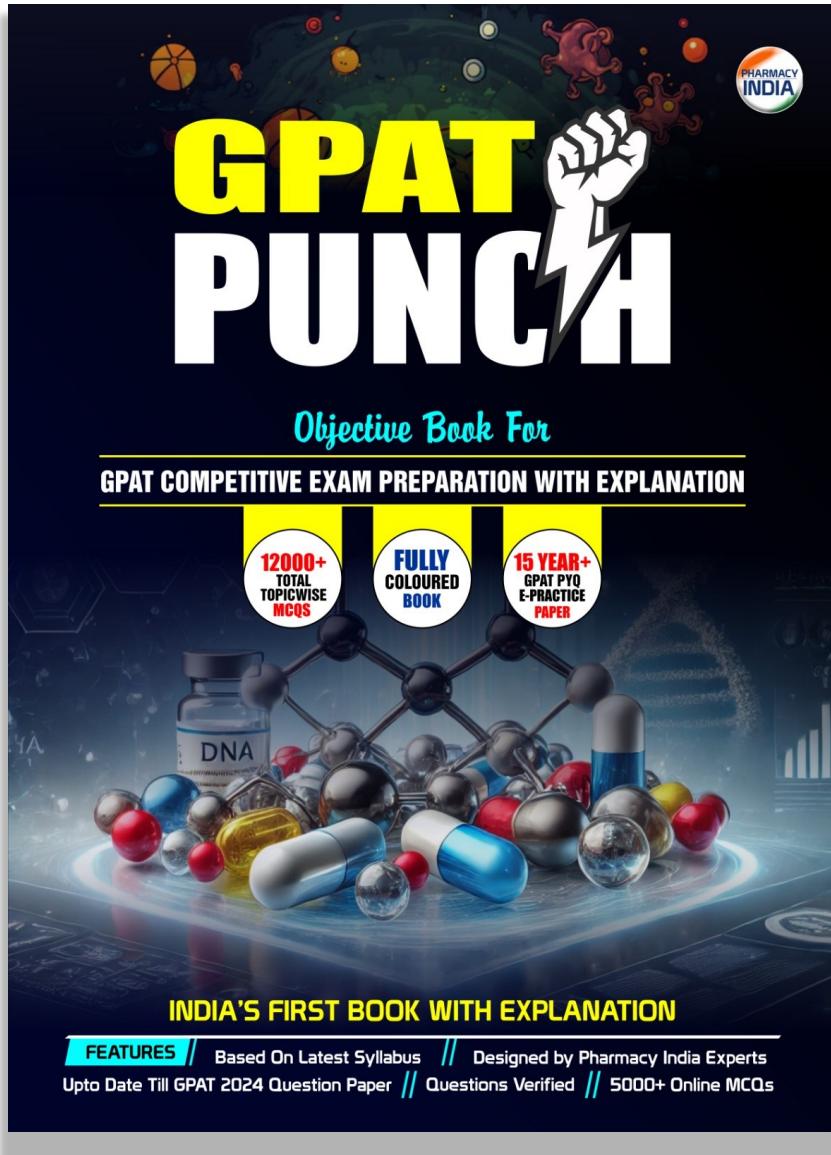
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