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PREFACE AND ACKNOWLEDGEMENTS

Welcome to **"Objective GPAT at Your Fingertips"** This comprehensive objective book has been meticulously crafted to be your ultimate companion in preparing for GPAT exam preparation.

Success in GPAT exam depends on proper planning of studies and appropriate selection of study materials. The pattern of examinations become tough. This book covers Previous year topic wise Questions as well as wide spectrum of the Practice multiple-choice questions having a huge variety.

Various unique features of the book are as under for example:

- ✓ Chapters are classified topic wise based on previous year questions.
- ✓ Multiple choice questions in every chapter are arranged in a systematic and sequential way covering the whole text and spectrum of the chapter.
- ✓ Answers are provided at the end of every chapters.
- ✓ Model Test Papers covering the whole syllabus are also provided at the end of the book again with their answers. These papers will prove to be fit for examination and provide a chance to students in assessing their level of preparation.

The present book is self-sufficient in all respects for question practice.

I am thankful to all my Authors of this book who has put a hard labour in reading the proofs thoroughly and pointing out errors and omissions. Although all attempts have been made to avoid errors and printing mistakes, but omissions are a human weakness and, therefore, constructive suggestions, modifications and errors brought to my notice will be highly appreciated and incorporated in the next edition.

"The only way to do great work is to love what you do."

Dr. PEEYUSH JAISWAL
Director, GDC

Content

PHARMACEUTICS

PHYSICAL PHARMACY

States of Matter

1. **The Gibb's Phase rule** [GPAT-2016]
   (a) Holds only for systems with more than components
   (b) Predicts that a maximum of three phase can exits in one components system
   (c) Does not count phase compositions as intensive variables
   (d) Does not count pressure and temperature as intensive variables
2. **Identify the molecule which will not exhibit Dipole moment** [GPAT-2019]
   (a) Carbon dioxide (b) Carbon monoxide (c) Chloroform (d) Ammonia
3. **Choose the wrong statement from the following with regard to Amorphous solids** [GPAT-2020]
   (a) Usually they are anisotropic
   (b) They tend to flow when subjected to sufficient pressure
   (c) Considered as super cooled fluids
   (d) They do not have definite melting point
4. **The Crystal form of Sulphacetamide is** [GPAT-2020]
   (a) Rhombohedral (b) Orthorhombic (c) Monoclinic (d) Triclinic
5. **Which of the following is most appropriate to crystalline solid** [GPAT-2022]
   (a) Give diffraction bands (b) Characteristics geometrical shapes
   (c) Sharp melting point (d) All of these
6. **Molecules in the smectic liquid crystals are characterized by which one of the following** [GPAT-2011]
   (a) Mobility in three directions and rotation in one axis
   (b) Mobility in two directions and rotation in one axis
   (c) Mobility in two directions and no rotation
   (d) Mobility in three directions and no rotation

50. Read the following statements [GPAT-2012]

[P] The surface area measurement using BET approach utilizes argon gas for adsorption

[Q] Full form of BET is Brunauer, Emmett and Teller

Choose the correct answer

(a) P & Q both are correct
(b) P is correct but Q is incorrect
(c) Q is correct but P is incorrect
(d) Both P & Q are incorrect

51. Which of the following is the correct choice of particle size measurement technique in scoring order of size [GPAT-2023 SHIFT-II]

[P] Sieve
[Q] Anderson Pipette
[R] Coulter counter
[S] Light scattering

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

52. Kozeny Carman equation is used to determine the [GPAT-2023 SHIFT-I]

(a) Surface area of the powder
(b) Viscosity of a liquid
(c) Surface tension of a liquid
(d) Density of a liquid

53. If S is the solubility of small particles of radius r, is the normal solubility (i.e., of a solid consisting of fairly large particles), is the interfacial energy, M is the molecular weight of the solid, ρ is the density of the bulk solid, R is the gas constant and T is the thermodynamic temperature, then which of the following equation indicates the changes in interfacial free energy that accompany the dissolution of particles of varying sizes causing the solubility of substance to increase with decreasing particle size [GPAT-2023 SHIFT-II]

(a) Log $(S_0/S)=2yMr/2.303RT\rho$
(b) Log$(S/S_0)=2yMr/2.303RT\rho$
(c) Log$(S_0/S)=2yMr/2.303RT\rho r$
(d) Log $(S/S_0)=2yM/2.303RT\rho r$

54. What are the specific surface per unit volume Sv of spherical particles with density of 3 gm/cm^3 and volume surface diameter, dvs of 2.57 μm [GPAT-2018]

(a) 7.78×10^3 cm^2/cm^3
(b) 2.33×10^3 cm^2/cm^3
(c) 1.55×10^3 cm^2/cm^3
(d) 1.00×10^3 cm^2/cm^3

55. Determine the correctness or otherwise of the following Assertion [A] and the Reason [R] [GPAT-2011]

Assertion[A]: For a pharmaceutical powder true density is greater than the granule density.

Reason[R]: Mercury displacement used for determining granule density, allows penetration of liquid into internal pores of the particles

(a) [A] is true but [R] is false
(b) Both [A] and [R] are false
(c) Both [A] and [R] are true and [R] is the correct reason for [A]
(d) Both [A] and [R] are true but [R] is NOT the correct reason for [A]

56. Hausner Ratio is [GDC PRACTICE MCQ]

(a) Bulk volume / Void volume
(b) Bulk density / Tapped density
(c) Tapped density / Bulk density
(d) Void volume / Bulk volume

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Colloidal System

171. An amphoteric surfactant used in pharmaceutical disperse systems is [GATE-2004]
(a) Bile salts (b) Lecithin
(c) Sorbitan monolaurate (d) Sorbitan monostearate

172. An electrochemical method that enhances the transport of some solute molecules by creating a potential gradient through skin tissue with an applied electrical current or voltage is called [GATE-2004]
(a) Electrophoresis (b) Iontophoresis (c) Osmosis (d) Implants

173. Which statement is FALSE for Association Colloids [GPAT-2011]
(a) They are also called amphiphiles (b) They contain aggregated molecules
(c) They show partial solvation (d) They are also called micelles

174. Read the following statements [GPAT-2012]
[P] At temperature below Krafft point, micelles will, not form
[Q] At Krafft point, solubility of surfactant equals CMC
[R] Krafft point increases with increasing chain length of hydrocarbon
[S] Krafft point is normally exhibited by non-ionic surfactants
Choose the correct combination of answers
(a) P is correct but Q, R & S are wrong (b) R & S are correct but P & Q are wrong
(c) P, Q & R are correct but S is wrong (d) All are correct

175. Identify the wrong match pattern of DLVO theory [GPAT-2014]
(a) Primary minimum - High attraction - Irreversible coagulation
(b) Primary maximum - High repulsion - Prevents coagulation
(c) Secondary minimum - Weak interaction - Flocculation
(d) None of these

176. Schulze-Hardy rule is for [GPAT-2015]
(a) Lyophilic colloid (b) Hydrophilic colloid
(c) Association colloid (d) Both (b) and (c)

177. DLVO theory is [GPAT-2016]
[P] Derjaguin Landou Vervey Overbeek theory
[Q] Used to explain double electric layer theory
[R] Used to explain stability ointments
[S] Used to explain Brownian movement of colloids
(a) [P], [Q] (b) [Q], [R] (c) [R], [S] (d) [Q], [S]

178. Colligative properties depend on [GPAT-2016]
(a) Structural arrangement of atoms within the molecules of solute and solvent
(b) The number of solute particles in solution
(c) The physical properties of the solute particles dissolved in solution
(d) Sum of the corresponding properties of individual atoms or functional group within the molecules

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Match the following

303. Given below are the equipment used in manufacturing powder and their purpose [P] to [T] Match them correctly [GATE-1988]

1. Coulter counter	[P] To determine the total surface
2. Sorptometer	[Q] To determine particle size
3. Andreasen apparatus	[R] To determine the flow rate
4. Shear box	[S] To determine sedimentation rate
	[T] To determine the cohesiveness

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

304. Match the following Group I with Group II [GATE-2008]

Group I Name of equation	Group II Equation
1. Noyes & Whitney equation	[P] $\frac{dc}{dt} = \frac{DS}{h}(C_S - C)$
2. B.E.T equation	[Q] $\frac{P}{Y(P_0 - P)} = \frac{1}{Y_m b} + \frac{b-1}{Y_m}\left(\frac{P}{P_0}\right)$
3. Stokes equation	[R] $V\frac{d^2(P_S - P_0)g}{18\eta_0}$
4. Higuchi equation	[S] $Q = [D(2A - C_S)C_S \times t]^{\frac{1}{2}}$

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

305. Given below in [P] to [T] are the names of instruments used for the determination of the following. Match them correctly [GATE-1989]

1. Particle volume	[P] Clarity apparatus
2. Presence of Foreign particle	[Q] Du Nouy ring
3. Surface tension	[R] Coulter counter
4. Presence of polymorph	[S] Compactor
	[T] Differential thermal calorimeter

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

306. Match the following Equipment and their determination [GATE-2009]

Group I Equipment	Group II To determine
1. Cascade Impactor	[P] Flash point
2. Tag Open Cup apparatus	[Q] Sedimentation rate
3. Pycnometer	[R] Particle size

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]

DISPENSING PHARMACY

Prescription

1. Prescription price consists of [GPAT-2022]
   (a) Cost of ingredients only
   (b) Cost of professional fee only
   (c) Cost of ingredients and cost of dispensing only
   (d) Cost of ingredients and professional fee only

2. Match List I with List II [GPAT-2021]

List - I (Term or Phrase)	List - II (Meaning)
1. Gutturi	[P] Into the left ear
2. In oculum sinistram	[Q] Into the right eye
3. In aurem sinistram	[R] For the left eye
4. In oculum dextrum	[S] To the throat

Choose the correct answer from the options given below
(a) 1 - [S], 2 - [R], 3 - [P], 4 - [Q]
(b) 1 - [Q], 2 - [P], 3 - [S], 4 - [R]
(c) 1 - [R], 2 - [S], 3 - [P], 4 - [Q]
(d) 1 - [P], 2 - [R], 3 - [Q], 4 - [S]

3. The part of prescription that means 'take thou' is [GPAT-2021]
   (a) Subscription (b) Inscription (c) Superscription (d) Signatura

4. In absence of instruction by the prescriber, unless otherwise directed, the dose given for the mixture preparation should be stated on the label as [GPAT-2023 SHIFT-I]
   (a) One five ml spoonful to be taken three times a day in water
   (b) Two five ml spoonful to be taken three times a day in water
   (c) Two five ml spoonful to be taken two times a day in water
   (d) One five ml spoonful to be taken two times a day in water

5. Auristillae is the latin term for [GPAT-2016]
   (a) Eye drop (b) Ear drop (c) Nasal drop (d) Spray solution

(a) Idiosyncrasy (b) Incompatibility (c) Accumulation (d) Antagonism

98. Causes for therapeutic incompatibility are [GDC PRACTICE MCQ]
(a) Error dose (b) Wrong dose
(c) Contraindicated drugs (d) All of these

99. Which type of incompatibility is observed in the following prescription R_x Codeine phosphate-0.5 gm powder [GDC PRACTICE MCQ]
(a) Physical incompatibility (b) Chemical incompatibility
(c) Therapeutic incompatibility (d) None of these

100. The combination of penicillin and Probenecid shows [GDC PRACTICE MCQ]
(a) Additive effect (b) Antagonism (c) Synergism (d) All of these

101. Which type of incompatibility observed in the following prescription R_x [GDC PRACTICE MCQ]
Acetophenatidin Acetyl salicylic acid Caffeine
(a) Physical incompatibility (b) Chemical incompatibility
(c) Therapeutic incompatibility (d) None of these

102. Reasons for physical incompatibility [GDC PRACTICE MCQ]
(a) Immiscibility (b) Insolubility (c) Liquefaction (d) All of these

103. Physical incompatibility can be corrected by [GDC PRACTICE MCQ]
(a) Order of mixing (b) Addition of suspending agent
(c) Change in the form of ingredient (d) All of these

104. Which type of incompatibility is observed in the following prescription R_x [GDC PRACTICE MCQ]
Menthol Camphor
Ammonium chloride Light magnesium carbonate
(a) Physical incompatibility (b) Chemical incompatibility
(c) Therapeutic incompatibility (d) All of these

105. The incompatibility observed between strychnine and soluble iodides are [GDC PRACTICE MCQ]
(a) Physical incompatibility (b) Chemical incompatibility
(c) Therapeutic incompatibility (d) All of these

HOSPITAL PHARMACY

1. Hospital formulary consists of [GPAT-2021]
(a) List of hospital staff (b) List of drugs present in the hospital
(c) List of equipments (d) List of patients

2. Hospital Formulary contains information on the following parameters EXCEPT [GPAT–2022]
(a) Composition (b) Indication
(c) Pricing (d) Dosage and administration

COSMETIC TECHNOLOGY

Cosmetic For Skin

1. Titanium dioxide is used in sun screen products as a topical protective. The topical protective effect of titanium dioxide is arising due to one of the following properties. Identify that [GPAT-2012]

   (a) It has a high bulk density
   (b) It has a high LTV absorptivity
   (c) It has a low water solubility
   (d) It has a high refractive index

2. Which one of the followings is NOT used in preparation of baby powders [GPAT-2012]

   (a) Stearic acid
   (b) Boric acid
   (c) Kaolin
   (d) Calcium carbonate

3. Determine the correctness or otherwise of the following Assertion [A] and the Reasons [R & S] [GPAT-2012]

   Assertion [A]: Butylated hydroxytoluene is added as one of the ingredients in the lipstick formulation

   Reason [R]: It is a good solvent for the wax - oil mixtures and coloring pigments in the lipstick

   Reason [S] : It is an antioxidant and prevents rancidity on storage

   (a) [A] is true, and [R] and [S] are true and correct reasons for [A]
   (b) [A], [R] and [S] are all false
   (c) [A] is true, [S] is false, and [R] is the correct reason for [A]
   (d) [A] is true, [R] is false, and [S] is the correct reason for [A]

4. The healing agent used in hand creams is [GPAT-2010]

   (a) Soft paraffin (b) Urea (c) Bees wax (d) Stearyl alcohol

5. The role of borax in cold creams is [GPAT-2010]

   (a) Anti-microbial agent
   (b) To provide fine particles to polish skin
   (c) *In-situ* emulsifier
   (d) Antioxidant

6. Titanium dioxide is commonly present in [GATE-1990]

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

7. Vanishing cream is an ointment that may be classified as [GPAT-2023 SHIFT-II]

   (a) Water soluble base (b) Oleaginous base (c) Absorption base (d) Emulsion base

8. A typical skin cream consisting of stearic acid, potassium hydroxide, glycerin, water, preservative and perfume, would be commonly known as [GPAT-2022]

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Size Reduction

41. Size reduction of a material with the addition of another material is called as [GPAT-2016]
(a) Mixing (b) Trituration (c) Levigation (d) Pulverization

42. Rittinger's hypothesis relates [GPAT-2023 SHIFT-II]
[P] Energy used in size reduction [Q] New surface area produced
[R] Equivalent shape [S] Reynold's number
(a) P and Q (b) Q and S (c) P and R (d) P and S

43. When adhesive attractions between molecules of different species exceeds cohesive attraction between like molecules, the deviation according to Raoult's law is said to be [GPAT-2020]
(a) Partial (b) Positive (c) Neutral (d) Negative

44. A pharmaceutical API is prone to environmental oxidation. To achieve a Better therapeutic action, its size needs to be reduced method of choice for pulverization is [GPAT-2015]
(a) Ball milling (b) Hammer mill
(c) Colloid mill (d) Rotary cutter mill

45. Hardinge mill is a variant of [GPAT-2019]
(a) Fluid energy mill (b) Ball mill
(c) Hammer mill (d) Rotary cutter mill

46. One of the following mills works on both the principles of attrition and impact [GATE-2002]
(a) Cutter mill (b) Hammer mill (c) Roller mill (d) Fluid energy mill

47. How much can be the working revolution per minute (RPM) of the Ball mill [GPAT-2013]
(a) 23-28 "D where D means the diameter of jar
(b) Two times more than the critical revolution per minute
(c) 42.3 "D (D=diameter of the jar)
(d) The average of critical RPM and the optional RPM

48. Choose the correct combination [GPAT-2012]
(I) Rod mill (P) Dried plant drug
(II) Hammer mill (Q) Thermolabile drug
(III) Fluid energy mill (R) Paint
(a) (I) & (Q), (II) & (P), (III) & (R) (b) (I) & (R), (II) & (P), (III) & (Q)
(c) (I) & (Q), (II) & (R), (III) & (P) (d) (I) & (P), (II) & (Q), (III) & (R)

49. In communition, certain type of materials listed in [P] to [T] are not suitable for the mills mentioned below. Match them [GATE-1992]
1. Cutter mill [P] Soft material
2. Hammer mill [Q] Adhesive material
3. Revolving mill [R] Friable material
4. Fluid energy mill [S] Liquifiable material
[T] Abrasive material
(a) 1-[R], 2-[P], 3-[S], 4-[Q] (b) 1-[Q], 2-[S], 3-[R], 4-[P]
(c) 1-[T], 2-[R], 3-[S], 4-[Q] (d) 1-[R], 2-[T], 3-[P], 4-[Q]

Filtration

96. The relation between emissive power of the surface and its absorptivity is given by [GPAT-2019]
(a) Stefan - Boltzmann Law (b) Darcy's Law
(c) Fourier's Law (d) Kirchhoff's Law

COMMON DATA FOR QUESTION (97-99)

In a pharmaceutical industry, batch filtration of liquids where the proportion of solids to liquids is high is to be carried out. The complete recovery of solids is required. After filtration, the filtrate, which is corrosive, gives a crystalline product on evaporation. The liquid tends to deposit scales or crystals on the heating surface during evaporation [GATE-2005]

97. The suitable filtration equipment's is
(a) Plate and frame filter press (b) Leaf filters
(c) Meta filters (d) Membrane filters

98. The filter aid used in the above filtration is
(a) Sand (b) Nylon fiber cloth
(c) Activated carbon (d) Filter paper

99. A suitable evaporator is
(a) Falling film evaporator (b) Forced circulation evaporator
(c) Vertical evaporator (d) Horizontal evaporator

100. The fluid flows through the filter medium by virtue of [GPAT-2023 SHIFT-II]
(a) Pressure difference across the filter
(b) Temperature difference across the filter
(c) Volume difference across the filter
(d) Potential difference across the filter

101. Viscosity of the fluid is ____ proportional to the filtrate [GDC PRACTICE MCQ]
(a) Directly (b) Inversely (c) Equal (d) None of these

102. Prefilter and membrane filter is in [GDC PRACTICE MCQ]
(a) Cartridge Filter (b) Rota Filter (c) Double Filter (d) Ring Filter

103. The process of separating the solids whose concentration is less than 1% w/v in the solvent [GDC PRACTICE MCQ]
(a) Filtration (b) Ultra Filtration
(c) Surface Filtration (d) Clarification

104. Filters are used to obtain sterile air [GDC PRACTICE MCQ]
(a) Cellulose fibre (b) Sterile (c) Anti-microbial (d) HEPA

105. Filter aid should be [GDC PRACTICE MCQ]
(a) Low Specific Gravity (b) Less Viscous
(c) High Boiling Point (d) Low Boiling Point

106. Talc, Kieselguhr and Asbestos are [GDC PRACTICE MCQ]
(a) Diluents (b) Glidants (c) Lubricants (d) Filter Aids

PHARMACEUTICAL TECHNOLOGY

Preformulation

1. Which polymorphic form of a drug candidate has highest melting point [GPAT-2019]
   (a) Unstable (b) Metastable (c) Hydrates (d) Stable
2. In Preformulation study polymorphs can be detected by [GPAT-2019]
   (a) Counter - current chromatography (b) Refractometry
   (c) High performance liquid chromatography (d) Differential scanning
3. Phase solubility analysis curve is not a good tool for [GPAT-2019]
   (a) Complex formation (b) Bioavailability determination
   (c) Polymorph detection (d) Impurity detection
4. Dynamic Vapour Sorption (DVS) isotherm is a plot of A versus B [GPAT-2021]
   (a) A - Crystallization Peak Energy (J/g), B - Percentage Relative Humidity
   (b) A - Percentage Change in Mass, B - Percentage Relative Humidity
   (c) A - Crystallization Peak Energy (J/g), B - Percentage Change in Mass
   (d) A - Crystallization Peak Energy (J/g), B - Amorphous Content
5. Which of the following techniques is not useful to detect polymorphs [GPAT-2017]
   (a) DSC (b) HPLC
   (c) PXRD (d) Melting point determination
6. Hot stage microscopy is an important tool in Preformulation studies for the study of [GPAT-2013, 2017]
   (a) Pseudo polymorphism (b) Particle size measurement
   (c) Microbial contamination (d) Compaction behaviour
7. The polymorphs exhibit the following different properties EXCEPT [GPAT-2020]
   (a) X-ray crystal and diffraction patterns (b) Melting points
   (c) Solubilities (d) Chemical structures
8. While studying solid state physicochemical properties, the packing property of drug include [GPAT-2020]
   (a) Heat capacity (b) Solubility (c) Refractive index (d) Entropy
9. Which of the following molecular properties can be determined by Thermogravimetric Analysis [GPAT-2023 SHIFT-I]
   (a) Solubility (b) Hygroscopicity (c) Colour stability (d) Hydrolysis
10. As per European Pharmacopoeia technical guide, substance stored at 25°C for 24 hours at 80% RH, called very hygroscopic when increase in weight is [GPAT-2020]
    (a) 0.2% w/w and <15% w/w (b) > 0.2% w/w and < 20% w/w
    (c) > 15% w/w (d) 0.2% w/w and < 2% w/w

244. For disguising the astringent and metallic taste of iron salts in children's mixture, the following flavoring agent in used [GPAT-2023 SHIFT-I]

(a) Orange syrup and compound orange syrup
(b) Lemon syrup
(c) Liquorice liquid extract
(d) Aromatic water

245. Which of the following formulations are "Pharmaceutically equivalent" Match List I with List II

INGREDIENT		FUNCTION		TABLET A	TABLET B	TABLET C	TABLET D
P	Acetaminophen	I	Drug	300mg	--	300mg	300mg
Q	Aspirin	II	Drug	--	300mg	--	--
R	Lactose	III	Filler	100mg	100mg	--	100mg
S	Avicel	IV	Filler	--	--	100mg	--
	Starch		Disintegrant	50mg	50mg	--	50mg
	Avicel		Disintegrant	--	--	50mg	--
	Mag stearate		Lubricant	2mg	2mg	2mg	2mg
	Gelatin		Binder	10mg	10mg	10mg	10mg

Choose the correct answer from the options given below [GPAT-2023 SHIFT-I]

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

246. Statement I: The problem of declining potency in an unstable preparation can be ameliorated by the addition of an excess or overage of the active ingredient

Statement II: Overages, are added to pharmaceutical formulations to keep the content of the active ingredient well above the limit, compatible with therapeutic requirements, for a predetermined period of time [GPAT-2022]

(a) Both Statement I and Statement II are correct
(b) Both Statement I and Statement II are incorrect
(c) Statement I is correct but Statement II is incorrect
(d) Statement I is incorrect but Statement II is correct

247. Which of the following statement is false [GPAT-2022]

[DROPPED QUESTION]

(a) Reducing agents often cause fading of dyes
(b) Anionic dyes are the most stable at acid pH
(c) Basic dyes are not sensitive to alkalies
(d) Cationic dyes may be precipitated by soaps and clays

248. Taste sensation of some liquid oral formulation are given. Match the compatible flavour used in the formulation [GATE-2000]

1. Salt
2. Sour

[P] Wild cherry
[Q] Vanilla
[R] Citrus
[S] Chocolate

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

332. Some substances used in tablet coating process are given. Match them with their correct use mentioned in [P] to [S] [GATE–1999]

1. Shellac	[P] Polishing
2. Hydroxy propyl methyl cellulose	[Q] Seal coating
	[R] Film former
	[S] Sub-coating

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

333. Given below are the type of excipients. Match them with the examples [GATE-2000]

1. Disintegrant	[P] Talc
2. Glidant	[Q] P.V.P
	[R] Lactose
	[S] Acacia

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

334. The ingredients mentioned in [P] to [T] are used in various stages of sugar coating of tablets. Match them [GATE-1993]

1. Seal coating	[P] Gelatin
2. Sub coating	[Q] Carnauba wax
3. Syrup coating	[R] Methanol
4. Polishing	[S] PEG 4000
	[T] Cane sugar

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

335. Match the coatings given below with their corresponding techniques listed [P] to [T] [GATE–1994]

1. Compression coating	[P] Air in the coating pan is replaced with nitrogen
2. Dip Coating	[Q] Application of coating to conductive substrates
3. Electrostatic Coating	[R] Acid insoluble coating
4. Vacuum Film coating	[S] A tablet within a tablet
	[T] Repeated coating and drying

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

336. Match the given ingredients from [P] to [T] with the purpose for which it is incorporated in the formulation of tablets [GATE-1988]

1. Glidant	[P] Pre – gelatinzed starch
2. Diluent	[Q] Pyramine
3. Adherents	[R] Colloidal silica
4. Disintegrant	[S] Calcium sulphate

518. Applying relatively thin coating to small particles of solid and droplets of liquids called as [GDC PRACTICE MCQ]

(a) Coating
(b) Dip coating
(c) Microencapsulation
(d) All of these

519. High bloom strength gelatin is used in the manufacturing of [GDC PRACTICE MCQ]

(a) Soft gelatin capsules
(b) Hard gelatin caules
(c) More physically stable
(d) Both (a) and (b)

520. Which component of a capsule shell is responsible for its dissolution or disintegration in the gastrointestinal tract [GDC PRACTICE MCQ]

(a) Gelatin (b) Plasticizer (c) Colorant (d) Opacifier

521. Concerning hard gelatin capsules, which of the following statements are true [GDC PRACTICE MCQ]

(a) Gelatin is a polysaccharide that is derived from animal sources
(b) There are two types of gelatins, each exhibiting same isoelectric points
(c) The grade of gelatin is defined by the bloom strength
(d) Gelatin is freely soluble in water at room temperature

522. Given below are two statements, one is labelled as Assertion [A] and the other is labelled as Reason [R] [GDC PRACTICE MCQ]

Assertion[A]: Soft gelatin capsules are often preferred for containing liquid formulations

Reason [R]: Soft gelatin capsules have a more flexible shell that can accommodate liquid fillings more effectively

In light of the above statements, choose the correct answer from the options given below

(a) Both [A] and [R] are true and [R] is the correct explanation of [A]
(b) Both [A] and [R] are true but [R] is NOT the correct explanation of [A]
(c) [A] is true but [R] is false
(d) [A] is false but [R] is true

523. Solid fills for hard gelatin capsules frequently contain which of the following excipients for the designated purpose except [GDC PRACTICE MCQ]

(a) Glidants – to improve powder flow
(b) Magnesium stearate – as a lubricant
(c) Starch – as a disintegrant
(d) None of these

524. Which of the following type of dissolution test apparatus is used for capsule [GDC PRACTICE MCQ]

(a) Paddle type
(b) Basket type
(c) Both (a) and (b)
(d) None of these

525. Identify the correct steps for preparation of empty gelatin shell [GDC PRACTICE MCQ]

(a) Dipping→Spinning→Drying→Stripping→Trimming→Joining→Polishing
(b) Dipping→Spinning→Stripping→Drying→Trimming→Joining→Polishing
(c) Dipping→Spinning→Drying→Stripping→Joining→Trimming→Polishing
(d) Spinning→Dipping→Drying→Stripping→Trimming→Joining→Polishing

526. Which of the following is used to increase the acid solubility and reduce the aldehyde tanning of gelatin [GDC PRACTICE MCQ]

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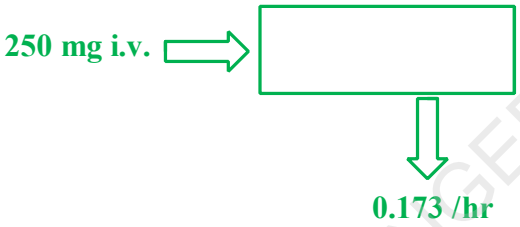
ALLAHABAD | BILASPUR | BHILAI | RAIPUR | NAGPUR | BHOPAL | INDORE | PUNE | NASHIK | DELHI | GHAZIABAD | BHUBANESWAR | BRAHMAPUR | MUMBAI

Distribution of Drugs

41. Concentration of drug in blood is 40mg/ml. dose of the drug is 200mg. assuming minute elimination Vd will be [GPAT-2015]
(a) 5 litre (b) 0.5 litre (c) 2.5 litre (d) 3 litre

42. The Volume of distribution of a drug administered at a dose of 300 mg and exhibiting 30 microgram/ mL instantaneous concentration in plasma shall be [GPAT-2010]
(a) 10 L (b) 100 L (c) 1.0 L (d) 0.10 L

43. In a pharmacokinetic model depicted in the following scheme, what is the half-life of the drug if the apparent volume of distribution of the drug is 25 L [GPAT-2012]



(a) 1.7 hrs (b) 2 hrs (c) 4 hrs (d) 3hrs

44. Which marker is used for measuring the volume of plasma [GPAT-2013]
(a) Deuterium oxide (b) Mannitol (c) Evan blue (d) Inulin

45. Which is used as a marker to determine total body water volume [GPAT-2014]
(a) Antipyrine (b) Mannitol (c) Evans blue (d) Raffinose

46. The initial distribution of a drug into the tissue is determined chiefly by [GATE–1999]
(a) Rate of blood flow to the tissue (b) Plasma protein binding of the drug
(c) Affinity for the tissue (d) Stomach emptying time

47. The intracellular fluid volume including those of blood cells is approximately [GPAT–2022]
(a) 7L (b) 17 L (c) 27 L (d) 37 L

48. Match the following concept in List I with parameters in List II [GPAT–2023 SHIFT-I]

LIST I (Concept)	LIST II (Parameters)
1. Volume of distribution	[P] Measure volume of real physiological plasma
2. Evans blue	[Q] Human serum albumin
3. 3.5 - 5%	[R] Volume of blood
4. Metallothionein	[S] Ratio of body drug content to plasma concentration
	[T] Protein present in kidney to bind metal

Choose the correct answer from the options given below
(a) 1-[P], 2-[Q], 3-[R], 4-[S] (b) 1-[T], 2-[S], 3-[R], 4-[Q]
(c) 1-[S], 2-[P], 3-[Q], 4-[T] (d) 1-[R], 2-[Q], 3-[S], 4-[T]

Prevention of Cruelty to Animals Act

196. Chapter IV of which law states that experiments on animals are avoided wherever it is possible to do so, as for example; in medical schools, hospitals, colleges and the like, if other teaching devices such as books, models, films and the like, may equally suffice. Also, that experiments on larger animals are avoided when it is possible to achieve the same results by experiments upon small laboratory animals like guinea- pigs, rabbits, frogs and rats [GPAT-2017]
(a) The Prevention of Cruelty to Animal Act, 1960
(b) The Pharmacy Act, 1948
(c) Drugs and Cosmetics Act, 1940
(d) Medicinal and Toilet Preparations Act, 1955

197. In which year was the Prevention of Cruelty to Animals Act enacted in India [GDC PRACTICE MCQ]
(a) 1956 (b) 1960 (c) 1972 (d) 1980

198. Animal Welfare Board of India constituted under the Prevention of Cruelty to Animal Act situated in [GDC PRACTICE MCQ]
(a) New Delhi (b) Mumbai (c) Kolkata (d) Chennai

199. Animal Welfare Board is established by [GDC PRACTICE MCQ]
(a) State Government (b) State Council
(c) Central Council (d) Central Government

200. According to The Prevention of Cruelty to Animals Act, 1960_____ member/s who is/are actively engaged in the promotion animal welfare is nominated by Central Government [GDC PRACTICE MCQ]
(a) Five (b) Six (c) Two (d) One

201. According to the Prevention of Cruelty to Animals Act, 1960 experimentation on animals is carried out for the following purposes except [GDC PRACTICE MCQ]
(a) Development of new drug (b) Production of vaccines and sera
(c) Development in medical field (d) To have the practice

202. Under the Prevention of Cruelty to Animals Act, what is the role of the Animal Welfare Board of India [GDC PRACTICE MCQ]
(a) Promoting the use of animals in entertainment
(b) Regulating the export of exotic animals
(c) Advising the government on animal welfare issues
(d) Conducting wildlife census

203. Which body is responsible for formulating and updating the rules under the Prevention of Cruelty to Animals Act [GDC PRACTICE MCQ]
(a) Central Zoo Authority (b) Animal Welfare Board of India
(c) National Institute of Animal Welfare (d) Indian Veterinary Research Institute

204. Under CPCSEA guidelines, what is the primary responsibility of the Institutional Animal Ethics Committees (IAECs) at research establishments [GDC PRACTICE MCQ]

PHARMACEUTICAL TECHNOLOGY

1-d	2-d	3-c	4-b	5-b	6-a	7-d	8-c	9-b	10-c
11-d	12-c	13-d	14-b	15-c	16-d	17-d	18-a	19-c	20-b
21-a	22-d	23-a	24-a	25-c	26-d	27-d	28-a	29-a	30-a
31-c	32-d	33-c	34-b	35-d	36-d	37-a	38-d	39-d	40-c
41-d	42-c	43-b	44-d	45-d	46-b	47-a	48- b	49-c	50- a
51-a	52-d	53-b	54- a	55-b	56-a	57-b	58-d	59-b	60-c
61-a	62-a	63-b	64-a	65-b	66-c	67- d	68-c	69-c	70-c
71-d	72-d	73-c	74-b	75-c	76-d	77-c	78-a	79-c	80-d
81-b	82-a	83-c	84-d	85-a	86-c	87-b	88-d	89-a	90-d
91-d	92-d	93-b	94-a	95-d	96-a	97-a	98-d	99-b	100-b
101-c	102-b	103-d	104-d	105-a	106-b	107-c	108-a	109-b	110-b
111-b	112-a	113-a	114-a	115-c	116-c	117-a	118-b	119-a	120- c
121-b	122-a	123-a	124-a	125-a	126-b	127-a	128-b	129-b	130-b
131-b	132-a	133-b	134-a	135-c	136-d	137-c	138-b	139-b	140-b
141-b	142-c	143-c	144-b	145-c	146-c	147-d	148-a	149-b	150-d
151-c	152-a	153-d	154-c	155-b	156-a	157-a	158-c	159-d	160-d
161-c	162-b	163-c	164-d	165-d	166-b	167-a	168-b	169-c	170-d
171-a	172-c	173-d	174-b	175-b	176-c	177-b	178-c	179-c	180-c
181-d	182-c	183-a	184-b	185-b	186-d	187-b	188-a	189-b	190-a
191-d	192-c	193-b	194-b	195-b	196-d	197-a	198-b	199-c	200- c
201- d	202-c	203-c	204-b	205-b	206-a	207-c	208-c	209-a	210-d
211-c	212-b	213-a	214-a	215- a	216-b	217- a	218- a	219- c	220-d
221- d	222-b	223- b	224-c	225-c	226-c	227-a	228-a	229-d	230-c
231- d	232-a	233-b	234-a	235-d	236- b	237-a	238-a	239-d	240-b
241- c	242-d	243- b	244-a	245-c	246-c	247-*	248-a	249-c	250-d
251-d	252-b	253-c	254-b	255-c	256-d	257-b	258-c	259-b	260-a
261-d	262- b	263-a	264-a	265-d	266-b	267-a	268-a	269-a	270-c
271-d	272-a	273-a	274-a	275-b	276-d	277-b	278-a	279-c	280-d
281-a	282- b	283- c	284-d	285- c	286-b	287-a	288-b	289- a	290-b
291-c	292-a	293-c	294-d	295- a	296-b	297-d	298-a	299-a	300-c
301-b	302-a	303-c	304-b	305-a	306-c	307-a	308-a	309-d	310- b
311-c	312-a	313-b	314-a	315-b	316-d	317-b	318-a	319-a	320-a
321-d	322-a	323-b	324-a	325-b	326-c	327-a	328-d	329-d	330-a
331-a	332-a	333-d	334-a	335-a	336-a	337-a	338-b	339-d	340-a
341-a	342-b	343-c	344-c	345-a	346- d	347-d	348- d	349-c	350-b
351-c	352-b	353- c	354- d	355- d	356-d	357-b	358- b	359- b	360- c
361-a	362- c	363-c	364- a	365-b	366-b	367-a	368-c	369-d	370-a
371-c	372-c	373-d	374- a	375-a	376-a	377-b	378- d	379-c	380-c
381-d	382-a	383- d	384-d	385-c	386-c	387-c	388-c	389-c	390-b
391-c	392- d	393- d	394- a	395- a	396- b	397-a	398- b	399- c	400- b
401-d	402-b	403-d	404-d	405-a	406-c	407-b	408-b	409-b	410-a
411-c	412-a	413-b	414-b	415-b	416-d	417-d	418-b	419-b	420-c
421-a	422-a	423-c	424-d	425-b	426-c	427-a	428-b	429-d	430-d
431-b	432-c	433-d	434-c	435-c	436-a	437-c	438-b	439-b	440-d
441-d	442-c	443-a	444-b	445-b	446-a	447-d	448-b	449-b	450-d
451-c	452-a	453-c	454-b	455-c	456-a	457-a	458-c	459-d	460-c

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HUMAN ANATOMY AND PHYSIOLOGY

Cell Physiology

1. RNA molecules having intrinsic catalytic activity are called as [GPAT-2019]
   (a) mRNAs (b) Ribozymes (c) snRNAs (d) rRNAs
2. Which of the following statement is NOT TRUE about prokaryotes [GPAT-2018]
   (a) Nucleus is not bounded by nuclear membrane
   (b) Cell wall contains peptidoglycan
   (c) 80S ribosomes are distributed in cytoplasm
   (d) It is Haploid in nature
3. Which of the following cell organelles does not contain DNA [GDC PRACTICE MCQ]
   (a) Nucleus (b) Lysosomes (c) Chloroplast (d) Mitochondria
4. This site serves as the synthesis and assembly of ribosomes [GDC PRACTICE MCQ]
   (a) Peroxisome (b) Plasma membrane (c) Chromatin (d) Nucleolus
5. Plasmodesmata are located in narrow areas of [GDC PRACTICE MCQ]
   (a) Cell walls (b) Protoplasm (c) Cellulose (d) Nuclei

Tissue

6. Conversion of pseudostratified columnar epithelium in chronic bronchitis and bronchiectasis to columnar type epithelium is an example of which type of metaplasia [GPAT-2021]
   (a) Squamous metaplasia (b) Columnar metaplasia
   (c) Osseous metaplasia (d) Cartilaginous metaplasia
7. Inflammation of soft tissue due to hyaluronidase is called as [GPAT-2015]
   (a) Tendinitis (b) Bursitis
   (c) Cellulitis (d) Cumulative Injury Disorder (CID)
8. What is the name of the tissues which helps in protection and support of the body [GPAT-2013]
   (a) Muscular tissue (b) Nervous tissue
   (c) Connective tissue (d) Epithelial tissue

46. Lacrimal glands are concerned with secretion of [GDC PRACTICE MCQ]

(a) Hormones (b) Digestive juices
(c) Enzymes (d) Tears

47. Astigmatism is corrected by the use of [GDC PRACTICE MCQ]

(a) Convex lens (b) Concave lens (c) Cylindrical lens (d) Surgery

48. The waxy substance which coats the surface of auditory canal is produced by [GDC PRACTICE MCQ]

(a) Tympanum (b) Ceruminous glands
(c) Sebaceous glands (d) Meibomian glands

49. Vascular coat of eye ball is made up of [GDC PRACTICE MCQ]

(a) Sclerotic, choroid and retina (b) Optic, ciliary and iridial
(c) Sclerotic, cornea and conjunctiva (d) Choroid, ciliary body and iris

50. Color perception in man is due to [GDC PRACTICE MCQ]

(a) Rhodopsin present in rod cells (b) Iodopsin present in cone cells
(c) Rhodopsin present in cone cells (d) Iodopsin present in rod cells

Skeletal System

51. Which of the following is true for bone tissue cell differentiation and maturation [GPAT–2023 SHIFT-I]

(a) Osteogenic → Osteoblasts → Osteocytes (b) Osteogenic → Osteoblasts → Osteoclasts
(c) Osteocytes → Osteogenic → Osteoblasts (d) Osteoclasts → Osteoblasts → Osteocytes

52. Match List I with List II [GPAT-2023 SHIFT-II]

List - 1	List - 2
1. Vibrations in skeletal muscles of larynx	[P] Facial contractions
2. Involuntary contraction of skeletal muscles that is regulated by the brain	[Q] Regulate voice
3. Contraction of skeletal muscles in the legs	[R] Shivering
4. Pull of skeletal muscles on attachments to skin of face	[S] Assists return of blood to the heart
	[T] Causes facial expressions

Choose the correct answer from the options given below

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

53. Which of the following statement is true for the periosteum of bone [GPAT–2022]

(a) Protects the bone by assisting in fracture repair
(b) Has osteogenic cells which enable bone to grow in thickness, but not in length
(c) It is composed of an outer fibrous layer of dense irregular connective tissue and an inner osteogenic layer that consists of cells
(d) All of these

PATHOPHYSIOLOGY

1. **Put the events of acute inflammation in proper sequence** [GPAT–2023 SHIFT-I]
   (a) Accumulation of fluid and plasma at the affected site → intravascular activation of platelets → polymorphonuclear neutrophils → followed by healing
   (b) Polymorphonuclear neutrophils → accumulation of fluid and plasma at the affected site → intravascular activation of platelets → followed by healing
   (c) Accumulation of fluid and plasma at the affected site → polymorphonuclear neutrophils → intravascular activation of platelets → followed by healing
   (d) Intravascular activation of platelets → polymorphonuclear neutrophils → accumulation of fluid and plasma at the affected site → followed by healing
2. **Which one of the following is an autosomal dominant syndrome in its inheritance** [GPAT-2023 SHIFT-II]
   (a) Gilbert's syndrome
   (b) Crigler-Najjar syndrome Type-I
   (c) Dubin- Johnson syndrome
   (d) Rotor syndrome
3. **Which is a protein marker which can be detected within three hours of acute ischemic kidney injury from patient's urine** [GPAT-2023 SHIFT-II]
   (a) N-acetyl- b-D-glucose aminidase
   (b) Glutathione-S-transferase
   (c) Neutrophil gelatinase associated lipocalin
   (d) g-glutamyl transpeptidase
4. **Laboratory findings of which one of the following disease include markedly elevated serum amylase levels during the first 24 hours followed by rising serum lipase levels within 72-96 hours** [GPAT-2023 SHIFT-II]
   (a) Acute pancreatitis
   (b) Cirrhosis of liver
   (c) Jaundice
   (d) Cystic fibrosis of lungs
5. **Which one of the following types of hepatitis can lead to fulminant hepatitis causing massive hepatic cell death more frequently among infected pregnant women, showing third trimester mortality as high as 30%** [GPAT-2023 SHIFT-II]
   (a) Hepatitis A
   (b) Hepatitis B
   (c) Hepatitis C
   (d) Hepatitis E
6. **Which of the following is a specific enzyme marker of cell death in acute myocardial infarction** [GPAT–2022]
   (a) Creatine Kinase-MB
   (b) Aspartate aminotransferase
   (c) Lactate dehydrogenase
   (d) Cardiac troponin
7. **Viable cells (viability assay) are assayed by all of the following methods EXCEPT** [GPAT–2022]
   (a) MTT/MTS/Resazurin assay
   (b) Apoptosis assay
   (c) ATP assay
   (d) Protease marker assay

34. Match the following group I with group II

Group-I Patho immunological condition	Group-II [GATE-2005] Drugs used in the treatment
1.Urticaria	[P] Cyclosporin
2. Autoimmune thrombocytopenia	[Q] Antihistamines
3. Rheumatoid arthritis	[R] Intravenous immunoglobulin
4. Organ transplant rejection	[S] Glucocorticoids

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

35. Identify the non-pathogenic organism [GATE-2004]

(a) *Mycobacterium bovis*
(b) *Mycobacterium smegmatis*
(c) *Mycobacterium avium*
(d) *Mycobacterium intracellulare*

36. Which of these is true about the discovery of HB antigen in the blood of people infected with Hepatitis-B [GATE-2004]

(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

37. Decreased risk of Atherosclerosis is associated with increase in [GATE-2003]

(a) Very-low-density lipoproteins
(b) Low-density lipoproteins
(c) Cholesterol
(d) High-density lipoproteins

38. Measurement of which of the following two of the constituents of human plasma is of great value in the differential diagnosis of rheumatoid diseases [GATE-2002]

(a) Rheumatoid factor and immunoglobulin G
(b) Rheumatoid factor and C - reactive protein
(c) HL-A antigen and C-reactive protein
(d) Immunoglobulin and bradykinin

39. Infected blood products may produce serum hepatitis due to the presence of [GATE-1992]

(a) Hepatitis A virus
(b) Hepatitis B virus
(c) Hepatitis C virus
(d) None of these

40. Which of the following is an example of hypertrophy [GDC PRACTICE MCQ]

(a) Increased liver size after partial hepatectomy
(b) Increased size of the female breast at puberty
(c) Increased respiratory epithelium seen in vitamin A deficiency
(d) Increased size of the uterus in pregnancy

41. Zellweger's syndrome is associated with abnormality of [GDC PRACTICE MCQ]

(a) Nonessential fatty acid metabolism
(b) Essential fatty acid metabolism
(c) Cholesterol metabolism
(d) Lipoprotein metabolism

PHARMACOLOGY

GENERAL PHARMACOLOGY

Introduction and Routes of Drug Administration

1. What do you mean by Orphan drug [GPAT–2023 SHIFT-I]
   (a) A drug meant to be distributed among orphans who cannot afford the cost of drug
   (b) A drug for a disease which is not having any other treatment options at all
   (c) A drug which is useful for rare disease
   (d) A drug that is available in abundance
2. Which of the statement is TRUE in geriatrics practice [GPAT–2022]
   (a) The incidence of adverse drug reactions diminishes with advancement of age
   (b) Dose reduction is inevitable for each and every drug used in geriatric patients
   (c) Patient compliance is highest in geriatric patients
   (d) Polypharmacy is often a problem in elderly
3. Which of the following is considered as differentiated product [GPAT-2019]
   (a) Ranitidine (b) Zantac (c) Isoniazid (d) Paracetamol
4. In relation to buccal and sublingual route of administration which of the following statement is INCORRECT [GPAT-2017]
   (a) Absorption through epithelium is not affected by partition coefficient of the drug
   (b) Drug absorption by these routes by pass first pass metabolism
   (c) There is an optimum log P for sublingual absorption
   (d) These are preferred routes for anti-anginal drug
5. Which of the following routes of administration of drugs is associated with Phlebitis [GPAT-2011]
   (a) Subcutaneous (b) Intravenous (c) Intraspinal (d) Intradural
6. The pKa of lidocaine is 7.9. if the pH of the infected is 8.9, the fraction of the drug in the ionized form will be [GATE-2002]
   (a) 1% (b) 10% (c) 90% (d) 99%
7. Which of the following is not an essential drug [GDC PRACTICE MCQ]
   (a) Octreotide (b) Atropine (c) Paracetamol (d) Calamine lotion

122. To understand the drug receptor interaction is necessary to quantify the relation between [GATE-1988]

(a) Drug and its toxicity
(b) Drug and its absorption
(c) Drug and its biological effect
(d) Drug and intermediate product

123. The osmotic activity of mannitol is an example of [GDC PRACTICE MCQ]

(a) Physical action
(b) Chemical action
(c) Enzymatic action
(d) Receptor action

124. Which one of the following is an example of competitive enzyme inhibition [GDC PRACTICE MCQ]

(a) Acetazolamide → Carbonic anhydrase
(b) Digoxin → Na^+K^+ ATPase enzyme
(c) Sulphonamides → Folate synthase
(d) Theophylline → Phosphodiesterase

125. A drug that activates a receptor to produce an effect in the opposite direction to that of recognized agonist is [GDC PRACTICE MCQ]

(a) Agonist (b) Antagonist (c) Partial agonist (d) Inverse agonist

126. Following receptors are membrane proteins, EXCEPT [GDC PRACTICE MCQ]

(a) Receptors for fast neurotransmitters, coupled directly to an ion channel
(b) Receptors for many hormones and slow transmitters, coupled to effectors system
(c) Receptors for insulin and various growth factors, which are directly linked tyrosine kinase
(d) Receptors for steroid hormone

127. Which of the following is TRUE [GDC PRACTICE MCQ]

(a) As the concentration of the drug increases over the therapeutic range, only the bound form of the drug increases
(b) The bound form is not available for metabolism but is available for excretion
(c) Acidic drugs binds to beta globulin and basic drugs bind to albumin
(d) Binding sites are non-specific and one drug can displace the other

128. Partial agonist are drugs which [GDC PRACTICE MCQ]

(a) Have affinity but low intrinsic activity
(b) Have only affinity
(c) Have only intrinsic affinity (IA)
(d) Have low affinity but high (IA)

129. Which of the following acts by inhibiting enzyme in the body [GDC PRACTICE MCQ]

(a) Atropine (b) Allopurinol (c) Levodopa (d) Metoclopramide

130. Receptor which has 7 helical membrane structure is [GDC PRACTICE MCQ]

(a) Tyrosine kinase receptor
(b) Gene expression regulating receptor
(c) Intrinsic ionic channel containing receptor
(d) G protein coupled receptor

131. All are intracellularly secondary messengers in receptor mediated signal transduction except [GDC PRACTICE MCQ]

(a) Cyclic AMP
(b) Inositol triphosphate (IP_3)
(c) Diacylglycerol (DAG)
(d) G protein

132. Following statement is TRUE about receptors linked directly to ion channels [GDC PRACTICE MCQ]

(a) These receptors are involved mainly in fast synaptic transmission
(b) These are monomeric proteins containing one transmembrane segment

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Antiadrenergic Drugs and Drugs for Glaucoma

144. A patient with pheochromocytoma is undergoing surgery and has not been administered with alpha receptor blocker. If he is administered with intravenous Propranolol, then which of the following effects will be evident [GPAT-2022]
   (a) There will be a rise in the blood pressure
   (b) There will be a fall in the blood pressure
   (c) The blood pressure will remain unchanged
   (d) The patient may suffer severe bronchoconstriction

145. Except one of the following pairs represent drugs used in the treatment of glaucoma and their primary mechanism. Select the wrong pair from the following [GPAT-2020]
   (a) Topical prostaglandin analogues : Increase aqueous outflow
   (b) Topical beta-adrenergic blockers : Decrease aqueous outflow
   (c) Topical miotics : Increase aqueous outflow
   (d) Topical carbonic anhydrase inhibitors : Decrease aqueous formation

146. Which of the following pair of drugs is considered as selective α_1-Blockers [GPAT-2019]
   (a) Timolol and Metoprolol
   (b) Prazosin and Terazosin
   (c) Formoterol and Levalbuterol
   (d) Yohimbine and Corynanthine

147. Which of the following is NOT a cardio selective β-blocker [GPAT-2019]
   (a) Bisoprolol (b) Nebivolol (c) Acebutolol (d) Pindolol

148. Topical application of Timolol to the eye would be expected to induce which of the following [GPAT-2017]
   (a) Decreased formation of aqueous humor
   (b) Miosis
   (c) Mydriasis
   (d) Increased outflow of aqueous humor

149. Characteristics of carvedilol includes [GPAT-2016]
   [P] It is a β_1-selective antagonist
   [Q] It has both α_1-selective and β-blocking effects
   [R] It inhibits vascular smooth muscle mitogenesis
   (a) [P] true, [Q] & [R] false
   (b) [P], [Q] & [R] true
   (c) [Q] true, [P] & [R] false
   (d) [P], [Q] & [R] false

150. Which of the following is true for α-Blocker, EXCEPT [GPAT-2015]
   (a) Blockade of vasoconstriction
   (b) Cause Nasal stuffiness and miosis
   (c) Increased intestinal motility
   (d) Tone of smooth muscle in bladder trigone and sphincter is increased

151. Which of the following is selective α_2-selective antagonists [GPAT-2013]
   (a) Clonidine (b) Prazosin (c) Phentolamine (d) Yohimbine

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AUTACOIDS AND RELATED DRUGS

Histamine and Antihistamine

1. "Wheal and Flare" reaction is characteristic reaction associated with identification of [GPAT-2021]

(a) Type - 1 hypersensitivity reaction (b) Type - 2 hypersensitivity reaction
(c) Type - 3 hypersensitivity reaction (d) Type - 4 hypersensitivity reaction

2. Histamine concentration is highest in [GPAT-2018]

(a) Beta cells (b) Mast cells (c) Lymphocytes (d) Adipocytes

3. Following is an example of preformed and not lipid derived mast cell mediator of inflammatory process [GPAT-2015]

(a) LTC_4 (b) PGD_2 (c) PAF (d) Kallidin

4. Following is an example of preformed and not lipid-derived mast cell mediator of inflammatory process [GPAT-2014]

(a) LTC_4 (b) PGD_2 (c) PAF (d) Histamine

5. The histamine is formed from histidine by [GPAT-2014]

(a) Methylation (b) Decarboxylation (c) Acetylation (d) Esterification

6. Which one of the following drug is withdrawn from the market due to torsade de pointes [GPAT-2010]

(a) Chlorpromazine (b) Astemizole (c) Haloperidol (d) Domperidone

7. The following receptor are associated with drug mentioned. Match them [GATE-2000]

1. H_1 receptor
2. $5HT_3$ receptor

[P] Ketanserin
[Q] Cimetidine
[R] Diphenhydramine
[S] Ondansetron

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

8. Match the following [GDC PRACTICE MCQ]

RECEPTOR	PATHWAY
1. H_1 receptor	[P] Increase cAMP
2. H_2 receptor	[Q] Increase cGMP
3. H_3 receptor	[R] Decrease cAMP

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

HORMONES AND RELATED DRUGS

Pituitary, Thyroid Hormones and Thyroid inhibitors

1. Prominent biochemical features of Graves' disease are [GPAT-2023 SHIFT-II]
   (a) Decreased ionized calcium in body fluids
   (b) Decreased T_4 and T_3 in circulation
   (c) Increased ionized calcium in body fluids
   (d) Increased T_4 and T_3 in circulation
2. Conversion of T_4 to T_3 inhibition is associated with [GPAT-2021]
   (a) Propylthiouracil (b) Radioactive iodine
   (c) Lugol's iodine (d) Carbimazole
3. Identify the hormone that stimulates sperm production in testes and ovulation in females [GPAT-2018]
   (a) Prolactin (b) Luteinizing hormone
   (c) Follicle stimulating hormone (d) Adrenocorticotropic hormone
4. Which one of the following is a organ specific localized autoimmune disease [GPAT-2020]
   (a) Grave's disease (b) Scleroderma
   (c) Polyarteritis nodosa (d) Rheumatoid arthritis
5. The thymus secretes several hormones related to the immunity. These hormones promote the maturation of T lymphocyte cells. These hormones are [GPAT-2017]
   1. Thymosin 2. Thymic humoral factor
   3. Thymic factor 4. Interleukins
   (a) Only 1, 2 (b) 1, 2 and 3 (c) Only 3 (d) Only 4
6. Insulin and Thyroxine arrive at an organ / tissue / cell at the same time. Thyroxine causes an effect on the organ but insulin does NOT because [GPAT-2017]
   (a) The organ cell have receptors for thyroxine but no receptor for insulin
   (b) Thyroxine is a lipid -soluble hormone and insulin is water soluble
   (c) The target cell in the organ have up-regulated for thyroxine
   (d) Thyroxine is local hormone and insulin is a circulating hormone
7. Indicate which one of the following drugs may interfere with the uptake of ^{123}I in thyroid gland [GPAT-2016]
   (a) Beta-blockers (b) Alpha-blockers
   (c) Calcium channel blockers (d) Amiodarone
8. Wolff-chaikoff effect is [GPAT-2013]
   (a) Reduced Thyroxine synthesis by radiotherapy
   (b) Reduced Thyroxine synthesis by Propylthiouracil

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Insulin, Oral Antidiabetic Drugs and Glucagon

57. Normal value of HbA_{1c} falls in the range of [GPAT–2023 SHIFT-I]
(a) 0.1% to 0.8% (b) 6.5% to 7.5% (c) 21.5% to 24.5% (d) 51.5% to 53.5%

58. Exenatide is a [GPAT-2023 SHIFT-II]
(a) Glucagon like peptide 1 (GLP1) receptor agonist
(b) Diphenyl Peptidase-4 (DPP4) inhibitors
(c) Facilitator of glucose transport across the cell
(d) Inhibitor of glucose absorption in the GIT

59. Which among the following statement is CORRECT with respect to their mechanism of antidiabetic action [GPAT-2023 SHIFT-II]
(a) Dapagliflozin/Canagliflozin - Sodium glucose cotransporter-2 inhibitors
(b) Glipizide/Gliclazide - Dipeptidyl peptidase-4 inhibitors
(c) Linagliptin/Alogliptin - AMPK activators
(d) Acarbose / Voglibose - K^+ATP channel blockers

60. Match List I with List II Match the following with their mechanism of action [GPAT–2022]

LIST I Mechanism of action	LIST II Drugs
1. DPP4 inhibitors	[P] Metformin
2. K_{ATP} Channel blocker	[Q] Pioglitazone
3. PPARγ activator	[R] Glimepiride
4. AMP_K Activator	[S] Teneligliptin
	[T] α glucosidase inhibitors

Choose the correct answer from the options given below
(a) 1 - [Q], 2 - [T], 3 - [R], 4 - [S] (b) 1 - [Q], 2 - [R], 3 - [S], 4 - [P]
(c) 1 - [S], 2 - [R], 3 - [Q], 4 - [P] (d) 1 - [S], 2 - [P], 3 - [T], 4 - [R]

61. Which of the following clinical feature is not responsible for insulin resistance in type 2 diabetes [GPAT–2022]
(a) Increased LDL (b) Increased HDL
(c) Reduced HDL (d) Increased triglycerides

62. Which among the following statement is CORRECT with respect to their mechanism of action [GPAT-2021]
(a) Sitagliptin/Vildagliptin : Dipeptidyl peptidase-4 inhibitors
(b) Dapagliflozin/Canagliflozine : AMPk activators
(c) Glibenclamide/ Glimepiride : α-Glucosidase inhibitors
(d) Acarose/Metformin : K_{ATP} channel blockers

63. The oral oligosaccharide hypoglycemic agent, which is administered at the start of the meal is [GPAT-2018]
(a) Pioglitazone (b) Miglitol (c) Acarbose (d) Glimepiride

DRUGS ACTING ON CENTRAL NERVOUS SYSTEM

General Anaesthetics

1. Two pore domain K^+ ions channels are opened by which one of the following categories of anaesthetic [GPAT-2020]
   (a) Barbiturates (b) Benzodiazepines
   (c) Opioid analgesics (d) Halogenated inhalation anaesthetic
2. Accepted measure of anaesthetic potency [GPAT-2015]
   (a) Lipid solubility
   (b) Speed of induction
   (c) Presence of a "second gas effect"
   (d) Minimum alveolar concentration (MAC value)
3. GABA, an important transmitter in the brain [GATE-2006]
   [P] Is an inhibitory transmitter [Q] Is an excitatory transmitter
   [R] Increases chloride conductance [S] Is antagonized by Naloxone
   Identify the correct statements
   (a) [P], [Q] (b) [Q], [R] (c) [P], [R] (d) [R], [S]
4. Ketamine is useful as an anesthetic agent in [GDC PRACTICE MCQ]
   (a) Ischemic heart disease (b) Intracranial hemorrhage
   (c) Hyperactive airways (d) Glaucoma
5. Pharmacological effects of ketamine are [GDC PRACTICE MCQ]
   (a) Disagreeable dreams during induction and after recovery
   (b) Bronchospasm
   (c) Production of excellent skeletal muscle relaxation
   (d) Cardiovascular and respiratory depression
6. Intravenous general anaesthetic of choice in bronchial asthma is [GDC PRACTICE MCQ]
   (a) Thiopentone (b) Propofol (c) Etomidate (d) Ketamine
7. Which of the following state regarding isoflurane is INCORRECT [GDC PRACTICE MCQ]
   (a) It is an isomer of enflurane
   (b) It produces a rapid induction anaesthesia
   (c) It produces marked respiratory depression
   (d) It decreases secretions
8. The following statement about nitric oxide is TRUE [GDC PRACTICE MCQ]
   (a) It produces analgesia only in very anaesthetic concentration
   (b) It can be safely combined with skeletal muscle relaxants during anaesthesia
   (c) It is a potent anaesthetic
   (d) It causes slow induction and recovery from anaesthesia
9. Which of the following causes dissotive anaesthesia [GDC PRACTICE MCQ]
   (a) Ketamine (b) Fentanyl (c) Propofol (d) Halothane

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Sedative-Hypnotics

50. A drug 'X' is more selective for the α_1 subunit of BZD receptors. It lacks effect on slow-wave sleep. Minimum residual daytime sedation, no rebound insomnia on discontinuation, low abuse potential. Which of the following can be 'X' [GPAT-2023 SHIFT-I]

(a) Flurazepam (b) Flumazenil (c) Melatonin (d) Zolpidem

51. Which one of the following is a competitive antagonist at benzodiazepine site of GABA-receptor gated chloride channel [GPAT-2021]

(a) Muscimol (b) Flumazenil
(c) Picrotoxin (d) Beta-carboline (DMCM)

52. Which among the following is a structural variant of GABA and is used as a muscle relaxant [GPAT-2017]

(a) Metocurine (b) Tybamate (c) Baclofen (d) Cyclobenzaprine

53. The ultra-short acting barbiturates have brief duration of action due to [GATE-2002]

(a) High degree of binding to plasma protein
(b) Low lipid solubility resulting in a minimal concentration in the brain
(c) Metabolism is slow in the liver
(d) Rapid rate of redistribution from the brain due to its high liposolubility

54. Benzodiazepines potentiate [GATE-1994]

(a) The binding of protein to nervous tissue (b) The binding of GABA to liver
(c) The binding of GABA to receptors (d) The binding of GABA to carbohydrates

55. All the statement mentioned below about chloral hydrate is true EXCEPT that it [GATE-1990]

(a) Produces hypnosis (b) Produces analgesia
(c) Produce dependence (d) Irritate gastric mucosa

56. Following is a barbiturate [GDC PRACTICE MCQ]

(a) Thiopentone (c) Clobazam
(b) Chlordiazepoxide (d) Lorazepam

57. All are non-benzodiazepine hypnotics EXCEPT [GDC PRACTICE MCQ]

(a) Zopiclone (b) Zolpidem (c) Zaleplone (d) Ziprasidone

58. Which of the following is a benzodiazepine antagonist [GDC PRACTICE MCQ]

(a) Bicuculin (b) Clorazepam (c) Flumazenil (d) Beta-carboline

59. Respiratory depression produced by following agent is reversed by Flumazenil [GDC PRACTICE MCQ]

(a) Fentanyl (b) Midazolam (c) Pentobarbitone (d) Halothane

60. Correct statement about diazepam is [GDC PRACTICE MCQ]

(a) It acts by directly stimulating GABA receptors in the brain
(b) It is a phenothiazine derivative
(c) It has anxiolytic and muscle relaxant properties
(d) It is a powerful inducer of hepatic microsomal enzymes

300. Rivastigmine and Donepezil are drugs used predominantly in the management of [GDC PRACTICE MCQ]

(a) Depression (b) Dissociation (c) Delusions (d) Dementia

CARDIOVASCULAR DRUGS

Antihypertensive Drugs

1. A hypertensive patient receiving a drug 'Y' for managing BP was prescribed a tricyclic antidepressant. As a result, there was an abolition of the antihypertensive action of 'Y'. Which of the following drug could be 'Y' [GPAT–2023 SHIFT-I]

(a) Atenolol (b) Captopril (c) Clonidine (d) Diltiazem

2. Following statement is CORRECT with respect to voltage sensitive calcium channels [GPAT-2023 SHIFT-II]

(a) L-type Blocker : Nifedipine (b) T-type Blocker : Verapamil
(c) N-type Blocker : Mibefradil (d) R-type Blocker : Diltiazem

3. Which of the following is not an ACE inhibitor [GPAT-2023 SHIFT-II]

(a) Captopril (b) Trandolapril (c) Verapamil (d) Lisinopril

4. A hypertensive patient Mr. Zee already receiving a drug 'X' to control his blood pressure was prescribed a tricyclic antidepressant. This resulted in the abolition of the antihypertensive action of 'X'. Which of the following drug could be X [GPAT-2021]

(a) Enalapril (b) Clonidine (c) Atenolol (d) Diltiazem

5. Long - term use of thiazide diuretics in hypertension can produce all of the following EXCEPT [GPAT-2021]

(a) Hyperkalemia (b) Hyperuricemia
(c) Hyperlipidemia (d) Hyperglycemia

6. L-type calcium channel located in [GPAT-2016]

(a) Cardiac muscle (b) Smooth muscle
(c) Skeletal muscle (d) All of these

7. Match the following [GPAT-2016]

Action	Description
1. Chronotropic	[P] Force of contraction
2. Inotropic	[Q] Frequency of heartbeat or heart rate
3. Dromotropic	[R] Excitability of cardiac muscle
4. Bathmotropic	[S] Conduction of impulse through heart

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

8. Which of the following Calcium channel blocker is Phenyl alkyl derivative [GPAT-2015]

(a) Bepridil (b) Nifedipine (c) Diltiazem (d) Verapamil

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Antianginal and Other Anti-ischaemic Drugs

152. Statement I: In vasospastic angina, the imbalance occurs when the myocardial oxygen requirement increases, as during exercise, and coronary blood flow does not increase proportionately.
Statement II: In Prinz metal's angina, oxygen delivery decreases as a result of reversible coronary vasospasm
In light of the above statements, choose the most appropriate answer from the options given below [GPAT–2023 SHIFT-I]
(a) Both Statement I and Statement II are correct
(b) Both Statement I and Statement II are incorrect
(c) Statement I is correct but Statement II is incorrect
(d) Statement I is incorrect but Statement II is correct

153. Nitric oxide synthase exists in [GPAT–2022]
(a) Two isoforms (b) Three isoforms (c) Four isoforms (d) Five isoforms

154. Which one of the following calcium channel blockers used as anti - anginal agents has the highest possibility to produce a negative inotropic effect, AV nodal block, bradycardia, decreased cardiac output, constipation, edema and is contraindicated in sick sinus syndrome [GPAT-2021]
(a) Nifedipine (b) Amlodipine (c) Diltiazem (d) Verapamil

155. Which one of the following is NOT the role of Nitric oxide [GPAT-2019]
(a) Reliving vascular smooth muscle (b) Mediating microbicidal action of macrophages
(c) Serving as neurotransmitter in CNS (d) Inducing platelet aggregation

156. Which of the following side effect of ACE inhibitors result from inhibition of bradykinin breakdown [GPAT-2018]
(a) Analgesia (b) Hyperglycaemia
(c) Productive cough (d) Dry cough

157. Bosentan is [GPAT-2014]
(a) Serotonin uptake inhibitor (b) Endothelin receptor antagonist
(c) Leukotriene modifier (d) Calcium sensitizer

158. Which one of the following drugs produces significant relaxation of both venules and arterioles [GPAT-2012]
(a) Hydralazine (b) Minoxidil
(c) Diazoxide (d) Sodium nitroprusside

159. All of the given four drugs cause vasodilation
[P] Bradykinin [Q] Minoxidil [R] Acetylcholine [S] Hydralazine
Choose the correct statement about them [GPAT-2011]
(a) P & Q cause release of nitric oxide (b) Q & R do not cause release of nitric oxide
(c) R & S cause release of nitric oxide (d) P & S do not cause release of nitric oxide

DRUGS AFFECTING BLOOD AND BLOOD FORMATION

Haematinics and Erythropoietin

1. Most common type of megaloblastic anemia caused by malabsorption of vitamin B_{12} and characterized by decreased production of hydrochloric acid in the stomach and a deficiency of intrinsic factor is [GPAT-2023 SHIFT-II]
   (a) Iron deficiency anemia (b) Sideroblastic anemia
   (c) Pernicious anemia (d) Aplastic anemia
2. Compounds that have both TXA_2 synthase inhibition as well as TXA_2 receptor-blocking activity [GPAT-2014]
   (a) Dazoxiben (b) Ridogrel (c) Moxonidine (d) Aspirin
3. An iron compound used as heamatinic agent must meet two requirements i.e. it should be biologically available and be non-irritating. Which one of the following compounds meet the above two requirements most closely [GPAT-2011]
   (a) Ferric chloride (b) Ferric ammonium sulphate
   (c) Ferric ammonium citrate (d) Ferrous thioglycolate
4. An example of hemopoietic growth factor is [GATE-2004]
   (a) Platelet derived growth factor (b) Epidermal growth factor
   (c) Iron dextran (d) Erythropoietin
5. Methyl malonyl CoA mutase which catalyzes the conversion of propionyl CoA to succinyl utilizes the prosthetic group derived from [GATE-2002]
   (a) Cyanocobalamine (b) Pyridoxine
   (c) Thiamine (d) Nicotinamide
6. Which of the following factor facilitate iron absorption from intestine [GDC PRACTICE MCQ]
   (a) Antacid (b) Phosphate (c) Vitamin C (d) Tetracycline
7. Which of the following is not a valid indication for parenteral iron therapy [GDC PRACTICE MCQ]
   (a) Inability to tolerate oral iron
   (b) Anaemia during pregnancy
   (c) Depletion of iron stores associated with chronic bleeding
   (d) Inflammatory bowel disorder
8. Parenteral iron preparations include the following EXCEPT [GDC PRACTICE MCQ]
   (a) Iron sorbitol citric acid (b) Iron sucrose
   (c) Iron dextran (d) Iron ammonium citrate
9. Iron binding globulin in blood is [GDC PRACTICE MCQ]
   (a) Transferrin (b) Ferritin (c) Apoferritin (d) Haemosiderin

Sulfonamides, Cotrimoxazole and Quinolones

36. Tendon rupture or tendonitis of Achilles tendon is an adverse reaction of [GPAT-2022]
    (a) Fluoroquinolones (b) Tetracycline's
    (c) Cephalosporins (d) Aminoglycosides
37. Cotrimoxazole is combination of trimethoprim with sulfamethoxazole. Which of the following statement is CORRECT about Cotrimoxazole [GPAT-2020]
    (a) Cotrimoxazole is contraindicated during pregnancy
    (b) Most effective ratio of trimethoprim: Sulfamethoxazole in plasma is 20:1
    (c) Trimethoprim: sulfamethoxazole are administered in a dose ratio of 5:1 to achieve optimal synergistic effect
    (d) Cotrimoxazole is ineffective in treating respiratory tract infections
38. The mechanism of action of Ciprofloxacin is [GPAT-2018]
    (a) Inhibition of protein synthesis by interacting with 30S ribosome
    (b) Inhibition of protein synthesis by interacting with 50S ribosomes
    (c) Inhibition of DNA synthesis by interacting with topoisomerase
    (d) Inhibition of cell wall synthesis
39. Most accepted mechanism for developing bacterial resistance to Sulphonamide is [GPAT-2017]
    (a) An alternative metabolic pathway for synthesis of essential
    (b) An increasing capacity to metabolize the drug
    (c) Increased antagonism of drug
    (d) An alteration in enzyme that utilizes PABA
40. Because Trimethoprim enters many tissue, has a larger V_d than Sulfamethoxazole, therefore for obtaining optional synergistic, which will be the CORRECT dose ratio [GPAT-2014]
    (a) Sulfamethoxazole 5: Trimethoprim 1
    (b) Trimethoprim 5: Sulfamethoxazole 1
    (c) Sulfamethoxazole 5: Trimethoprim 1/5
    (d) Trimethoprim 5: Sulfamethoxazole 1/5
41. Which one of the following statements is FALSE for fluoroquinolones [GPAT-2012]
    (a) These are highly effective by oral and parenteral routes
    (b) These are relatively more susceptible to development of resistance
    (c) These are effective against those bacteria that are resistant to β-lactam and aminoglycoside antibiotics
    (d) These are bactericidal with broad spectrum of activity
42. Stevens Johnson syndrome is the most common adverse effect associated with one of the following categories of drugs [GPAT-2010]
    (a) Sulphonamides (b) Macrolides (c) Penicillins (d) Tetracyclines

223. One of the drugs when coadministered with Terfenadine may lead to life threatening Cardiac arrhythmia [GATE-2001]

(a) Lomefloxacin (b) Clofazimine (c) Itraconazole (d) Neomycin

224. Which of the following is a polyene antifungal agent [GDC PRACTICE MCQ]

(a) Amphotericin B (b) Miconazole

(c) Griseofulvin (d) Fluconazole

225. Mechanism of action of Rifampin [GDC PRACTICE MCQ]

(a) PABA competitor

(b) Mycolic acid synthesis

(c) Inhibits RNA synthesis by binding to DNA dependent RNA polymerase

(d) Protein synthesis inhibitors

226. Azole used by systemic route [GDC PRACTICE MCQ]

(a) Econazole (b) Clotrimazole (c) Ketoconazole (d) Miconazole

227. The antifungal agent given orally for systemic fungal infection is [GDC PRACTICE MCQ]

(a) Amphotericin B (b) Clotrimazole (c) Griseofulvin (d) Fluconazole

228. Antifungal drug binding to ergosterol and forming micropores is [GDC PRACTICE MCQ]

(a) Amphotericin B (b) Clotrimazole (c) Griseofulvin (d) Fluconazole

229. Antifungal drug inhibiting 14 alpha demethylase enzyme is [GDC PRACTICE MCQ]

(a) Amphotericin B (b) Voriconazole (c) Griseofulvin (d) Terbinafine

230. Antifungal drug inhibiting squalene epoxidase enzyme is [GDC PRACTICE MCQ]

(a) Amphotericin B (b) Voriconazole (c) Griseofulvin (d) Terbinafine

231. Azole with widest antifungal spectrum is [GDC PRACTICE MCQ]

(a) Clotrimazole (b) Ketoconazole (c) Fluconazole (d) Voriconazole

232. Following statement about griseofulvin is TRUE [GDC PRACTICE MCQ]

(a) It is effective topically as well as systemically

(b) It can induce hepatic microsomal enzyme

(c) It is used in systemic candidiasis

(d) It has no action on growing fungal cells

233. Which of the following adverse effect does not belong to Ketoconazole [GDC PRACTICE MCQ]

(a) Antiandrogenic (b) Decreased steroid synthesis

(c) Drug interaction (d) Elevation of hepatic enzymes

234. Which of the following is the treatment of choice for cryptococcal meningitis [GDC PRACTICE MCQ]

(a) Fluconazole (b) Itraconazole (c) Flucytosine (d) Amphotericin B

235. Which of the following antibiotics can be used in the treatment of fungal keratomycotic [GDC PRACTICE MCQ]

(a) Linezolid (b) Vancomycin

(c) Silver sulphadiazine (d) Doxycycline

236. Topical antifungal of choice for aspergillus infection of eye is [GDC PRACTICE MCQ]

(a) Miconazole (b) Clotrimazole (c) Econazole (d) Fluconazole

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CHEMOTHERAPY OF NEOPLASTIC DISEASE

1. Which of the following metabolite is used to inactivate the vasicotoxic metabolites leading to hemorrhagic cystitis by alkylating agents used in the treatment of cancer [GPAT–2023 SHIFT-I]
   (a) Acroline (b) Aldophosphamide
   (c) Cyclophosphamide (d) Mesna
2. Trastuzumab is a/an [GPAT–2023 SHIFT-I]
   (a) EGFR/HER_2 inhibitor (b) Angiogenesis inhibitor
   (c) EGF receptor (HER_1) inhibitor (d) BCR-ABL tyrosine kinase inhibitor
3. Which of the following drug used in the chemotherapy of some types of leukemia, satisfies the statements
   Statement I: It is effective orally
   Statement II: It has near 100% oral bioavailability
   In light of the above statements, choose the CORRECT answer from the options given below [GPAT–2023 SHIFT-I]
   (a) Asparaginase (b) Doxorubicin (c) Mitomycin (d) Hydroxyurea
4. One of the following is CORRECT match or mechanisms. Select it [GPAT-2023 SHIFT-II]
   (a) Methotrexate – Inhibition of microtubules, Vinca alkaloids – Inhibition of Purine synthesis, Bleomycin – Inhibition of RNA, 5-Fluoro Uracil – DNA damage
   (b) Methotrexate – Inhibition of Purine synthesis, Vinca alkaloids – Inhibition of Micro tubules, Bleomycin – DNA damage, 5-Fluoro Uracil – Inhibition of 2-deoxythymidylate
   (c) Methotrexate – DNA damage, Vinca alkaloids – Inhibition of micro tubules, Bleomycin – Inhibition of 2-deoxythymidylate, 5-Fluoro Uracil – RNA damage
   (d) Methotrexate – DNA damage, Vinca alkaloids – RNA damage, Bleomycin – Inhibition of Purine synthesis, 5-Fluoro Uracil – Inhibition of 2-deoxythymidylate
5. Which phase of cell cycle is the shortest phase in terms of time [GPAT-2023 SHIFT-II]
   (a) G_1 (b) S (c) M (d) G_2
6. Which of the following is a malignant type of tumor [GPAT–2022]
   (a) Lipoma (b) Adenoma (c) Melanoma (d) Osteoma
7. Which of the following statement/s are CORRECT regarding the alkylating agents as anticancer agents
   [A] They get converted into highly nucleophilic anions and bind to the nitrogen atom of guanine intercalating the DNA strands
   [B] Cyclophosphamide and Busulfan belong to this class
   [C] They inhibit the DNA synthesis by inhibiting the DNA polymerase enzyme
   [D] They inhibit the DNA supercoiling by irreversibly inhibiting the DNA topoisomerase enzyme
   Choose the CORRECT answer from the options given below [GPAT–2022]
   (a) A, B and D only are correct (b) Only B is correct
   (c) Only A and B are correct (d) All A, B, C and D are correct

MATCH THE FOLLOWING TYPE QUESTIONS

1. Match the following List I with List II [GPAT–2022]

LIST I (Poisoning)	LIST II (Treatment)
1. Warfarin	[P] Pralidoxime
2. Carbon monoxide	[Q] Oxygen
3. Cyanide	[R] Vitamin K
4. Nitrites	[S] Dicobalt edetate
5. Organophosphates	[T] Methylene blue

Choose the CORRECT answer from the options given below

(a) 1-[R], 2-[Q], 3-[S], 4-[T], 5-[P]
(b) 1-[P], 2-[Q], 3-[T], 4-[S], 5-[R]
(c) 1-[Q], 2-[S], 3-[P], 4-[R], 5-[T]
(d) 1-[T], 2-[Q], 3-[R], 4-[P], 5-[S]

2. Match the following drugs with alteration they produces in structure and functions of kidney [GPAT-2017]

LIST I (Class of drug)	LIST II (Structure and function of kidney)
1. Aminoglycoside antibiotics	[P] Glomerular abnormality
2. ACE inhibitors	[Q] Tubular epithelial cell damage
3. Methotrexate	[R] Hemodynamic mediated kidney injury
4. NSAIDs	[S] Obstructive nephropathy

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

3. Select the CORRECT option regarding screening models and their activity [GPAT-2016]

LIST I (Screening model)	LIST II (Activities)
1. Actophotometer	[P] Locomotor
2. Rota road and Chimney	[Q] Muscle relaxant
3. Tail flick and Hot plate	[R] Analgesics
4. Elevated plus maze and Mirror chamber	[S] Antianxiety

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

4. Given below are the drug and their antagonist [P] to [T]. Match them CORRECTLY [GATE 1988]

LIST I (Drug)	LIST II (Antagonist)
1. 5-HT	[P] Bemegride
2. Codeine	[Q] Atropine
3. Phenobarbitone	[R] Cyproheptadine
4. Muscarine	[S] Naloxone
	[T] Pyridoxine

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

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42. Given below the drug and their enzyme [P] to [T] inhibited by them. Match the following [GATE-1988]

Group I (Drug)	Group II (Enzyme)
1. Physostigmine	[P] COMT inhibitors
2. Imipramine	[Q] Acetaldehyde dehydrogenase
3. Pyrogallol	[R] Carbonic anhydrase
4. Disulfiram	[S] Cholinesterase
	[T] MAO inhibitors

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

43. Given below the antibacterial agent and mode of action [P] to [T]. Match the CORRECTLY [GATE-1988]

Group I (Antibacterial agent)	Group II (Mechanism of action)
1. Gentamicin	[P] Inhibit the mycolic acid synthesis
2. Isoniazid	[Q] Prevent the bacterial cell wall synthesis
3. Polymyxin B	[R] Bind with 30S ribosomal subunit (take false amino acid)
4. Penicillin	[S] Get accumulated at cell wall membrane and counteract with cell phospholipids
	[T] Destroys the nucleic acid counteract with cell phospholipids

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

44. Given below are the aliments and the drugs used [P] to [T]. Match them correctly [GATE-1988]

Group I (Disease)	Group II (Drug)
1. Parkinson's disease	[P] Probenecid
2. Glaucoma	[Q] Ampicillin
3. Gout	[R] Nitroglycerin
4. Angina	[S] Pilocarpine
	[T] Levodopa

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

45. Given below are the hypertensive agents. Match their mode of action [P] to [T] [GATE-1988]

Group I (Antihypertensive Drug)	Group II (Mechanism of action)
1. Minoxidil	[P] Alpha adrenoreceptor antagonist
2. Prazosin	[Q] Beta adrenoreceptor antagonist
3. Alpha methyldopa	[R] From alpha methyl norepinephrine
4. Clonidine	[S] Direct action on blood vessel (vasodilation)
	[T] Decrease sympathetic activity through brain

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

PHARMACOGNOSY

Introduction of Pharmacognosy

General Introduction

1. Charaka, a physician belonged to which system of medicine [GPAT-2018]
   (a) Ayurveda (b) Unani (c) Siddha (d) Homeopathy
2. Choose that scientist who classified the plants and introduced the system of naming the plants known as the binomial system [GDC PRACTICE MCQ]
   (a) Seydler (b) Berg
   (c) Swede Linnaeus (d) Bentham and Hooker
3. Which of the following scientist describes _____ 365 drugs, one for each day of the year and titled as [GDC PRACTICE MCQ]
   (a) Charaka Samhita, Ayurveda (b) Papyrus Ebers, Pen-t'sao
   (c) Shen Nung, Pen-t'sao (d) Dioscorides, Materia medica
4. Who is consider as a father of surgery [GDC PRACTICE MCQ]
   (a) Dioscorides (b) Galen (c) Aristotle (d) Sushruth
5. Match the following drugs isolated in which year [GDC PRACTICE MCQ]

Plant constituent		Year
1. Strychnine	-	[P] 1819
2. Quinine	-	[Q] 1817
3. Cocaine	-	[R] 1820
4. Piperine	-	[S] 1860

   (a) 1 – [Q] , 2 – [R] , 3 – [P] , 4- [S] (b) 1 – [Q] , 2 – [S] , 3 – [R] , 4 -[P]
   (c) 1 – [Q] , 2 – [R] , 3 – [S] , 4- [P] (d) 1 – [R] , 2 – [Q] , 3 – [S] , 4- [P]
6. In which year Morphine from Opium was extracted [GDC PRACTICE MCQ]
   (a) 1803 (b) 1820 (c) 1806 (d) 1860
7. Who is regarded as "Father of Natural History" [GDC PRACTICE MCQ]
   (a) Edward bach (b) Hippocrates (c) Dioscorides (d) Aristotle

92. In plant tissue culture the leaf surface can be sterilized by [GDC PRACTICE MCQ]
(a) 0.1% w/v Mercuric chloride (b) 2% Potassium Hypochloride
(c) 10% Calcium hypochloride (d) All of these

93. Plant cell devoid of cell wall is called [GDC PRACTICE MCQ]
(a) Protoplast (b) Cytoplasts (c) Cybrids (d) Hybrids

94. The cytoplasmic hybrids where the nucleus is derived from only one parent and the cytoplasm is derived from both the parents are called as [GDC PRACTICE MCQ]
(a) Hybrids (b) Cybrids (c) Heterokaryon (d) None of these

95. The macronutrient found in culture media [GDC PRACTICE MCQ]
(a) Potassium (b) Molybdenum (c) Zinc (d) All of these

96. The most effective method for producing virus free plants is [GDC PRACTICE MCQ]
(a) Root culture (b) Meristem culture
(c) Somatic embryogenesis (d) Floriculture

97. ABA is involved in [GDC PRACTICE MCQ]
(a) Dormancy of seeds (b) Root elongation
(c) Shoot elongation (d) Increased cell division

98. Stress hormone is [GDC PRACTICE MCQ]
(a) Auxin (b) Gibberellin (c) Abscisic acid (b) Cytokinin

99. Plant hormone causing abscission of leaves, senescence and inhibition of cell division is [GDC PRACTICE MCQ]
(a) IAA (b) Ethylene (c) Cytokinin (d) ABA

100. The hormone responsible for stimulation of closing of stomata is due to [GDC PRACTICE MCQ]
(a) Abscisic acid (b) Cytokinin (c) Ethylene (d) All of these

101. The hormone responsible for stimulation of opening of stomata is due to [GDC PRACTICE MCQ]
(a) Abscisic (b) Cytokinin (c) Ethylene (d) All of these

102. The phytohormone shows triple response growth is [GDC PRACTICE MCQ]
(a) Ethylene (b) Abscisic acid (c) Cytokinin (d) Auxins

103. Choose correct option for the following statement [GDC PRACTICE MCQ]
[I] Auxins (cell elongation)
[II] Gibberellins (cell elongation + cell division - translated into growth)
[III] Cytokinins (cell division + inhibits senescence)
[IV] Abscisic acid (promotes senescence, epinasty, and fruit ripening)
[V] Ethylene (abscission of leaves and fruits)
(a) I, II, III (b) I, III, IV (c) I, III, IV, V (d) I, II, III, IV, V

Biogenetic Pathway

104. Sesquiterpenes are biosynthesized from ____ in plants [GPAT-2023 SHIIFT-II]
(a) Farnesyl-pyrophosphate (b) Geranyl farnesyl pyrophosphate
(c) Terpenes (d) Degraded products of terpenes

33. Which of the following alkaloids is derived from tyrosine [GPAT-2011]
(a) Quinine (b) Morphine (c) Atropine (d) Ephedrine

34. A glycoalkaloid [GPAT-2011]
[P] Contains sulphur in addition to nitrogen in its molecule
[Q] Is glycosidic in nature
[R] Can be hydrolysed to an alkaloid
[S] Always contains endocyclic nitrogen in its molecule
(a) P & R (b) Q & S (c) Q & R (d) P & Q

35. Alkaloids are NOT precipitated by [GPAT-2010]
(a) Mayer's reagent (b) Dragendorff reagent (c) Picric acid (d) Millon's reagent

36. The chemical behaviour of morphine alkaloid is [GPAT-2010]
(a) Acidic (b) Basic (c) Neutral (d) Amphoteric

37. Tropane alkaloids are NOT present in [GPAT-2010]
(a) *Datura stramonium* (b) *Erythroxylum coca*
(c) *Duboisia myoporoides* (d) *Lobelia inflata*

38. Choose the right combination [GPAT-2010]
(a) Quinine, antimalarial, isoquinoline alkaloid
(b) Reserpine, antihypertensive, indole alkaloid
(c) Quantitative microscopy, stomatal number, myrrh
(d) Palmitic acid, salicylic acid, fatty acids

39. Genetically modified species of Papaver namely *Papaver bracteatum* and *Papaver orientale* contain the predominant alkaloid [GATE-2009]
(a) Morphine (b) Codeine (c) Thebaine (d) Narcotine

40. Different species of Ephedra can be identified by observing the nature of [GATE-2009]
(a) Inner surface (b) Outer surface (c) Trichomes (d) Scaly leaves

STATEMENT FOR QUESTION NO. 41 & 42

Extract of *Chondrodendron tomentosum*, family manispermaceae contains several alkaloids

41. One of the important alkaloid is [GATE-2008]
(a) (-) Phyllandrene (b) (+) Hollarhenine
(c) (+) Tubocurarine (d) (±) Colchicine

42. This alkaloid has [GATE-2008]
(a) Bis benzyl tetrahydro isoquinoline ring (b) Quinoline ring
(c) Phenanthrene ring (d) Pyrido pyrimidine ring

43. Two tests for ephedrine are [GATE-2008]
[P] A solution in dilute HCl, treated with copper sulphate and sodium hydroxide gives a violet color
[Q] An alcoholic solution gives a red color with $FeCl_3$
[R] On shaking with solvent ether, the organic layer shows purple while the aqueous layer becomes blue in color
[S] A solution of vanillin gives a violet-red color
(a) [Q], [S] (b) [P], [S] (c) [P], [R] (d) [Q], [R]

191. Non-lignified hypodermal fibre is the characteristic microscopy of [GDC PRACTICE MCQ]
(a) Kurchi (b) Ephedra (c) Datura (d) Mentha

192. Purine alkaloids are identified by [GDC PRACTICE MCQ]
(a) Benedict test (b) Dragendorff's rest
(c) Virali morin rest (d) Murexide test

193. Colour of the leaves changes during fermentation is due to the presence of an enzyme [GDC PRACTICE MCQ]
(a) Thease (b) Diastase (c) Oxidase (d) Amylase

194. Theophylline on oxidation with KClO/HCl gives [GDC PRACTICE MCQ]
(a) Trimethyl alloxan and urea (b) Methyl alloxan and dimethyl urea
(c) Dimethyl alloxan and methyl urea (d) None of these

Quinazoline and Diterpene alkaloids

195. Cystoliths present in [GDC PRACTICE MCQ]
(a) Datura leaves (b) Digitalis leaves (c) Vasaka leaves (d) Vinca leaves

196. Vasicine is an alkaloid obtained from the plant *Adhatoda vasica*, which belongs to the family [GDC PRACTICE MCQ]
(a) Apocynaceae (b) Acanthaceae (c) Scrophulariacea (d) Rutaceae

197. The Aconite plant is propagated from [GDC PRACTICE MCQ]
(P) Stem and Seeds (Q) Tubers (R) Root
(a) P Only (b) Q Only (c) R Only (d) P, Q & R

198. The highly poisonous drug which use in treatment of neuralgia [GDC PRACTICE MCQ]
(a) Monkshood (b) Ephedra (c) Belladonna (d) Nux vomica

199. Which alkaloid contains diterpene moiety is [GDC PRACTICE MCQ]
(a) Cocaine (b) Aconitine (c) Reserpine (d) Pilocarpine

200. Hydrolysis of Aconitine gives [GDC PRACTICE MCQ]
(a) Aconine + Benzoic acid (b) Aconine + Benzoyl Aconine
(c) Benzoyl Aconine + Acetic acid (d) Benzoyl Aconine + Benzoic acid

Glycosides

1. Modified borntrager's test is used to detect the presence of which type of glycosides [GPAT-2023 SHIFT-II]
(a) O-type of glycosides (b) C-type of glycosides
(c) S-type of glycosides (d) N-type of glycosides

2. Unicellular conical, warty trichomes, paracytic stomata, xylem vessels with annular thickening are important microscopical features of which plant [GPAT-2023 SHIFT-II]
(a) *Datura metel* (b) *Cassia angustifolia*
(c) *Digitalis purpurea* (d) *Atropa belladonna*

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73. What is true about Chenopodium oil [GDC PRACTICE MCQ]

1. It contain not less than 65% of ascaridiole
2. It is used as anthelmintic
3. It is contraindicated in pregnancy
4. It has no action on large tapeworms

(a) 1,2 and 3 are true (b) 2,3 and 4 are true
(c) 2 and 3 are true (d) All of these

74. Eucalyptus oil is obtained from the eucalyptus leaves by ___ method [GDC PRACTICE MCQ]

(a) Eucelle method (b) Enfleurage method
(c) Soxhlet evaporation (d) Steam distillation

75. 1, 8-Cineol is an active constituent of [GDC PRACTICE MCQ]

(a) Eucalyptus oil (b) Peppermint oil (c) Lemon oil (d) Turpentine oil

76. Diacytic stomata is microscopic feature of which alcoholic volatile oil drug [GDC PRACTICE MCQ]

(a) Fennel (b) Dill (c) Anise (d) Peppermint oil

77. Choose the right constituents given below is considered by U.S.F.D.A as generally regarded as safe (GRAS) to use as nasal decongestant [GDC PRACTICE MCQ]

(a) Anethol (b) Menthol (c) Carvone (d) Phellandrene

78. The anti-inflammatory and antiulcer activity of peppermint oil is due to [GDC PRACTICE MCQ]

(a) Azulene (b) Menthol (c) Pulegone (d) Menthol

79. The bitter substance which is present in bitter orange peel is [GDC PRACTICE MCQ]

(a) Aurantimarin (b) Hesperidin (c) Limonene (d) Pectin

80. Volatile oil from Lemon peels contains d-limonene which is [GDC PRACTICE MCQ]

(a) Phenyl propane derivative (b) Bicyclic monoterpene derivative
(c) Monocyclic monoterpene derivative (d) Acyclic sesquiterpene

81. Which volatile oil containing drug is used for extraction of citral [GDC PRACTICE MCQ]

(a) Mentha oil (b) Palmarosha oil (c) Orange peel (d) Indian Melissa oil

82. Name of the active constituent that is obtained by steam distillation from the leaves and aerial parts of the plants *Cymbopogon flexuousus* is [GDC PRACTICE MCQ]

(a) Camphor (b) Carvone (c) Linalool (d) Citral

83. Which of the following chemical constituents is used as mosquito repellant [GDC PRACTICE MCQ]

(a) Citral (b) Geraniol (c) Citronellal (d) Eugenol

84. On enzymatic hydrolysis of Gaultherin it produces [GDC PRACTICE MCQ]

(a) Methyl cinnamate and Primeverose (b) Primeverose and Methyl salicylate
(c) Digitoxose and Methyl salicylate (d) Digitoxose and Methyl cinnamate

85. Camphor is obtained from *Cinnamomum comphora* belonging to the family [GDC PRACTICE MCQ]

(a) Rubiaceae (b) Lauraceae (c) Myristicaceae (d) Myrtaceae

86. A drop of Vanillin and Sulphuric acid added to X powder, then produce finally blue color, here X powder drug is [GDC PRACTICE MCQ]

(a) Chenopodium (b) Camphor (c) Eucalyptus (d) All of these

3. Choose the right combination from the following Microscopic features Crude drugs [GPAT-2017]

Type of stomata	Drugs
1. Diacytic stomata and sessile, glandular trichomes	[P] Datura
2. Paracytic stomata and unicellular warty trichomes	[Q] Vasaka
3. Anomocytic Stomata, and glandular, multicellular covering trichomes	[R] Senna
4. Anisocytic stomata and multicellular covering trichomes	[S] Digitalis

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

4. Given below are some microscopical diagnostic of the drug listed in A to E. Choose the appropriate one [GATE-1989]

Microscopical characters	Plant drugs
1. Unlignified septate fiber	[P] Rhubarb
2. Raphides of calcium oxalate embedded in mucilage	[Q] Liquorice
3. Anisocytic type of stomata	[R] Ginger
4. Star spots	[S] Squill
	[T] Solanaceous plants

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

5. The diagnostic features of crude drugs are given in 1-4. Their descriptions are given in [P] to [U]. Match them. [GATE–1997]

Diagnostic features	Description
1. Trichome	[P] Two similar cells placed with their long axis parallel and having smaller intercellular space.
2. Cicatrix	[Q] Epidermal cells which do not have any definite function
3. Stomata	[R] An elongated tubular outgrowth of an epidermal cell
4. Mesophyll	[S] Trichomes having fallen or been rubbed leaving a scar
	[T] The whole of the parenchymatous ground tissue between two epidermises
	[U] Flat and has one or more rows of Palisade cells.

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

6. Match the following under chemical compounds under Column I with their respective chemical tests under Column II [GPAT-2021]

COLUMN - I (COMPOUNDS)	COLUMN - II (CHEMICAL TESTS)
1. Quinine	[P] Borntrager's
2. Digitoxin	[Q] Thalleoquin
3. Atropine	[R] Vitali Morin
4. Sennosides	[S] Keller kiliani

Choose the correct answer from the options given below

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

PHARMACEUTICAL CHEMISTRY

PHYSICAL CHEMISTRY

States of Matter

1. The value of R in energy of activation is [GPAT-2021]
   (a) 1.98 cal/deg.molecule (b) 1.89 cal/deg.molecule
   (c) 8.91 cal/deg.molecule (d) 9.18 cal/deg.molecule
2. One of the units used for expressing pressure is 'torr' and is equal to [GATE-2004]
   (a) Cm of Hg (b) Mm of mercury (c) Psi (d) Gause
3. The interaction of one dipole liquid to another induced dipole liquid molecule is known as [GDC PRACTICE MCQ]
   (a) Polar forces (b) London forces
   (c) French forces (d) Van der wall forces
4. The temperature at which vapour pressure of a liquid can be measured is [GDC PRACTICE MCQ]
   (a) Freezing point (b) Boiling point
   (c) Critical temperature (d) Inversion temperature
5. Which one of the following is the correct order of interactions [GDC PRACTICE MCQ]
   (a) Covalent < Hydrogen bonding < Van der Waals < Dipole-dipole
   (b) Van der Waals < Hydrogen bonding < Dipole < Covalent
   (c) Van der Waals < Dipole-dipole < Hydrogen bonding < Covalent
   (d) Dipole-dipole < Van der Waals < Hydrogen bonding < Covalent
6. Van der Waals' real gas, acts as an ideal gas, at which conditions [GDC PRACTICE MCQ]
   (a) High temperature, low pressure (b) Low temperature, high pressure
   (c) High temperature, high pressure (d) Low temperature, low pressure
7. The total pressure exerted by a number of non-reacting gases is equal to the sum of the partial pressures of the gases under the same conditions is known as [GDC PRACTICE MCQ]
   (a) Boyle's law (b) Charle's law (c) Avogadro's law (d) Dalton's law

Colligative Property and Solution

40. Which is NOT the colligative property [GPAT-2021]

[P] Depression of freezing point [Q] Elevation of boiling point

[R] Elevation of vapour pressure [S] Osmotic pressure

Choose the correct one of the following

(a) (P), (Q) and (S) (b) (P) and (Q)

(c) (P) and (S) (d) (R) only

41. Cottrell's method is used for the measurement of [GPAT-2022]

(a) Depression of freezing-point (b) Elevation of boiling-point

(c) Lowering of vapour pressure (d) Osmotic pressure

42. Which of the following method is used for the determination of osmotic pressure [GPAT-2021]

(a) Beckmann's method (b) Berkeley and Hartley's method

(c) Cottrell's method (d) Landsberger's method

43. Calculate the accurate osmotic pressure at 0°C of a blood serum sample using Lewis equation having freezing point - 0.53°C [GPAT-2019]

(a) 0.636 ATM (b) 6.39 ATM (c) 574.28 ATM (d) 0.0441 ATM

44. Parachor and Molar refraction can be categorized under one of the following properties. Identify that [GPAT-2012]

(a) Additive properties (b) Constitutive properties

(c) Colligative properties (d) Additive and constitutive property

45. Rast's camphor method is used for determination of molecular weight of solutes which are soluble in molten camphor. The basic principle of the method is dependent on one of the following properties. Identify that [GPAT-2012]

(a) Elevation of freezing point of camphor by the solute

(b) Lowering of vapour pressure of camphor by the solute

(c) Lowering of freezing point of camphor by the solute

(d) Elevation of boiling point of camphor by the solute

46. The statement "The mass of a gas dissolved in a given mass of a solvent at any temperature is proportional to the pressure of the gas above the solvent" is [GDC PRACTICE MCQ]

(a) Dalton's Law of Partial Pressures (b) Law of Mass Action

(c) Henry's Law (d) None of these

47. Determination of correct molecular mass from Raoult's law is applicable to [GDC PRACTICE MCQ]

(a) An electrolyte in solution (b) A non-electrolyte in a dilute solution

(c) A non-electrolyte in a concentrated solution (d) An electrolyte in a liquid solvent

48. An ideal solution is that which [GDC PRACTICE MCQ]

(a) Shows positive deviation from Raoult's law

(b) Shows negative deviation from Raoult's law

(c) Has no connection with Raoult's law

(d) Obeys Raoult's law

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(a) I < II < III (b) III < I < II (c) II < I < III (d) II < III < I

4. Most acidic compound will be [GDC PRACTICE MCQ]

(a) $Cl_3C–COOH$ (b) $F_3C–COOH$ (c) $H_3C–COOH$ (d) $CH≡C–COOH$

5. Most basic compound will be [GDC PRACTICE MCQ]

(a) $CH_3–NH–CH_3$ (b) $Cl_2CH–NH–CH_3$

(c) $ClCH_2 – NH – CH_3$ (d) $Cl_3C–NH–CH_3$

6. The correct order of decreasing basic character of the three amines are [GDC PRACTICE MCQ]

CH_3NH_2 (I) CH_3NHCH_3 (II) $C_2H_5NHC_2H_5$ (III)

(a) II > III > I (b) I > III> II (c) I > II > III (d) III > II > I

7. Which of compound will be most acidic [GDC PRACTICE MCQ]

(a) CH_3OH (b) C_2H_5OH (c) C_3H_7OH (d) CH_3-CH(Cl)-OH

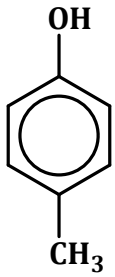
8. Most acidic compound will be [GDC PRACTICE MCQ]

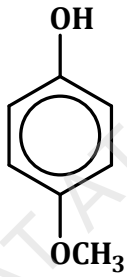
(a) HCOOH (b) CH_3COOH (c) C_2H_5COOH (d) None of these

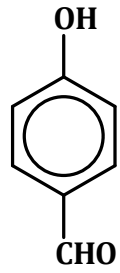
9. Amongst the amines $C_6H_4NH_2$ (I), CH_3NH_2 (II), $(CH_3)_2NH$ (III) and $(CH_3)_3N$ (IV) the order of basicity (in aqueous medium) is [GDC PRACTICE MCQ]

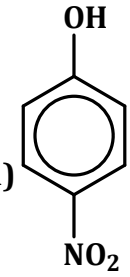
(a) I < IV < II < III (b) IV < III < II < I (c) I < II < III < IV (d) II < III < IV < I

10. Value of pK_a will be minimum for [GDC PRACTICE MCQ]

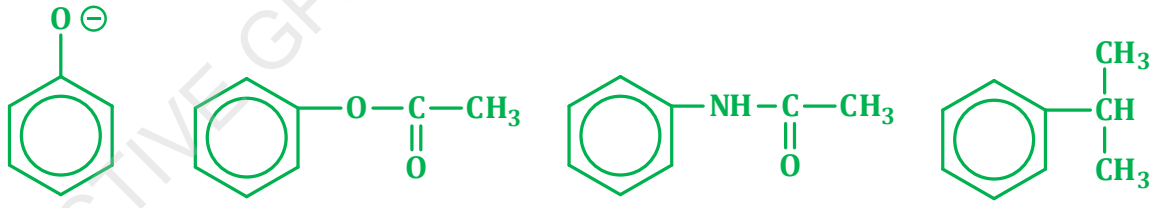
(a) 

(b) 

(c) 

(d) 

11. The order of reactivity of the compounds [GDC PRACTICE MCQ]

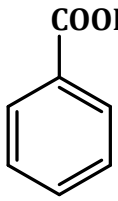


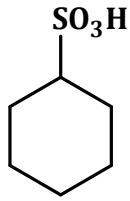
(I) (II) (III) (IV)

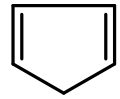
Towards substitution with a given electrophile is

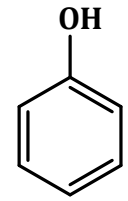
(a) IV > III > II > I (b) I > II > III > IV (c) III > II > I > IV (d) I > III > II > IV

12. Which of the following is least acidic [GDC PRACTICE MCQ]

(a) 

(b) 

(c) 

(d) 

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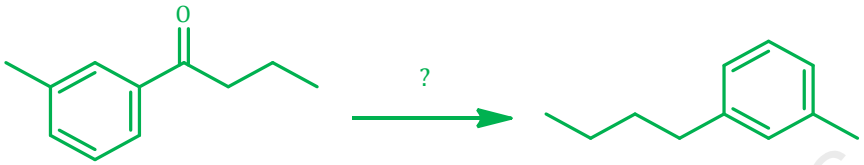
89. Identify which statement among the following is true in case of E_2 and SN_2 [GPAT-2022]
(a) Secondary substitution undergoes slow elimination and fast substitution
(b) Primary substitution undergoes slow elimination and fast substitution
(c) Tertiary substitution undergoes slow elimination and fast substitution
(d) Primary substitution does not undergo elimination and substitution reactions

90. The set of specific reagents used in the below-mentioned synthesis of m-(n-Butyl) toluene from n-propyl m-tolyl ketone is [GPAT-2022]



(a) Zn(Hg), HCl
(b) $NaBH_4$, CH_3OH
(c) NH_2NH_2, NaOH
(d) $SnCl_2$, CH_3OH

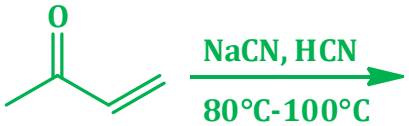
91. Identify the functional groups from the below mentioned options that lead to weakening of benzoic acid [GPAT-2022]
[A] –OH [B] –Cl [C] $–NH_2$ [D] $–NO_2$
(a) A and B (b) A and C (c) B and C (d) A and D

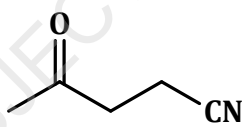
92. The dehydration of aldol product of two acetaldehyde molecules through E1cb mechanism affords formation of [GPAT-2021]
(a) 1-Butenal (b) 2-Butenal (c) 3-Butenal (d) 4-Butenal

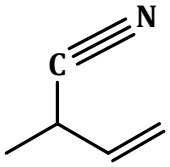
93. Which of the following groups stabilizes carbocation in electrophilic aromatic substitution [GPAT-2020]
(a) -CN, $-SO_3H$ (b) -COOH, -CHO (c) $-NH_2$, -OH (d) $–N(CH_3)_3^+$, $-NO_2$

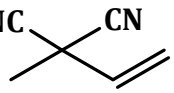
94. Walden inversion or complete reversal of stereochemistry occurs in one of the following substitution reaction [GPAT-2020]
(a) SN_{Ar} reactions (b) SN_i reaction (c) SN_2 reactions (d) SN_1 reactions

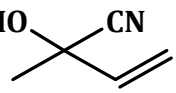
95. What is the product of the following reaction [GPAT-2020]



(a) 

(b) 

(c) 

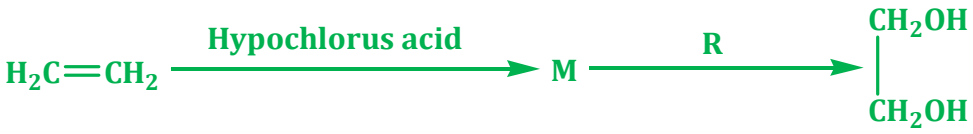
(d) 

96. The chief product obtained by the reaction of neo-pentyl bromide under E_1 reaction conditions [GPAT-2019]
(a) Neopentyl alcohol
(b) 2-methyl-2-butane
(c) 2-methyl-1, 3-butadiene
(d) 2-methyl butane

31. The dehydrohalogenation of 2-bromobutane with alcoholic KOH gives mainly [GDC PRACTICE MCQ]
(a) 2-Butene (b) 2-Butyne (c) 1-Butene (d) 1-Butyne

32. The major product of acid-catalyzed dehydration of 3 - pentanol is [GDC PRACTICE MCQ]
(a) 1-Pentene (b) 2-Methyl-1-butene (c) 2-Pentene (d) 3-Methyl-1-butene

33. In a reaction [GDC PRACTICE MCQ]



Where M = molecule; R = reagent; M and R are
(a) CH_3CH_2Cl and NaOH (b) $CH_3Cl - CH_2OH$ and aq. $NaHCO_3$
(c) CH_3CH_2OH and HCl (d) $CH_2 = CH_2$ and heat

34. 2-Methylpropene reacts with HBr to give [GDC PRACTICE MCQ]
(a) Tert-Butyl bromide (b) Isobutane
(c) N-Butyl bromide (d) None of these

35. Which of the following compounds is the major product when 1-hexyne is treated with excess HBr [GDC PRACTICE MCQ]
(a) 1,1-dibromohexane (b) 1,1-dibromohexene
(c) 1,2-dibromohexene (d) 2,2-dibromohexane

36. Acetylene reacts with water in the presence of sulfuric acid and mercuric sulfate to give [GDC PRACTICE MCQ]
(a) Acetone (b) Acetic acid (c) Formaldehyde (d) Acetaldehyde

37. 1 - Chlorobutane, on reaction with alcoholic potash (KOH), gives [GDC PRACTICE MCQ]
(a) 1-Butene (b) 1-Butanol (c) 2-Butene (d) 2-Butanol

38. 3 - Hexyne reacts with Na/liq. NH_3 to produce [GDC PRACTICE MCQ]
(a) cis-3-Hexene (b) trans-3-Hexene (c) 3-Hexylamine (d) 2-Hexylamine

39. When 2-pentyne is treated with dil. H_2SO_4 and $HgSO_4$, the product formed is [GDC PRACTICE MCQ]
(a) 1-pentanol (b) 2-pentanol (c) 2-pentanone (d) 3-pentanone

40. Propyne and propene can be distinguished by [GDC PRACTICE MCQ]
(a) Conc. H_2SO_4 (b) Br_2 in CCl_4
(c) Dil. $KMnO_4$ (d) $AgNO_3$ in ammonia

41. Identify the reagent from the following list which can easily distinguish between 1-butyne and 2-butyne [GDC PRACTICE MCQ]
(a) Bromine, CCl_4 (b) H_2, Lindlar catalyst
(c) Dilute H_2SO_4, $HgSO_4$ (d) Ammonical Cu_2Cl_2 solution

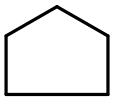
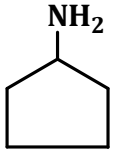
42. Butene-1 may be converted to butane by reaction with [GDC PRACTICE MCQ]
(a) Sn/HCl (b) Zn/Hg (c) Pd/H_2 (d) Zn/HCl

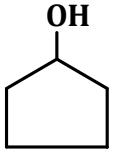
43. The decreasing order of boiling points is [GDC PRACTICE MCQ]
(a) n-Pentane > iso-Pentane > neo-Pentane
(b) iso-Pentane > n-Pentane > neo-Pentane
(c) neo-Pentane > iso-Pentane > n-Pentane
(d) n-Pentane > neo-Pentane > iso-Pentane

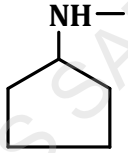
211. Reactants in skraup synthesis for quinoline are [GPAT-2014]

(a) Aniline, nitrobenzene, glycerol
(b) Aniline and glycerol
(c) Nitrobenzene and glycerol
(d) None of these

212. Product of the following reaction [GPAT-2020]

(a) 
(b) 

(c) 

(d) 

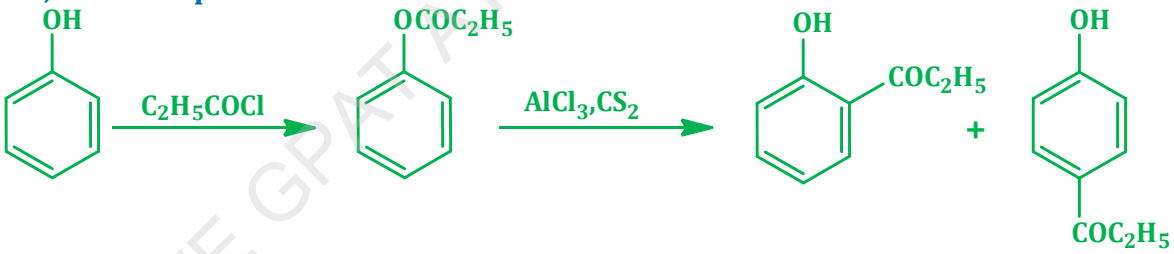
213. The protons ortho to the nitro group in p-nitrotoluene are examples of which one of the Following types [GPAT-2011]

(a) Chemically equivalent but magnetically non-equivalent protons
(b) Chemically and magnetically equivalent protons
(c) Chemically and magnetically nonequivalent protons
(d) Chemically nonequivalent but magnetically equivalent protons

214. Choose the correct statement regarding the synthesis of phenyl n-propyl ether [GPAT-2012]

(a) Phenyl n-propyl ether is prepared from n-propyl bromide and sodium phenoxide
(b) Phenyl n-propyl ether is prepared from bromobenzene and sodium n-propoxide
(c) Phenyl n-propyl ether can be prepared by either of the two methods
(d) Both (a) and (b) are not the correct methods for the synthesis of phenyl n-propyl ether

215. Phenol, an antiseptic when treated as follows [GATE-2009]



Gave the above two phenolic ketones. The Reaction is

(a) Hofmann Rearrangement
(b) Fries Rearrangement
(c) Kolbe's Reaction
(d) Reimer-Tiemann Reaction

216. What is/are the parameters of aromatic compounds [GDC PRACTICE MCQ]

(a) It must have coplanar structure
(b) Must follow (4n+2)p rule
(c) Must have p bond dislocation
(d) All of these

217. What is the general structure of a diazonium salt [GDC PRACTICE MCQ]

(a) R-NH_2
(b) R-N_2^+
(c) R-OH
(d) R-CHO

218. The diazonium salts are the reaction products of the reaction of nitrous acid with [GDC PRACTICE MCQ]

(a) Primary aliphatic amines
(b) Primary aromatic amines
(c) Secondary aliphatic amines
(d) Secondary aromatic amines

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143. Enantiomerism is the phenomenon of existence of enantiomers in a single structural formula, in configuration [GDC PRACTICE MCQ]

(a) Same (b) Opposite

(c) Same as well as opposite (d) Initially opposite and then same

144. Which of the following statements are true regarding racemic mixture [GDC PRACTICE MCQ]

i. A racemic mixture is optically active

ii. It is a mixture of two equal proportions mixture

iii. It is a mixture of two optically active compounds

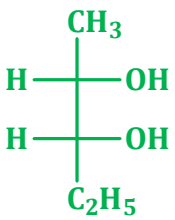
(a) Statement (i) and (ii) are true (b) Statement (i) and (iii) are true

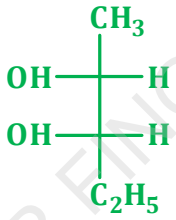
(c) Statement (ii) and (iii) are true (d) All are true

145. Which one of the following compound is optically active [GDC PRACTICE MCQ]

(a) 1-Butanol (b) 2-Chlorobutane (c) 4-Heptanol (d) 3-Chloropentane

146. Which of the following statements are correct about the following compounds [GDC PRACTICE MCQ]



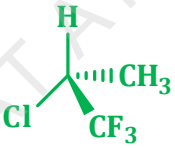


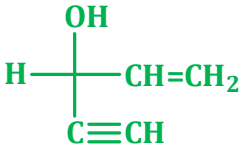
1. Pair of Enantiomers 2. Both are threo form

3. Pair of Diastereomers 4. Both are d, l pair

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

147. What is the configuration of following compounds respectively [GDC PRACTICE MCQ]





(a) R and R (b) R and S (c) S and R (d) S and S

148. Which of the following compounds will be optically active [GDC PRACTICE MCQ]

(a) Succinic acid (b) Meso-tartaric acid

(c) Lactic acid (d) Chloroacetic acid

149. 2-Butanol is optically active because it contains [GDC PRACTICE MCQ]

(a) An asymmetric carbon (b) A plane of symmetry

(c) A hydroxyl group (d) A centre of symmetry

150. Which of the following represents a racemic mixture [GDC PRACTICE MCQ]

(a) 75% (R)-2-butanol, 25% (S)-2-butanol (b) 25% (R)-2-butanol, 75% (S)-2-butanol

(c) 50% (R)-2-butanol, 50% (S)-2-butanol (d) None of these

151. How many asymmetric centers are present in a molecule of 2,4,6- trimethyl heptane [GDC PRACTICE MCQ]

(a) 0 (b) 1 (c) 2 (d) 3

33. N, N-dimethyl-(diphenylmethoxy)ethylamine is [GDC PRACTICE MCQ]

(a) Diphenhydramine (b) Dimenhydrinate (c) Clemastine (d) None of these

34. PGs are rapidly metabolized and inactivated by _____pathways [GDC PRACTICE MCQ]

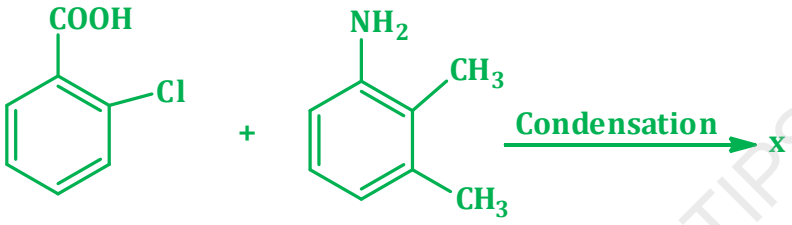
(a) Hydroxylation (b) Oxidative and reductive

(c) Acetylation and conjugation (d) None of these

35. The initial step of PGs involves rapid oxidation of the 15 α-OH group to [GDC PRACTICE MCQ]

(a) Aldehyde (b) Ketone (c) Carboxylic acid (d) Alcohol

36. In the given structure X will be [GDC PRACTICE MCQ]



(a) Piroxicam (b) Parecoxib

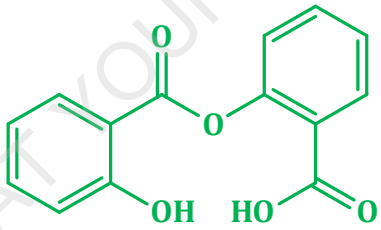
(c) Oxyphenbutazone (d) Mephenamic acid

37. Product form during xenobiotic metabolism of paracetamol is [GDC PRACTICE MCQ]

(a) N-acetyl-p-benzpyrrole imine (b) N-acetyl-p-benzoquinone imine

(c) N-ethyl-p-benzoquinone amine (d) None of these

38. Identify the given structure [GDC PRACTICE MCQ]



(a) Diflunisal (b) Nimesulide (c) Piroxicam (d) Salsalate

39. N-aryl anthranilic acid are structural analogue of [GDC PRACTICE MCQ]

(a) Ibuprofen (b) Indomethacin (c) Naproxen (d) Diclofenac

40. Allopurinol undergoes metabolism, where it transforms into [GDC PRACTICE MCQ]

(a) Hydropurinol (b) Oxypurinol (c) Carbopurinol (d) Allyl benzene

41. Febuxostat generally contains_____ ring [GDC PRACTICE MCQ]

(a) Thiazole (b) Imidazole (c) Pyrazole (d) Pyridazine

42. Sulindac is generally_____ derivative [GDC PRACTICE MCQ]

(a) Indole acetic acid (b) Indene acetic acid

(c) Xanthene (d) Xanthine

43. Drug which is used to increase metabolism of uric acid [GDC PRACTICE MCQ]

(a) Pegloticase (b) Allopurinol (c) Colchicine (d) Sulfinpyrazone

44. Substitution of 2-phenyl thioethyl group at the 4th position of pyrazolidinedione produces [GDC PRACTICE MCQ]

(a) Antiemetic effect (b) Anti-influenza effect

(c) Antigout effect (d) Antileprotic effect

4. Pheniramine
[S] Pyrazine
[T] Pyridazine

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

19. Match the each pair with the type of a structural relationship they exhibit [GATE-1992]

1. (R) and (S) Naproxen
2. Dilactim and Monolactim form of Barbituric acid
3. Quinine and Quinidine
4. Eclipsed and staggered form of phenothiazine

[P] Tautomer's of one another
[Q] Diastereomers of one another
[R] Non-superimposable mirror images of each other
[S] Superimposable mirror images of each other
[T] Conformational isomers of one another

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

20. Following are some naturally occurring substances. They are classified under different categories which are listed in [P] to [T]. match them correctly [GATE-1992]

1. Prostaglandins
2. Codeine
3. Angiotensin II
4. Strophanthidin

[P] Opioids
[Q] Eicosanoids
[R] Corticoids
[S] Peptide
[T] Cardenolide

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

21. The side chain structure for the following drugs are given from [P] to [T]. Match them [GATE-1993]

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

22. The starting material for the synthesis of drug 1 to 4 are mentioned from [P] to [T]. Match them correctly [GATE-1993]

1. L-tyrosine
2. Phenylephrine
3. Isoprenaline
4. Adrenaline

[P] 3-chloroacetyl phenol
[Q] 4-chloroacetyl catechol
[R] Catechol
[S] Thyroxine
[T] Resorcinol

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

(a) Coupling constant rarely exceeds 20 cps while chemical shifts are over 1000 cps
(b) Spin - Spin interactions are dependent of strength of the applied field
(c) Coupling constants increase with distance
(d) Equivalent nuclei interact with each other to show interaction

123. On scale the position of TMS signal is taken as [GPAT-2013]
(a) 0.0 ppm (b) 0.2 ppm (c) 2.0 ppm (d) 10.0 ppm

124. What will be type of proton NMR spectrum of 2,2,-dimethylpropane [GPAT-2021]
(a) Quartet (b) Doublet (c) Triplet (d) Singlet

125. According to the n + 1 rule, what would be the multiplicities of the signals in the proton NMR spectrum of 1, 1- dibromoethane [GPAT-2022]
(a) Triplet and doublet (b) Quartet and doublet
(c) Triplet and quartet (d) Triplet and triplet

126. Which list below gives only spin active nuclei [GPAT-2016]
(a) ^{1}H, ^{2}H, ^{12}C (b) ^{1}H, ^{12}C, ^{19}F (c) ^{1}H, ^{13}C, ^{19}F (d) ^{2}H, ^{12}C, ^{19}F

127. In NMR, the aromatic proton resonate in a characteristic narrow range at [GPAT-2018]
(a) δ 6.5 – δ 8.0 (b) δ 11.0 – δ 12.0 (c) δ 2.0 – δ 4.0 (d) δ 0.7 – δ 1.3

128. In NMR spectrum of a substance the environment of absorbing proton with respect to the environment of neighboring proton tells about [GPAT-2016]
(a) Position of signals (b) Intensity of different signals
(c) Number of signals (d) Splitting of signals

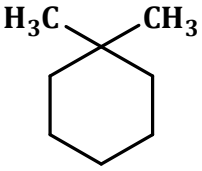
129. o, m, p- isomers can be differentiated on the basis of [GPAT-2014]
(a) Chemical shift (b) Coupling constant
(c) Extinction coefficient (d) Dipole moment

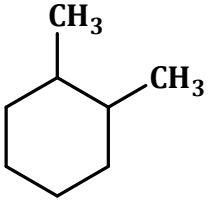
130. Rotation of electrons about the proton generates a secondary magnetic field which may oppose the applied magnetic field. The proton is then said to be [GATE-2003]
(a) Shielded (b) Shifted (c) Hydrogen (d) Deshielded

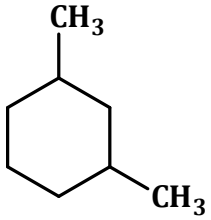
131. Karplus curve is associated with which spectroscopy [GPAT-2013]
(a) UV (b) Mass (c) FTIR (d) NMR

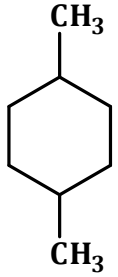
132. Conformation of drugs is commonly determined by [GATE-1992]
(a) NMR (b) NMI
(c) Mass spectrometry (d) pH determination

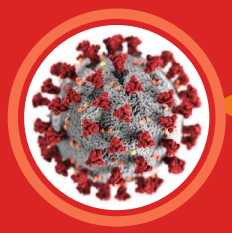
133. Both of the CMR and PMR spectra of an unknown compound show four absorption peaks each. Identify the unknown compound [GPAT-2012]

(a) 

(b) 

(c) 

(d) 



OTHER SUBJECTS

BIOCHEMISTRY

Carbohydrates

1. Carbohydrates have hydrogen oxygen atom ratio of [GPAT-2023 SHIFT-II]
   (a) 1 : 2 (b) 3 : 1 (c) 1 : 3 (d) 2: 1
2. An aldopentose can be converted into aldohexose by [GPAT-2020]
   (a) Ruffs degradation method (b) Wohl's method
   (c) Kiliani-Fischer synthesis (d) Hoffmann degradation method
3. Glucose upon treatment with nitric acid yields [GPAT-2021]
   (a) Gluconic acid (b) Glucaric acid (c) Glucitol (d) Heptanoic acid
4. Glucose is the only source of energy for one of the following. Identify that [GPAT-2012]
   (a) Cardiac cells (b) Nephrons (c) RBCs (d) Thrombocytes
5. A compound with an –OH group and –OR group bonded to the same carbon atom is [GPAT-2013]
   (a) An acetal (b) A hemiacetal (c) A simple ether (d) An aldol
6. D-Fructose on simple reduction gives [GATE-1992]
   (a) L-Fructose (b) Only Sorbitol
   (c) Only mannitol (d) Mixture of Mannitol and Sorbitol
7. Read the following statements
   [P] Caramelization occurs in acidic conditions
   [Q] Caramel is optically inactive glucose
   [R] Caramel is obtained by burning of glucose
   [S] Caramel is obtained by degradation of fructose
   Choose the right combination of statements [GPAT-2012]
   (a) P & Q are true but R & S are false (b) P & S are true but Q & R are false
   (c) Q & R are true but P & S are false (d) R & S are true but P & Q are false
8. Identify pair of C-4 epimers [GPAT-2023 SHIIFT-II]
   (a) D-glucose and D-galactose (b) D-glucose and D-fructose
   (c) D-glucose and D-mannose (d) D-glucose and D-xylulose

112. Which of the following reagent used for Ninhydrin test [GDC PRACTICE MCQ]

(a) HNO_3 (b) 1-Fluoro 2,4 dinitro benzene

(c) 2, 2 dihydroxy indane 1, 3-dione (d) 10 % α-naphthol + ethanol

113. Arrange the correct sequence of urea formation in our body [GDC PRACTICE MCQ]

(P) Ammonia + CO_2 (Q) Argininosuccinate

(R) Ornithine (S) Citrulline

(T) Arginine

(a) $P \rightarrow R \rightarrow Q \rightarrow S \rightarrow T$ (b) $P \rightarrow Q \rightarrow R \rightarrow S \rightarrow T$

(c) $P \rightarrow S \rightarrow Q \rightarrow T \rightarrow R$ (d) $P \rightarrow T \rightarrow R \rightarrow Q \rightarrow S$

114. Match the following base on the biologically important compounds formed by amino acid [GDC PRACTICE MCQ]

Amino acid	Biological important
(1) Cysteine	(P) For adrenaline, Nor adrenaline
(2) Serine	(Q) Formation of Heme
(3) Glycine	(R) Form Choline
(4) Phenylalanine	(S) Constituent of bile acid

(a) 1-S, 2-R, 3-P, 4-Q (b) 1-Q, 2-S, 3-P, 4-R

(c) 1-S, 2-R, 3-Q, 4-P (d) 1-P, 2-Q, 3-S, 4-R

115. Match the following base on the Metabolic defect of amino acid [GDC PRACTICE MCQ]

Disorder	Metabolic defect
(1) Phenylketonuria	(P) Defect in renal reabsorption
(2) Alkaptonuria	(Q) Defect in phenylalanine hydroxylase
(3) Glycinuria	(R) Defect in homogentisate oxidase
(4) Albinism	(S) Defect in tyrosinase

(a) 1-R, 2-P, 3-Q, 4-S (b) 1-Q, 2-R, 3-P, 4-S

(c) 1-S, 2-R, 3-Q, 4-P (d) 1-P, 2-Q, 3-S, 4-R

116. The amino acids that cannot be synthesized in the body and must be supplied in the diet are known as [GDC PRACTICE MCQ]

(a) Alicyclic compounds (b) Aliphatic compounds

(c) Essential Amino acids (d) Aromatic amino acids

117. Which group of amino acid is CORRECT in relation to essential amino acids [GDC PRACTICE MCQ]

(a) Isoleucine, methionine, valine, lysine

(b) Isoleucine, arginine, valine, phenylalanine, lysine

(c) Phenylalanine, alanine, valine, lysine

(d) Alanine, arginine, leucine, glutamine

118. Which among the following is an amide containing amino acid [GDC PRACTICE MCQ]

(a) Leucine (b) Serine (c) Asparagine (d) Cysteine

119. The specific test for identifying imidazole ring in amino acids is [GDC PRACTICE MCQ]

(a) Pauly's test (b) Biuret test (c) Millon's test (d) Folin's test

BIOTECHNOLOGY

Plant Tissue Culture

1. Micropropagation of the plants is carried out through [GATE-2004]
   (a) Cross fertilization (b) Seed germination
   (c) Plant tissue culture (d) Grafting
2. The most effective method for producing virus-free plants is [GATE-2005]
   (a) Root culture (b) Meristem culture
   (c) Somatic embryogenesis (d) Floriculture
3. Which statements are not true about the grafts [GPAT-2022]
   [A] Isografts are grafts in which the donor and recipient is the same individual
   [B] Autografts are grafts between the donor and recipient of the same genotype
   [C] Allografts are those in which the donor is of the same species but of a different genotype
   [D] Xenografts are those in which the donor is of a different species from that of the recipient
   Choose the correct answer from the options given below
   (a) A, B and D only (b) A and B (c) B and C (d) C and D
4. The artificial or synthetic seeds are prepared by the following process [GPAT-2021]
   (a) Somatic hybridization and culture
   (b) Somatic embryogenesis and immobilization
   (c) Microprojectile and transformation
   (d) Artificial pollination and embryogenesis
5. A technique of using very small metal particles coated with desired DNA in the gene transfer is called [GPAT-2018]
   (a) Microinjection (b) Biolistic
   (c) Liposome mediated (d) Electroporation
6. Some of the organic reactions are catalyzed by a product obtained from starch on treatment with amylase from *Bacillus macerans*. It is [GATE-2009]
   (a) Amylopectin (b) Amylose (c) Cellulose (d) Cyclodextrin
7. Tryptophan is involved in the formation of [GDC PRACTICE MCQ]
   (a) Heme (b) Vitamin Niacin and Indole Acetic Acid
   (c) Hormones (d) Urea formation in liver
8. Abscisic acid controls [GDC PRACTICE MCQ]
   (a) Stem elongation (b) Cell expansion and cell wall plasticity
   (c) Cell division (d) Leaf fall and dormancy
9. Protoplast fusion can be achieved by [GDC PRACTICE MCQ]

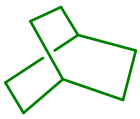
PHARMACEUTICAL MANAGEMENT

1. Which of the following product life cycle phases, it is indicative of market saturation in the sense that all the potential customers have bought the product EXCEPT those who have decided not to have it [GPAT-2021]
   (a) Growth phase (b) Introductory phase
   (c) Decline Phase (d) Maturity phase
2. Which of the following represents a complete list of products that are offered by a company for sale [GPAT–2023 SHIFT-I]
   (a) Product Variety (b) Product Mix (c) Product Item (d) Product Line
3. The process of establishing a product in the minds of target customer is called as [GPAT–2022]
   (a) Product positioning (b) Product differentiation
   (c) Product targeting (d) Market segmentation
4. Boston Consulting Group (BCG) Matrix is used for [GPAT–2022]
   (a) Product life cycle management (b) SWOT analysis
   (c) Product portfolio management (d) Gap analysis
5. Product,_____and Promotion are four 'P's of marketing [GPAT-2017]
   (a) Price, Place (b) Place
   (c) Process (d) Production, Process, Price, Production
6. High lightening differences among brands within the same product category is [GPAT-2017]
   (a) Product brand (b) Brand launch
   (c) Product differentiation (d) Branding
7. Henri Fayol's principle "Espirit de corps" means [GPAT-2018]
   (a) Corporate objective (b) Group objective
   (c) Team activity (d) Team spirit
8. How customer's bias about the product will influence the marketing communication [GPAT-2018]
   (a) Positive effect (b) Negative effect
   (c) No effect (d) Both (a) and (b)
9. Consumer who are loyal to two-three brands are considered as [GPAT-2019]
   (a) Split loyals (b) Switcher loyals (c) Semi-core loyals (d) Shifting loyals
10. Which of the following statement is the correct description of product positioning [GPAT-2021]
    (a) Selecting one or more segment to enter
    (b) Occupying distinctive position in the mind of customer
    (c) Identifying group of buyers with common need
    (d) Distinguishes company's product from competitor's product

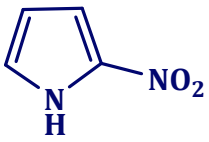
MODEL PAPER

CHEMISTRY

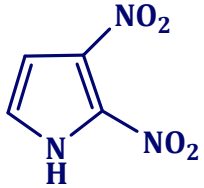
1. HVZ Reactions is possible when
   (a) Carboxylic acids with α- hydrogen (b) Aldehydes with α- hydrogen
   (c) Carboxylic acids without α- hydrogen (d) Aldehydes without α- hydrogen
2. The following statements are true regarding Oppenauer oxidation reaction except
   (a) Reagent is Isopropoxide (b) Secondary alcohol are oxidized to ketone
   (c) Primary alcohols are oxidized to ketone (d) It is a reversible reaction or MPV reaction
3. Which of the following is correct
   (a) In stereospecific reaction, different substrates give different products
   (b) In stereoselective reaction unequal amounts of stereo isomers are produced
   (c) In stereo specific reaction are stereoselective reaction but reversal is not true
   (d) All of these
4. In a small bridged ring system one cannot have double bond at the bridge head position. This is known as
   (a) Pfeiffers rule (b) Bredt's rule (c) Baldwin rule (d) Barton rule
5. The solvent which facilitates the SN^1 reaction is
   (a) Aprotic Polar (b) Protic Polar (c) Non polar (d) All kind of solvents
6. The nomenclature of the given compound is

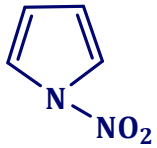


   (a) Bicyclo [2.2.1] Octane (b) Bicyclo [1.1.1] Octane
   (c) 1,4 bismethylene cyclohexane (d) Bicyclo [2.2.2] Octane
7. Which of the following conformation of cyclohexane has the most energy
   (a) Chair (b) Half- chair (c) Boat (d) Twist Boat
8. Which of the following conditions will always lead to a nonspontaneous change
   (a) Positive ΔH and positive ΔS (b) Negative ΔH and negative ΔS
   (c) Positive ΔH and negative ΔS (d) Negative ΔH and positive ΔS
9. Upon nitration, pyrrole gives which of the following as major product

(a) 

(b) 

(c) 

(d) 

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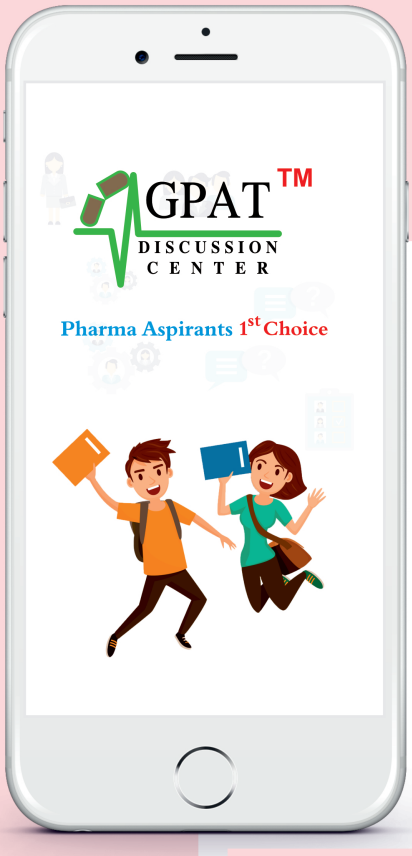

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