GATE-1998

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

R1. Answer all questions in this section.
2. Answer question No. 1 and 2 in the specific columns provided in the answer book.

1.1 The opium alkaloids in Papaver somniferum is present as one of the following. Identify.
(a) Free alkaloids (b) As salts of citric acid
(c) As salt of meconic acid (d) None of these

1.2 In expressing Vitamin A activity one of the following is true. Identify.
(a) One RE represents the biological activity in 1 µg of all-trans retinol
(b) One RE represents the biological activity of 30 mg of all-trans retinol
(c) One RE represents the biological activity of 0.334 µg of all-trans retinol
(d) None of the above

1.3 Which of the antineoplastic agent is metabolised by Xanthine oxidase
(a) 6-Mercaptopurine (b) Vincristine
(c) Chlorambucil (d) 6-Thioguanine

1.4 If a drug has a very small volume of distribution (Vd), it is likely that this drug
(a) Has a short biological life
(b) Does not accumulate in various tissues and organs
(c) Not bioavailable
(d) Will not be effective

1.5 The energy of a photon is given by the relationship E = hv, where
(a) E is energy of photon in kilo-calories
(b) E is energy of photon in cycles/sec
(c) E is the energy of photon in joules
(d) E is the energy of photon in ergs

1.6 Gas chromatographic technique can be used for
(a) Qualitative analysis only
(b) Quantitative analysis only
(c) Both (a) and (b)
(d) None of these

1.7 Reference compound widely used in NMR spectroscopy for proton spectra in non-aqueous medium is
(a) Silane (b) Tetramethyl silane
(c) DPPH (d) Peroxymide disulphonate

1.8 Liposomes are
(a) Uni or multilayered vesicles of phospholipids
(b) Type of enzymes
(c) Fibrinogenes
(d) Red blood cells

1.9 The gonadal hormones like Estrogens, Androgens and Progestins binds with
(a) Receptors located in the cytoplasm
(b) Receptors located in the nucleus of the cell
(c) Receptors located in the contractile vacuoles
(d) None of the above

1.10 A highly sensitive semi-quantitative method of detecting microbial antigens in biological fluid is
(a) Counter immune electrophoresis
(b) Nitroblue tetrazolium dye assay
(c) The Coomb's test
(d) Radio-immune electrophoresis

1.11 Polyene antibiotics such as Amphotericin-B are most likely to
(a) Inhibit bacterial DNA synthesis
(b) Bind to prokaryotic ribosomes
(c) Act as antimetabolites
(d) React with sterols in the membrane

1.12 Among the following statements, one of them is most appropriate for γ-Interferon. Identify.
(a) They are virus-specific substances and not host-specific, naturally occurring glycoproteins
(b) They are not virus-specific substances, however, they are naturally occurring glycoproteins
(c) They are not virus-specific substances, however, they are not host-specific either. They are naturally occurring glycoproteins
(d) They are virus-specific and host-specific naturally occurring glycoproteins

1.13 The tear secretion contains an antibacterial enzyme known as
(a) Zymase (b) Diastase (c) Lysozyme (d) Lipase

1.14 A list of ACE inhibitors is given below. One of them is not a prodrug. Identify.
(a) Benazepril (b) Captopril
(c) Quinapril (d) Ramipril

1.15 Which one of the following is not a pharmacological effect of Morphine
(a) Constriction of the pupil (b) C.N.S. depression
(c) Diarrhoea (d) Respiratory depression

1.16 Half-life equation for first-order reaction is
(a) $t_{1/2} = a / 2K$ (b) $t_{1/2} = 0.693 / K$
(c) $t_{1/2} = 1 / aK$ (d) $t_{1/2} = 3 / 2 \times 1 / a^2K$

1.17 Which one of the following is true for alkaloidal bases
(a) Water solubility and organic solvent insolubility
(b) Water insolubility and organic solvent insolubility
(c) Water solubility and organic solvent solubility
(d) Water insolubility and organic solvent solubility

1.18 The conductivity of the solution of an electrolysis is
(a) Non temperature dependent
(b) Temperature dependent
(c) Pressure dependent
(d) None of these

1.19 One of the materials listed below is most commonly used in film coating of tablets. Identify.
(a) Hydroxypropyl Methyl Cellulose (b) Acacia
(c) Simple Syrup (d) Bees Wax

1.20 Lamination is defined as
(a) Separation of a tablet into two or more distinct layers
(b) Partial and complete separation of the top and bottom crowns of a tablet from the main body of the tablet
(c) Process of sub-coating of tablets
(d) None of the above

1.21 Among the four opioids given below, one of them is equipotent on μ, δ, κ, and κ_3 receptor types. Identify.
(a) Fentanyl (b) Methadone
(c) Morphine (d) Etorphine

1.22 In amperometric titrations, which one of the following is kept constant:
(a) Current (b) Resistance
(c) Voltage applied (d) Conductance

1.23 Disposable syringes are made up of
(a) Polypropylene (b) Transparent Polystyrene
(c) Glass (d) Polytetrachloroethylene

1.24 Typhoid vaccine IP is a sterile suspension or a freeze-dried solid prepared from
(a) Salmonella typhimurium (b) Salmonella paratyphi
(c) Salmonella typhi (d) Salmonella Enteritidis

1.25 In the microbiological assay of bacitracin IP, the test organism used is
(a) Staphylococcus aureus
(b) Staphylococcus epidermidis
(c) Micrococcus luteus
(d) Bacillus pumilus

1.26 In the general formula R-X-C-C-N: X = Nitrogen, Oxygen or Carbon, R = Different groups. This formula represents
(a) Antitussive (b) Antipyretics
(c) Analgesics (d) Hallucinogens

1.27 The biological source of cinnamon bark is
(a) Dried inner bark of shoot of coppiced trees of Cinnamomum zeylanicum (Family – Lauraceae)
(b) Dried inner bark of the shoot of coppiced trees of Cinnamomum inidum (Family – Lauraceae)
(c) Dried wood bark of Cinnamomum camphora (Family – Lauraceae)
(d) Dried inner bark of the shoot of coppiced trees of Cinnamomum loureirii (Family – Lauraceae)

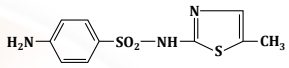
1.28 Identify the correct Geneva name for Cortisone
(a) 4 – Pregnene 17α, 21 – diol – 3, 11, 20 – trione
(b) 3 – Pregnene 17α, 21 – diol – 3, 11, 20 – trione
(c) 4 – Pregnene 11β, 17α, 21 – triol – 3, 20 – dione
(d) 4 – Pregnene 12β, 17α, 21 – triol – 3, 20 – dione

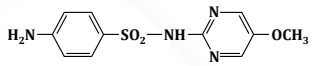
1.29 Identify one of the Carbonic Anhydrase inhibitors that inhibit only luminal carbonic anhydrase enzyme
(a) Methazolamide (b) Acetazolamide
(c) Dichlorphenamide (d) Benzolamide

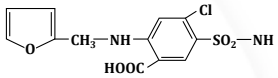
1.30 Testosterone is rapidly converted to one of the following metabolic products in many tissues, which is the active Androgen
(a) 5-β Dihydrotestosterone (b) 5-OH-Testosterone
(c) 5-α Dihydrotestosterone (d) 5α, 6β-OH-Testosterone

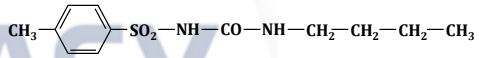
1.31 One of the following drugs is an alkylating agent. Identify.
(a) Cyclophosphamide (b) Methotrexate
(c) Allopurinol (d) Rifampicin

1.32 Listed below are structures of Sulphonamides. Which one of them is used as an anti-diabetic drug?

(a) 

(b) 

(c) 

(d) 

1.33 Four sets of intermediates are listed below. Choose the correct set for the synthesis of Bupivacaine IP.
(a) α-Picolinic acid chloride with 2,6-diethyl aniline
(b) β-Picolinic acid chloride with 2,6-dimethyl aniline
(c) α-Picolinic acid chloride with aniline hydrochloride
(d) α-Picolinic acid chloride with 2,6-dimethyl aniline

1.34 Among the immunizing agents listed below, one of them is orally administered. Identify.
(a) Tetanus toxoid
(b) Rabies vaccine
(c) Poliomyelitis vaccine
(d) Mumps virus vaccine

1.35 In vitro dissolution rate studies on drug product are useful in bioavailability evaluations if they are correlated with
(a) Disintegration rate
(b) In-vivo studies in at least three species of animals
(c) The chemical stability of the drug
(d) In-vivo studies in humans

Section – II (Match The Following)

R2. In the following sub-questions, match each of the items of 1 and 2 on the left with an appropriate item on the right [P, Q, R, S] and write in the specific space provided in the answer book.

2.1 The mechanism of action of antiviral drugs are given. Match with closely associated drugs given in [P] to [S].

Mechanism of action	Drug
1. Inhibit an early step in viral replication via viral uncoating	[P] Amantadine
2. Irreversible inactivation of DNA polymerase	[Q] Methisazone
	[R] Rifampin
	[S] Acyclovir

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

2.2 Given below are the etiologic agents. Match with the common name of the infection listed in [P] to [S].

Etiologic agents	Infection Name
etiologic agents	[P] Tapeworm
etiologic agents	[Q] Pinworm
	[R] Roundworm
	[S] Hookworm

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

2.3 The substance mentioned below elicit the therapeutic effect given in [P] to [S].

Substances	Therapeutic Effect
1. Hepatitis B immunoglobulin antibodies	[Q] Induce functional differentiation
2. Tetanus toxoid	[R] Provide transfer of passive immunity
	[S] Provide short-term non-specific bactericidal effect

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

2.4 The following glycosides of Digitalis purpurea give on hydrolysis the genins and sugars listed in [P] to [S]. Match them.

Glycosides of Digitalis purpurea	Components on Hydrolysis
1. Purpurea Glycoside-A	[P] 1, 3, 5, 11α, 19-hexahydroxy cardenolide + Glucose + Digitoxose
2. Purpurea Glycoside-B	[Q] 3β, 14β-dihydroxy cardenolide + Glucose + Digitoxose
	[R] 3β, 14β, 16β-trihydroxy cardenolide + Glucose + Digitoxose
	[S] 3β, 12β, 14β-trihydroxy cardenolide + Glucose + Digitoxose

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

2.5 Listed below are some important antibiotics from [P] to [S]. Match them with the number of amino acids they are made from.

Antibiotics	Source
1. Bacitracin	[P] From several amino acids
2. Erythromycin	[Q] From single amino acids
	[R] From acetate or propionate units
	[S] From sugars

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

2.6 The substitution of R in the structure is listed in [P] to [Q] for the following antibiotics. Match them.

Antibiotics	Structure
1. Cloxacillin	[P]
2. Carbenicillin	[Q]
	[R]
	[S]

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

2.7 Some of the vitamins listed below are associated with co-enzymes given in [P] to [S]. Match them.

Vitamins	Co-Enzyme
1. Nicotinic Acid	[P] Coenzyme A
2. Riboflavin	[Q] Coenzyme I
	[R] TPP
	[S] FAD

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

2.8 Listed are some tablet additives. Match them with their correct use given in [P] to [S].

Tablet additives	Function
1. Acacia	[P] Binder
2. Lactose	[Q] Glidant
	[R] Diluent
	[S] Lubricant

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

2.9 The compounds listed below are assayed by methods given from [P] to [S]. Match them.

Compounds	Method
1. Pyridoxine Hydrochloride I.P.	[P] Colorimetry
2. Ranitidine Hydrochloride	[Q] HPLC
	[R] Fluorimetry
	[S] Non-aqueous titration

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

2.10 The following chromatographic techniques are associated with the support materials used in the column, which are given in [P] to [S]. Match them.

Chromatographic Techniques	Support Material
1. Size exclusion chromatography	[P] Octadecyl silane chemically bonded to porous silica
2. HPLC	[Q] Cellulose acetate
	[R] Diatomaceous support
	[S] Agarose F.C.

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

2.11 For the following potentiometric titrations, indicate the electrode used as given from [P] to [S]. Match them.

Potentiometric titrations	Electrode Type
1. Acid base	[P] Silver electrode
2. Complexometry	[Q] Glass electrode
	[R] Platinum electrode
	[S] Mercury–II electrode

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

2.12 Following ring systems are present in the alkaloids listed [P] to [S]. Match them.

Ring systems	Alkaloid
1. Imidazole	[P] Pelletierine
2. Isoquinoline	[Q] Nicotine
	[R] Papaverine
	[S] Pilocarpine

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

2.13 Following constituents are present in drugs listed in [P] to [S]. Match them.

Constituents	Source
1. D-Linalool	[P] Opium
2. Panaxadiol	[Q] Coriandrum sativum
	[R] Ginseng
	[S] Brahmi

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

2.14 Systematic names of the following biologically important purines are given in [P] to [S]. Match them correctly.

Purines	Name
1. Adenine	[P] 2-amino-6-oxy purine
2. Guanine	[Q] 6-amino purine
	[R] 1,3,7-dimethyl-6-hydroxy purine
	[S] 6-hydroxy purine

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

2.15 The drugs mentioned below are synthesized from intermediates listed in [P] to [S]. Match them.

Drugs	Intermediate
Meprobamate	[P] 2-chloro-5-amino benzophenone and glycine
Diazepam	[Q] 2-amino-5-chloro-benzophenone and ethyl glycinate
	[R] 2-ethyl benzaldehyde and formaldehyde
	[S] 2-methyl valeraldehyde and formaldehyde

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

2.16 Some of the drugs listed below from [P] to [S] have specific mechanisms of action. Match them.

Mechanisms of action	Drug
1. Interferes with the renin–angiotensin system	[P] Hydralazine
2. Directly relaxes arteriolar smooth muscles and thus decreases peripheral resistance	[Q] Methyl Dopa
	[R] Enalapril
	[S] Clonidine

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

2.17 Given below from [P] to [S] are application forms for the specific purpose listed as per Drugs and Cosmetics Act. Match them.

Specific purpose	Form Number
1. Manufacture of cosmetics	[P] Form No. 31
2. Retail sale of schedule C and C_1 drugs	[Q] Form No. 20 C
	[R] Form No. 20
	[S] Form No. 21

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

2.18 For many drugs in the I.P., exact solubility limits are not listed. Instead, descriptive terminology is employed. Match the numbered solubility limits with the correct descriptive solubility expression (g/mL).

Solubility	Solubility Range
1. Very soluble	[P] Less than 1

2. Sparingly soluble	[Q] From 1 to 10
	[R]From 30 to 100
	[S] From 100 to 1000

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

2.19 It is often desirable to formulate a dosage form so that its pH is approximately equivalent to that of the area of which it is administered. Match them.

Components	pH
Blood	[P] pH 7.4
Skin	[Q] pH 6.4
	[R] pH 5.5
	[S] pH 6.8

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

2.20 The following microscopical characteristics are associated with the drugs mentioned in [P] to [S]. Match them.

Microscopical characteristics	Plant Source
1. Rubiaceous type of stomata (Paracytic)	[P] Atropa belladonna leaves
2. Ranunculaceous type of stomata	[Q] Cassia acutifolia leaves
	[R] Cassia auriculata leaves
	[S] Digitalis purpurea leaves

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

PART – B Answer any TEN questions

3. Give the five steps involved in the absorption of **Transdermal dosage forms.**

4. (A) Give the **structural formula** of the important phenolic constituent of **clove oil.**
(B) Give its **name.**
(C) What happens when a transverse section of the **clove bud** is treated with strong potassium hydroxide solution and examined under a microscope?
(D) What are (answer in one sentence each):
(i) Mother clove
(ii) Blown clove

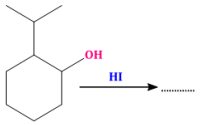
5. (A) Three types of electrons are involved in the absorption of energy in the **UV region.** What are they?
(B) In **fluorimetry,** how is the emitted radiation separated from the incident radiation?
(C) Why IR radiations cannot bring about **electronic changes?**

6. **Show how you would convert the following. Choose any other reagents if needed. Answer by giving equations only.**
(A) Pyridine to Iodone I.P.
(B) 2-Amino Benzophenone and Ethyl Glycinate to Nitrazepam
(C) Methyl Acetoacetate and 2-Nitro-Benzaldehyde to Nifedipine

7. (A) Draw the **structure of Allopurinol.**
(B) How does it act? (Answer in one sentence)
(C) What is its interaction with **Probenecid?** (Answer in two sentences)
(D) What is its major clinical use? (Answer in 2 sentences)

8. Compound **A** with molecular formula **$C_{18}H_{22}O_2$** gave. What inferences can you draw from reaction [A] to [E]? Answer each in one sentence only.
(A) **Chrysene** on zinc dust distillation.
(B) **Oxime** on treatment with $NH_2–NH_2$.
(C) **Methyl ether** with CH_3I.
(D) On **catalytic hydrogenation**, it is converted to **$C_{18}H_{30}O_2$,** a dihydroxy derivative.
(E) It undergoes a **coupling reaction** with Benzene diazonium chloride.

9. (A) Mention the **difference between the optical activity** of Limonene and **Dipentene.**
(B) Show how **Limonene** is converted to **Carvone.**



(C) Complete the following reaction:

10. (A) List **four basic principles of HPLC.**
(B) Name the technique used to handle solids as a thin paste in **IR spectrophotometry.**

11. (A) What is the **source of Belladonna Herb, I.P.?**
(B) Give the **microscopical characteristics** of **Belladonna leaf** under the following headings.
Answer each in one or two sentences only.
(i) Epidermal cells (ii) Stomata
(iii) Calcium oxalate crystals (iv) Trichomes

12. Calculate the **concentration of Dextrose** required to make a **0.24% solution of sodium chloride** iso-osmotic with blood plasma.
Molecular weights:
NaCl = 58.5 and Dextrose = 180

13. Mention **five advantages** of **membrane filter method** over other methods of sterilization.

14. **Name the specific type of antagonism for the following combinations:**
(A) Dimercaprol and Mercury
(B) Acetylcholine and Epinephrine
(C) Morphine and Naloxone
(D) Noradrenaline and Phenoxybenzamine
(E) Adrenaline and Diazoxide

15. **Write equation only for the chemical reactions involved in the following assays:**
(A) Diphenhydramine Hydrochloride I.P.
(B) Benzocaine I.P.
(C) Ascorbic Acid I.P.
(D) Di-iodo Hydroxy Quinoline I.P.

16. (A) What is **half-wave potential?**
(B) Give its **application.**
(C) **Oxygen dissolved** in the solution for polarographic analysis produces **two waves** in a polarogram. Write the **chemical reactions** involved in the production of these waves in **acid solution.**

17. (A) What is **Streptokinase I.P.?**
(B) Mention its **important action.**
(C) What are **zymogens?**

18. (A) **Tetracycline hydrochloride** shows **three acidity constants** in aqueous solution. Which particular **functional groups** are responsible for this?
(B) **"Salt of Phenoxy Methyl Penicillin with N,N-bis (dihydroabietyl)-ethylene diamine** provides a very long acting **liquid oral dosage form."** Give reason in one sentence only.
(C) Which **group in Penicillin** is responsible for determining the **extent to which it is plasma-protein bound?**

19. Mention the **nature and name of primary metabolites** and the resulting **change in the activity profile** of the following drugs:
(A) Procaine (B) Imipramine
(C) Enalapril (D) Chlorpromazine
(E) 6-Mercaptopurine

20. (A) **Metabolism of Lidocaine** in the liver produces products A, B and C in a specific manner. Draw the structure of **Lidocaine** and the **metabolic products A, B and C.**
(B) The **anti-inflammatory effect** of NSAIDs are explained on the basis of one important observation. Mention it in **one sentence.**

21. (A) Give the **structural formula** of a **Diuretic** which contains a **Pyrazine ring.**
(B) It has a **pKa of 8.7.** Which group is responsible for this?
(C) Why the above compound is **very poorly and erratically absorbed** from the G.I. tract?
(D) What happens when **Benzhydryl bromide** is treated with **4-hydroxy-1-methyl piperidine?** (Give equation only.)
(E) Indicate the **pharmacological category** of the compound obtained in [D].

22. Write **complete equations** for the following conversions:
(A) 2,3-Dichlorophenoxyacetic acid is treated with **butyryl chloride** in the presence of anhydrous $AlCl_3$. The product is condensed with **HCHO** and **dimethylamine.**
(B) **Ethyl phenyl malonylamide** is condensed with **formamide.**

23. (A) In the **morphological examination** of three different **cocci samples,** following observations are noted. Predict the type:
(i) Spherical-shaped Gram positive, 1 μm in diameter, grape-like clusters.
(ii) Gram positive, occurs in pairs, tetrads or irregular clusters.
(iii) Gram positive, arranged in the form of chains or pairs.
(B) Name the **smooth O-type** of two classical types of Vibrio cholerae from which **Cholera Vaccine I.P.** is prepared.

24. (A) What are the **advantages of silicone-treated injection containers** for antibiotics?
(B) What are **implants?**

25. Name the **five important critical factors** involved in the **formulation of eye drops.**

26. Draw the **structural formulae** of the following:
(A) Allo-cholanic acid (B) Epi-cholesterol
(C) Cholesta-4-en-3-one (D) Coprastanol
(E) Stigmastanol

27. (A) According to the **Lofgren's scheme,** each local anaesthetic has a **lipophilic portion,** intermediate chain, and **hydrophilic portion.**
Write the **structure of Procaine** and mark these portions.
(B) Write the **source and structure** of **Clavulanic Acid.**
(C) Why it is called **suicide inhibitor**
(D) Does it possess **antibacterial property**

Answer Key

PART (SECTION - I)

1.1 - c	1.2 - c	1.3 - a	1.4 - b	1.5 - a	1.6 - c	1.7 - b	1.8 - a	1.9 - a	1.10 - a
1.11 - d	1.12 - a	1.13 - c	1.14 - b	1.15 - c	1.16 - c	1.17 - d	1.18 - b	1.19 - a	1.20 - a
1.21 - d	1.22 - c	1.23 - a	1.24 - c	1.25 - c	1.26 - d	1.27 - a	1.28 - a	1.29 - b	1.30 - c
1.31 - a	1.32 - c	1.33 - d	1.34 - c	1.35 - d					

PART (SECTION - II)

2.1- c	2.2 - a	2.3 - b	2.4 - b	2.5 - c	2.6 - c	2.7 - d	2.8 - a	2.9 - d	2.10 - a
2.11 - d	2.12 - a	2.13 - b	2.14 - d	2.15 - d	2.16 - a	2.17 - c	2.18 - a	2.19 - a	2.20 - d

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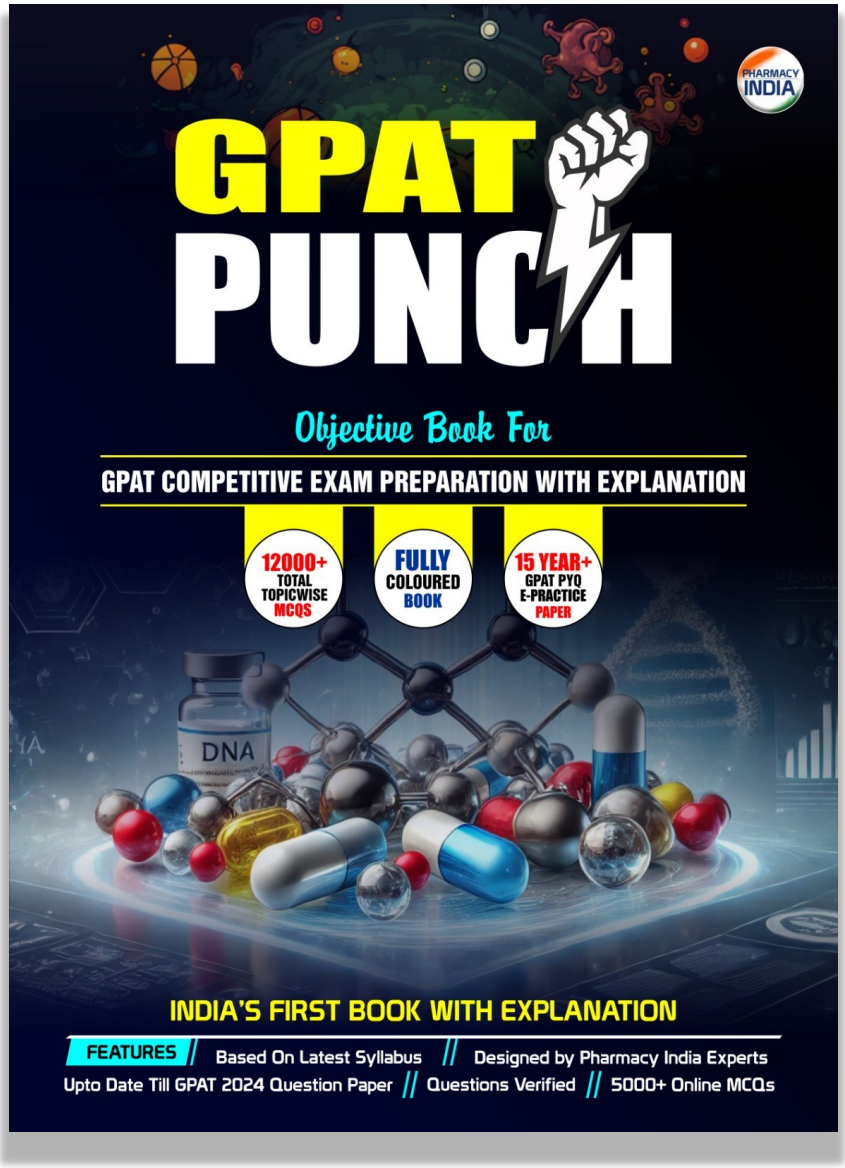

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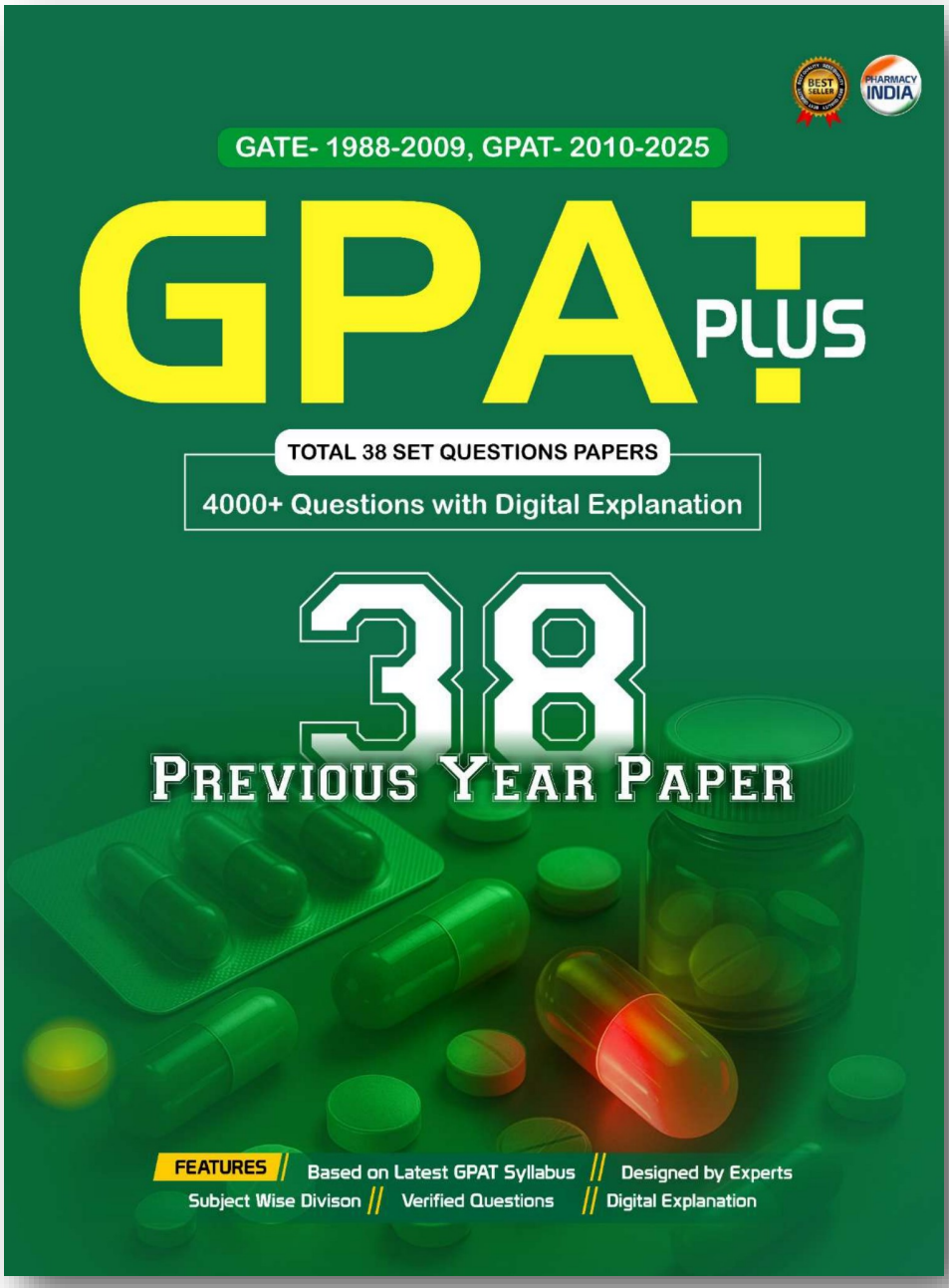

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