

GPAT-2027

GRADUATE PHARMACY APTITUDE TEST



Exam Oriented

MCQ SERIES

39

Years

Previous Year Paper

GATE-1988 TO 2009 | GPAT-2010 TO 2026



GPAT PREP SERIES

Includes

- 39 Previous Year Papers
- Aligned as per GPAT Previous Year Paper
- Answer Key Validated with NTA & NBEMS
- Added GPAT-2026 Paper in this Edition

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Previous Years Paper

GPAT PREP SERIES

GPAT-2027

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GATE-1988 TO 2009 | GPAT-2010 TO 2026

by

GDC EDITORIAL BOARD





GDC Publication

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39 GATE/ GPAT PREVIOUS YEAR PAPERS

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PREFACE AND ACKNOWLEDGEMENTS

The journey of pursuing a career in pharmacy is both inspiring and challenging, demanding rigorous preparation and a deep understanding of core concepts. The **GPAT (Graduate Pharmacy Aptitude Test)** exams have become critical gateways for aspiring pharmacists to secure admission to esteemed institutions and carve a path towards professional success.

This book is meticulously crafted to cater to the needs of GPAT aspirants, providing a comprehensive collection of **39 GATE/GPAT** question papers from previous years up to **GPAT-2026**. As you delve into these papers, you will gain invaluable insights into the examination trends, question formats, and time management, all of which are essential for honing your skills and achieving excellence.

This book ensures a structured and effective approach to your preparation. Each question paper is accompanied by step-by-step solutions, enabling you to grasp the underlying concepts and refine your problem-solving techniques.

Additionally, expert tips and strategies shared by professionals will empower you with the knowledge and confidence to face the GPAT examination with poise and determination.

As you immerse yourself in this treasure trove of past papers, envision your success and embrace the challenges that lie ahead. May this book be your trusted companion, guiding you towards achieving your dreams and opening doors to a fulfilling career in pharmacy.

Wishing you the best of luck on your journey to excel in the GPAT examination and beyond!

Dr. Peeyush Jaiswal
Director, GDC

GPAT EXAM PATTERN & QUESTION ANALYSIS

A clear understanding of the GPAT-2027 pattern is crucial for aspirants. NBEMS, which conducts the exam, is responsible for establishing the exam pattern for GPAT.

Understanding the GPAT exam pattern helps candidates prepare for the test according to a schedule.

GPAT EXAM PAPER PATTERN

PARTICULARS	DETAILS
Exam mode	Online mode
Frequency	Once a year
Exam Duration	180 minutes
Total number of questions	125
Maximum marks	500
Type of questions	Multiple-choice questions
Marking scheme	4 marks will be awarded for every correct response. 1 mark will be deducted for every incorrect response. No marks will be awarded for unattempted questions.

GPAT-2024, 2025, 2026 EXAM PAPER ANALYSIS

SUBJECT	TOTAL QUESTIONS			
	NBEMS Pattern	2024	2025	2026
Pharmaceutics and Allied subject	38	32	41	38
Pharmacology and Allied subject	28	41	34	35
Pharmaceutical Chemistry and Allied subject	38	31	37	31
Pharmacognosy and Allied subject	10	10	5	9
Other subjects of B.Pharm course	11	11	8	12
TOTAL	125	125	125	125

GPAT-2026 EXAM PAPER SUBJECT WISE ANALYSIS

SUBJECT	NUMBERS OF QUESTIONS
PHARMACEUTICS AND ALLIED SUBJECTS	
P' Technology	16
Physical pharmacy	04
P' Engineering	06
P' Jurisprudence	07
Biopharmaceutics	04
Dispensing pharmacy	-
Hospital and Clinical Pharmacy	01
PHARMACOLOGY AND ALLIED SUBJECTS	
General Pharmacology	05
Drugs Acting on ANS	01
Autacoids and Related Drugs	03
Respiratory System Drugs	-
Hormones and Related Drugs	03
Drugs Acting on PNS	-
Drugs Acting on CNS	05
Drugs Acting on CVS	02
Drugs Acting on Kidney	01
Drugs affecting Blood and Blood Formation	-
Gastrointestinal Drugs	-
Antimicrobial Drugs	04
Chemotherapy of Neoplastic Disease	01
Miscellaneous Drugs	01
HAP	07
PATHOPHYSIOLOGY	02
PHARMACOGNOSY AND ALLIED SUBJECTS	
Introduction of pharmacognosy	03
Alkaloids	01
Glycosides	02
Lipids and volatile oil	-
Resins	-
Tannin	-
Carbohydrates and Gum	-
Herbal formulation	03
Fibres	-
PHARMACEUTICAL CHEMISTRY AND ALLIED SUBJECTS	
Organic chemistry	09
Inorganic chemistry	03
Medicinal chemistry	12
Physical chemistry	-
Pharmaceutical analysis	07
OTHER SUBJECTS OF B.PHARM COURSE	
Microbiology	05
Biochemistry	-
Biotechnology	03
P' Management	-
Biostatistics	01
Social and Preventive Pharmacy	03

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GPAT-2026

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You can view all the questions by clicking on the question paper button. Note that the options for multiple choice type question will not be shown

GPAT-2026

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. **In-process tablet thickness variation is mainly influenced by**
 - (a) Compression force
 - (b) Lubricant concentration
 - (c) Die diameter
 - (d) Granule flow rate
2. **Iodine is very sparingly soluble in water, that is about 1 part of iodine in ____ parts of water**

[DROPPED QUESTION]

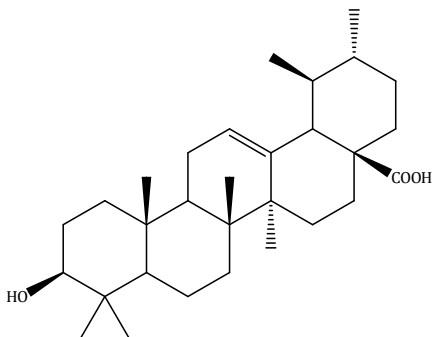
 - (a) 400
 - (b) 100
 - (c) 4000
 - (d) 1000
3. **Naphthalene is best purified by which process**
 - (a) Steam distillation
 - (b) Crystallization
 - (c) Sublimation
 - (d) Distillation
4. **During ampoule sealing, nitrogen flushing is used mainly to**
 - (a) Improve clarity
 - (b) Sterilize the product
 - (c) Reduce oxidation of drug
 - (d) Increase filling speed
5. **Which buffer system is most commonly used in ophthalmic preparations**
 - (a) Lactate buffer
 - (b) Acetate buffer
 - (c) Citrate buffer
 - (d) Phosphate buffer
6. **The relationship between pH of the environment, pKa of the drug and the extent of ionization is given by**
 - (a) Fick's Law
 - (b) Law of mass action
 - (c) Noyes-Whitney equation
 - (d) Henderson-Hasselbalch equation
7. **In pharmaceutical manufacturing, laminar airflow cabinets provide which class of clean air for aseptic processing**
 - (a) Class 100
 - (b) Class 10
 - (c) Class 1000
 - (d) Class 10000
8. **McCabe-Thiele method is primarily used to determine**
 - (a) Heat duty of reboiler
 - (b) Number of theoretical plates in distillation
 - (c) Column diameter in distillation
 - (d) Vapour pressure of component
9. **Commercially gamma radiation is not used for sterilization of which of the following**
 - (a) Syringes
 - (b) Heat labile liquids
 - (c) Swabs
 - (d) Metal foils
10. **Methylene blue is commonly used in which quality control procedure for closures/containers**
 - (a) Thermal shock test
 - (b) Clarity test
 - (c) Self sealability test
 - (d) Hydrolytic resistance test
11. **The Wagner Nelson method is used to determine which of the rate constant**
 - (a) Dissociation rate constant (k_d)
 - (b) Fraction of dose absorbed
 - (c) Elimination rate constant (k_e)
 - (d) Absorption rate constant (k_a)
12. **Phytosomes improve bioavailability by**
 - (a) Delaying absorption
 - (b) Increasing molecular weight
 - (c) Complexing with phospholipids
 - (d) Enzyme inhibition
13. **According to the United States Pharmacopoeia, if one part of solute requires 10 to 30 parts of the solvent, it is described as**
 - (a) Slightly soluble
 - (b) Freely soluble
 - (c) Soluble
 - (d) Sparingly soluble
14. **The "Durham-Humphrey Amendment of 1951" primarily impacted on the practice of pharmacy by**
 - (a) Prohibiting the reimportation of drugs manufactured in the U.S
 - (b) Creating the five schedules for controlled substances
 - (c) Requiring drugs to be proven effective before marketing



78. WHO recommends the use of chromatographic techniques in herbal medicines mainly for

- (a) Detection of microbial load
- (b) Fingerprint profiling
- (c) Detection of moisture content
- (d) Packaging analysis

79. Identify the class of compounds which contains the following ring



- (a) Triterpenoids class
- (b) Anthraquinone class
- (c) Isothiocyanate class
- (d) Steroid class

80. Lycopene, an antioxidant, is classified as

- (a) Hydroxycinnamates
- (b) Carotenes
- (c) Flavonoids
- (d) Xanthophylls

81. Which of the following test of aloe is based upon the fluorescence [DROPPED QUESTION]

- (a) Bromine test
- (b) Borax test
- (c) Schoenteten's test
- (d) Cupraloin test

82. Why does caffeine not give a precipitate in general alkaloidal tests

- (a) Because it is an indole derivative
- (b) Because it is a purine derivative
- (c) Because it is an acridine derivative
- (d) Because it is an imidazole derivative

PHARMACEUTICAL CHEMISTRY

83. Presence of electron-withdrawing groups on the phenothiazine ring enhances antipsychotic activity by

- (a) Increasing water solubility
- (b) Reducing CNS penetration
- (c) Increasing dopamine receptor binding
- (d) Reducing hepatic metabolism

84. If the pKa of phenobarbitone is 3.4, what fraction of drug would be ionized at pH 4.4

- (a) 0.90
- (b) 0.50
- (c) 0.01
- (d) 1.00

85. If emission intensity doubles when concentration from 5 to 10 ppm, the relationship obeyed is

- (a) Linear proportionality
- (b) Exponential relationship
- (c) Inverse proportionality
- (d) Beer-Lambert law

86. In the apparatus of limit test for arsenic, the internal diameter of the glass tube is

- (a) 6.5 mm
- (b) 7.5 mm
- (c) 8.5 mm
- (d) 5.5 mm

87. The quinoline containing local anaesthetic is

- (a) Dibucaine
- (b) Benzocaine
- (c) Prilocaine
- (d) Tetracaine

88. Indicator used in EDTA titration of calcium and magnesium is

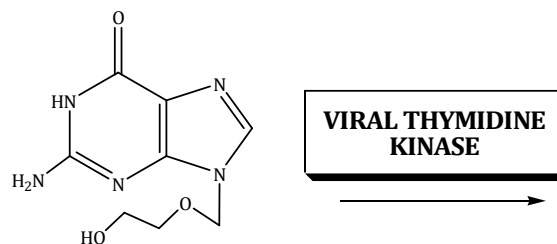
- (a) Starch
- (b) Phenolphthalein
- (c) Eriochrome Black T
- (d) Methyl Orange

89. Introduction of lipophilic substituents on benzodiazepines mainly enhances

- (a) Water solubility
- (b) Renal excretion
- (c) Metabolic clearance
- (d) CNS penetration

90. Identify the active metabolite of acyclovir which binds DNA polymerase. Also, mention the type of chemical reaction involved in its metabolism

[DROPPED QUESTION]



ACYCLOVIR

- (a) Acyclovir triphosphate; phosphorylation
- (b) Acyclovir thymidyl hydroxylate; hydroxylation
- (c) Acyclovir thymidyl trihydroxylate; hydroxylation
- (d) Acyclovir diphosphate; phosphorylation

GPAT-2025

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GPAT-2025

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. What is the USP prescribed maximum concentration limit for Benzalkonium chloride to be used as preservative in parenteral formulations

(a) 0.05% (b) 0.005%
(c) 0.01% (d) 0.001%

2. Which of the following is the correctly matched pair

P. True density	(i) Reciprocal of bulk density
Q. Granule density	(ii) Graduated cylinder method
R. Bulk density	(iii) Helium pycnometer
S. Bulkiness	(iv) Mercury displacement method

(a) P(i), Q(ii), R(iv), S(iii)
(b) P(iii), Q(iv), R(ii), S(i)
(c) P(i), Q(ii), R(iii), S(iv)
(d) P(iii), Q(ii), R(iv), S(i)

3. Rheogram of which system does not start from the origin

(a) Pseudoplastic systems
(b) Dilatant systems
(c) Newtonian systems
(d) Plastic systems

4. In supercritical fluid extraction, critical temperature (t_c) and critical pressure (p_c) for CO_2 are

(a) 31°C and 54 atm (b) 51°C and 54 atm
(c) 31°C and 74 atm (d) 51°C and 74 atm

5. Which of the following diluent is incompatible with primary amines

(a) Lactose
(b) Mannitol
(c) Microcrystalline Cellulose

(d) Dextrose

6. When the highest dose of a drug is soluble in 250 ml or less of an aqueous medium over the pH range from 1 to 6.8 at 37°C and the extent of absorption in humans is expected to be more than or equal to 85 % of the administered dose, the drug is said to be classified in which of the BCS Class

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

7. Which is an example of continuous shelf moving bed dryer

(a) Vacuum Tumble Dryer
(b) Tray Dryer
(c) Spray Dryer
(d) Turbo Tray Dryer

8. Which among the following is a class-II methods for tonicity adjustment

(a) White Vincent method
(b) Molecular concentration method
(c) Cryoscopic method
(d) Sodium chloride equivalent method

9. If the granule density of potassium bicarbonate powder is 2.350 g/cc and true density is 3.560 g/cc, then determine intraparticle porosity

(a) 0.56 (b) 0.24
(c) 0.66 (d) 0.34

10. Minimum manufacturing space required for "Habb-Unani medicine" as per Schedule T of Drugs and Cosmetic Act is

(a) 100 Sq Ft (b) 200 Sq Ft
(c) 150 Sq Ft (d) 50 Sq Ft

11. The iron content present in the gelatin for the manufacturing of soft gelatin capsules shell should not exceed

(a) 50 PPM (b) 15 PPM
(c) 20 PPM (d) 25 PPM



38. Multimeric enzymes which binds substrate in a cooperative fashion analogous to the binding of oxygen in haemoglobin can be best studied by

- (a) Hill coefficient
- (b) Hansch plot
- (c) Michaelis-Menten expression
- (d) Craig's plot

39. The Kozeny - Carman equation is related to

- (a) Pressure drop in turbulent flow
- (b) Sedimentation velocity
- (c) Heat transfer coefficient
- (d) Permeability to particle size and bed porosity

40. An antibiotic has an elimination half life of 3 to 6 hours in the general population. A patient was given an IV infusion of an antibiotic at an infusion rate of 15 mg/h. Blood samples were taken at 8 and 24 hours, and plasma drug concentrations were 5.5 and 6.5 mg/L, respectively. Estimate the elimination half - life of the drug in this patient

- (a) 3.58 hours
- (b) 1.58 hours
- (c) 4.96 hours
- (d) 2.96 hours

41. Manucol is also known as

- (a) Alginic acid
- (b) Guar gum
- (c) Sodium alginate
- (d) Carbopol

PHARMACOLOGY

42. Match the following

MECHANISM OF ACTION	DRUG
1. Inhibits arabinosyl transferases	a. Rifampicin
2. Inhibits DNA dependent RNA polymerase	b. Bedaquiline
3. Inhibits folate synthase	c. Ethambutol
4. Inhibits mycobacterial ATP-synthase	d. Para-aminosalicylic acid

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

43. What is the fasting physiological pH value in the jejunum

- (a) 4.8 ± 0.4
- (b) 6.8 ± 0.4
- (c) 3.2 ± 0.4
- (d) 8.6 ± 0.4

44. Furosemide inhibits

- (a) The Na^+/K^+ co-transporter in the distal nephron and collecting tubules
- (b) The Na^+/Cl^- co-transporter in the distal convoluted tubule
- (c) The Na^+ channel controlled by aldosterone's protein mediator
- (d) The $\text{Na}^+/\text{K}^+/2\text{Cl}^-$ co-transporter in the ascending loop of Henle

45. Which of the following is a peroxisome proliferator-activated receptor gamma agonist

- (a) Acarbose
- (b) Metformin
- (c) Sulphonylureas
- (d) Pioglitazone

46. Select the proper sequence from start of contraction regarding skeletal muscle contraction

- A. Release of calcium from sarcoplasmic reticulum after change in potential
- B. Stimulation of motor end plate with acetylcholine
- C. Troponin binds with calcium causing expose of binding sites for myosin
- D. Actin and myosin crossbridge leads to power stroke

- (a) BCDA
- (b) BACD
- (c) ABCD
- (d) BCAD

47. Match the following

Pancreatic islet cells type Secretory Product

- 1. Alpha (α) cell
- 2. Beta (β) cell
- 3. Delta (δ) cell
- 4. G cell
- a. Glucagon
- b. Somatostatin
- c. Gastrin
- d. Proinsulin

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



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Unattempt
question



Attempted
question



Flagged with unattempt
question



Flagged with attempt
question

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GPAT-2024

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. **Coating of Eudragit NE40D on tablets is done to prepare**

- (a) Buccal tablets (b) Sublingual tablets
(c) CR tablets (d) IR tablets

2. **Examples of BCS class III drugs are**

- (a) Taxol, Ellagic acid, Aspirin
(b) Chloroquine, Diltiazem, Metoprolol
(c) Acyclovir, Atenolol, Captopril
(d) Aspirin, Paracetamol, Amoxycillin

3. **Schedule T of Drugs and Cosmetics Rules, 1945 deals with**

- (a) GMP for Homeopathy medicine
(b) GMP for ASU drugs
(c) GLP and requirement of premises and equipments
(d) GMP for Pharmaceutical product

4. **During compression of tablets, dwell time is**

- (a) Time it takes for the punches to eject tablet under the primary compression rollers
(b) Time it takes for the punches to eject the tablets
(c) Time it takes for the punches to stop moving vertically and to achieve maximum penetration in the die under the primary compression rollers
(d) Time it takes for the punches to punch tablet

5. **Which of the following is NOT a method for solubility enhancement**

- (a) Crystallization (b) Co-solvency
(c) Hydrotrophy (d) Salt formation

6. **The bloom strength is directly proportional to**

- (a) Density
(b) Viscosity
(c) Measure of the strength and stiffness of the gelatin
(d) Molecular weight

7. **Size of a pilot plant batch is**

- (a) 1/10th of marketing batch
(b) 1/5th of marketing batch
(c) 1/5th of production batch
(d) 1/10th of production batch

8. **Nitrostat® is an example of**

- (a) Effervescent tablet (b) Bolus tablet
(c) CR tablet (d) Sublingual tablet

9. **The rate limiting step for the absorption of controlled release tablet is the**

- (a) Dissolution of the drug
(b) Excretion of the drug
(c) Metabolism of the drug
(d) Distribution of the drug

10. **Core tablet coated with cellulose acetate phthalate has been administered to a patient. Where do you expect the drug to be released**

- (a) Stomach (b) Intestine
(c) Liver (d) Oral cavity

11. **Based on the rheological behavior of fluid, all of the following shows time independent property, EXCEPT**

- (a) Anti-thixotropic (b) Non-newtonian
(c) Plastic (d) Pseudoplastic

12. **An elixir contains 47%v/v alcohol, what is the proof spirit according to USP**

- (a) 82% (b) 70%
(c) 63% (d) 91%

13. **Which of the following protective colloids has high gold number**

- (a) Tragacanth (b) Albumin
(c) Acacia (d) Gelatin

14. **Which of the following mills is based on the mechanism of impact and attrition for size reduction**

- (a) Roller mill (b) Colloid mill
(c) Hammer mill (d) Fluid energy mill

15. **Which of the following climatic zones can be categorized into the hot & dry zone**

- (a) Zone-IV (b) Zone-II
(c) Zone- III (d) Zone-I



GPAT-2023

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GPAT-2023

PY - PHARMACEUTICAL SCIENCES

SHIFT - I

PHARMACEUTICS

- Which of the following terms is used to describe the "Partial or complete separation of the top or body crowns of a tablet from the main body of the tablet"**
(a) Lamination (b) Capping
(c) Picking (d) Mottling
- The law of relative lowering of vapour pressure was given by**
(a) Raoult (b) Ostwald
(c) Henry (d) Van't Hoff
- Dipole-dipole weak interactions are also called as**
(a) London forces (b) Debye interactions
(c) Electrovalent forces (d) Keesom forces
- Invert sugar is a product obtained by the hydrolysis of**
(a) Maltose (b) Sucrose
(c) Lactose (d) Dextrin
- The time taken at a fixed temperature or the radiation dose required to achieve a 90% reduction in viable bacterial cells is called**
(a) F value (b) Z value
(c) D value (d) T value
- In pharmacokinetic models, the term "Compartment" means**
(a) Blood
(b) Individual organ
(c) Extracellular fluid
(d) Hypothetical pool of tissue
- The most efficient heat exchange between the particles and flowing air occurs in the**
(a) Tray dryer (b) Vacuum Dryer
(c) Fluidized bed dryer (d) Rotary dryer
- The Drug Price Control Order (DPCO) is an order issued by the Government under the _____ which enables it to fix the prices of some essential bulk and their formulations**
(a) Essential Commodities Act
(b) Essential Commodities Amendment
(c) Essential Commodities Accessories
(d) Ethical Commodities Act
- According to IP and BP very fine powder is one in which**
(a) All particles pass through 120# sieve
(b) 90% particles pass through 350# sieve
(c) All particles pass through 350# sieve
(d) 90% particles are of size < 10µm
- Which of the following pharmaceutical solvent has the highest dielectric constant, at 25 degree C**
(a) Glycerin (b) Ethanol
(c) Acetone (d) Phenol
- Kozeny carmen equation is used to determine the**
(a) Surface area of the powder
(b) Viscosity of a liquid
(c) Surface tension of a liquid
(d) Density of a liquid
- Which of the following emulsifiers has the highest HLB value**
(a) Span 80 (b) Acacia
(c) Tween 80 (d) Sodium lauryl sulfate
- Which of the following substances are not used as humectants in emulsions**
(a) Propylene glycol (b) Sorbitol
(c) Tocopherol (d) Glycerol
- Under which of the following conditions in-vitro-in-vivo correlation for a drug fails**
(a) When the drug is highly soluble



Choose the correct answer from the options given below

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

113. Match the types of glycosides under Column I with their respective example under Column II and choose the correct option

COLUMN I GLYCOSIDES		COLUMN II EXAMPLES	
1.	Anthracene	[P]	Digitalis
2.	Cardiac	[Q]	Liquorice
3.	Saponin	[R]	Senna
4.	Cyanogenetic	[S]	Ashwagandha
		[T]	Bitter almond

Choose the correct answer from the options given below

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

114. Quinine and Quinidine differs in

- (a) Chemical nature
 (b) Molecular formula
 (c) Rotating the plane of polarized light
 (d) Precursor of biosynthesis

OTHER SUBJECTS

115. Establishing a complete structure of _____ is more complex problem than others

- (a) Polysaccharide
 (b) Protein
 (c) Nucleic acid
 (d) Peptide

116. Which one is not the characteristics of the Hexose Monophosphate Pathway

- (a) It produces CO_2
 (b) It requires ATP for phosphorylation
 (c) It is controlled by inhibition of glucose-6-phosphate dehydrogenase by NADPH
 (d) It produces ribose-5-phosphate

117. Match List I with List II

LIST I NAME OF VITAMIN		LIST II FUNCTIONS OF VITAMINS	
1.	Riboflavin	[P]	The electron acceptor for isocitrate dehydrogenase
2.	Niacin	[Q]	Decarboxylation of alpha-ketoglutarate dehydrogenase
3.	Thiamine	[R]	Part of coenzyme A
4.	Pantothenic acid	[S]	Cofactor for succinate dehydrogenase
		[T]	Enzyme activity regulator, such as for protein kinase C

Choose the correct answer from the options given below

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

118. DNA and RNA contain the following two major purine bases

- (a) Guanine and Cytosine
 (b) Adenine and Guanine
 (c) Thymine and Uracil
 (d) Adenine and Uracil

119. Match the process of reproduction and genetic exchange under column I with the explanation under column II Match List I with List II

LIST I PROCESS OF REPRODUCTION AND GENETIC EXCHANGE		LIST II EXPLANATION	
1.	Binary fission	[P]	Transfer of genetic material from the donor to recipient bacterium through cell contact
2.	Transformation	[Q]	Common vegetative reproduction
3.	Transduction	[R]	Transfer of genetic material in bacteria through virus
4.	Conjugation	[S]	Horizontal gene transfer by taking up of foreign genetic material (naked DNA)

Choose the correct answer from the options given below

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



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Unattempt question



Attempted question



Flagged with unattempt question



Flagged with attempt question

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GPAT-2023

PY - PHARMACEUTICAL SCIENCES

SHIFT - II

PHARMACEUTICS

1. **The addition of Monobasic Potassium Phosphate to the suspended Bismuth Subnitrate particles cause the A to B owing to the C**
 - (a) A- negative zeta potential, B-decrease, C-adsorption of the negatively charged phospho-ateanion
 - (b) A-positive zeta potential, B-increase, C-adsorption of the negatively charged phosphateanion
 - (c) A-positive zeta potential, B-decrease, C-adsorption of the negatively charged phosphateanion
 - (d) A- positive zeta potential, B-decrease, C-adsorption of the positively charged hydrogenanion
2. **Noyes-Whitney equation predicts**
 - (a) An increase of dissolution rate if the particle size is reduced by micronization because of an increase in area
 - (b) Relationship between the radius of the diffusing molecule and its diffusion coefficient
 - (c) The influence of electrolyte on the rate constant
 - (d) An equilibrium between the surfactant and the drug molecules at the surface of the solution and in the bulk of the solution
3. **Which type of in-vitro-in-vivo correlation compares % drug released Vs % drug absorbed**
 - (a) Level C
 - (b) Level A
 - (c) Multiple level C
 - (d) Level B
4. **Ideally BA studies should be carried on _____ volunteers**
 - (a) Aged
 - (b) Children
 - (c) Healthy
 - (d) Patient
5. **Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R)**

Assertion (A) :In case of Salicylic Acid Ointment BP Wool Alcohol Ointment made with white soft paraffin is used

Reason (R) : Wool Alcohol Ointment made with white soft paraffin is used because the medicament is coloured

In the light of the above statements, choose the most appropriate 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
6. **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**
 - (a) $\log(S_0/S) = 2\gamma Mr / 2.303RT\rho$
 - (b) $\log(S/S_0) = 2\gamma Mr / 2.303RT\rho$
 - (c) $\log(S_0/S) = 2\gamma Mr / 2.303RT\rho$
 - (d) $\log(S/S_0) = 2\gamma M / 2.303RT\rho$



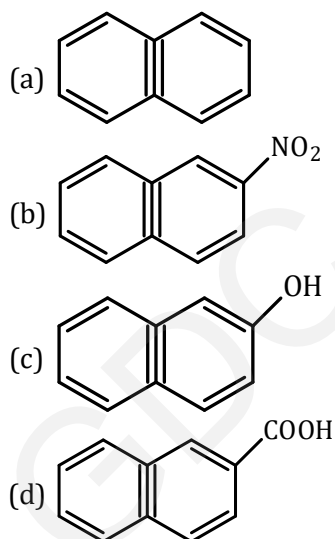
40. Identify the schedule for which the following cautionary labelling is mandatory as per Drugs and Cosmetics Act

[DROPPED QUESTION]

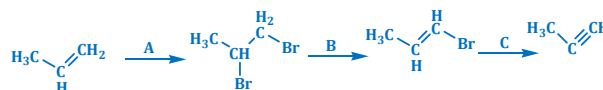
- (a) Use within one month of opening
 (b) Name and concentration of preservative
 (c) Not for injection
 (d) If irritation persists or increases, discontinue use and consult physician. Keep container tightly closed
41. Para aminohippuric acid (PAH) clearance test is employed to measure
- (a) Renal blood flow (b) Liver blood flow
 (c) Cerebral blood flow (d) Venous blood flow

PHARMACEUTICAL CHEMISTRY

42. Alkyl group in Grignard reagent serve as
- (a) Carbene
 (b) Free radical
 (c) Aromatic carbocation
 (d) Carbanion
43. Which of the following compound would be expected to have greatest fluorescence



44. Conversion of cyclic ketone to ring expanded cyclic ester takes place by
- (a) Willgerodt rearrangement
 (b) Michael rearrangement
 (c) Lossen rearrangement
 (d) Baeyer Villiger rearrangement
45. Identify A, B and C in below reaction



- (a) A = Br₂, B = KOH, C = NaNH₂
 (b) A = Br₂, B = HCl, C = NaNH₂
 (c) A = Br₂, B = HCl, C = NaBH₄
 (d) A = Br₂, B = KOH, C = NaBH₄

46. Identify intermediate forms in following substitution reaction



- (a) Cyclohexa-1,3-dien-4-yne
 (b) Cyclohexa-1,3-dien-5-yne
 (c) Cyclohexa-1,4-dien-5-yne
 (d) Cyclohexa-1,5-dien-3-yne

47. Match List I with List II

LIST - I		LIST - II	
NAME OF THE DRUG		CHEMICAL CLASS	
1.	Zolpidem	[P]	Cyclopyrrolone
2.	Zaleplon	[Q]	Benzodiazepine
3.	Zopiclone	[R]	Imidazopyridine
4.	Triazolam	[S]	Pyrazolopyrimidine

Choose the correct answer from the options given below

- (a) 1-[S], 2-[R], 3-[Q], 4-[P]
 (b) 1-[Q], 2-[S], 3-[R], 4-[P]
 (c) 1-[R], 2-[S], 3-[P], 4-[Q]
 (d) 1-[P], 2-[R], 3-[S], 4-[Q]
48. Addition of HBr to 1,3-butadiene at 40°C yields
- (a) 80% 1,4-addition product and 20% 1,2-addition product
 (b) 80% 1,2-addition product and 20% 1,4-addition product
 (c) 80% 1,2-addition product and 20% 1,3-addition product
 (d) 80% 1,2-addition product and 20% 1,4-addition product
49. Which heterocyclic ring is fused to a steroidal nucleus in Danazol
- (a) Thiazole (b) Isoxazole
 (c) Imidazole (d) Pyrazole



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GPAT-2022

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

- The intracellular fluid volume including those of the blood cells is approximately**
(a) 15 litres (b) 20 litres
(c) 27 litres (d) 35 litres
- India's first Central Drug Laboratory was established at**
(a) Mumbai (b) Lucknow
(c) Kolkata (d) Hyderabad
- Which of the following instrument is used to determine surface area and pore structure of pharmaceutical powders**
(a) Coulter counter (b) Anderson apparatus
(c) Quantasorb (d) Optical microscopy
- In the process of extraction, if maceration is accomplished by heating the drug and solvent in a close vessel, then this modification is known as**
(a) Digestion (b) Refining
(c) Expression (d) Rendering
- The below mentioned complex is not the type of inclusion compounds**
(a) Channel-Lattice type
(b) Quinhydrone complex
(c) Layer type
(d) Clathrates
- Prescription price consists of**
(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
- Given below are two statements**
Statement I: Drugs Controller General of India is the Chairman of Drugs Technical Advisory Board (DTAB)
Statement II: In DTAB, there will be eight ex-officio members, five nominated and five elected members

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

- (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
- Which of the following vehicles (not required to be sterile, but must be pyrogen free) is intended to be used in the manufacture of injectable products to be sterilized after preparation**
(a) Purified Water
(b) Water for Injection USP
(c) Sterile Water for Injection USP
(d) Bacteriostatic Water for Injection USP
- As per the Pharmacy Act, in the composition of Pharmacy Council of India, the total number of Ex-officio members is**
(a) THREE (b) FOUR
(c) SIX (d) EIGHT
- Match List I of Unit operations of crystallizers with List II of principle/characteristics properties of crystallizer**

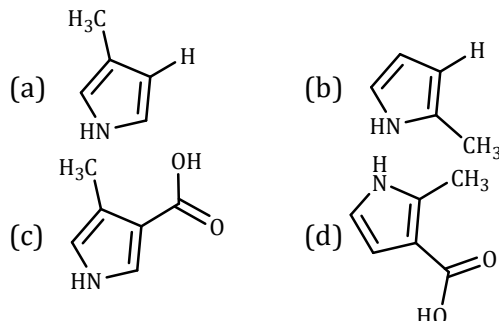
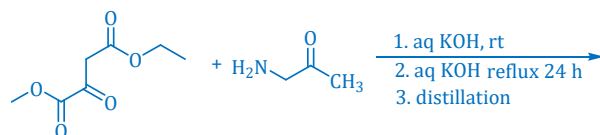
CRYSTALLIZER	PRINCIPLE/CHARACTERISTICS
UNIT OPERATIONS	PROPERTIES
1. Swenson-walker crystallizer	[P] Adiabatic evaporative cooling
2. Krystal crystallizer	[Q] Cooling alone
3. Vacuum crystallizer	[R] Evaporation
4. Forced circulation type crystallizer	[S] Heat exchange, Separation, circulation

Choose the CORRECT answer from the options given below

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



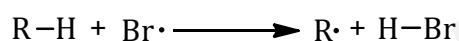
103. The major product formed in the below-given Knorr synthesis is



104. When 100 mL of 0.1 M sodium hydroxide solution is added to 100 mL of 0.1 M acetic acid ($K_a = 1.82 \times 10^{-5}$), pH of the solution will be

- (a) 8.3 (b) 7.0
(c) 3.8 (d) 8.7

105. In the case of halogenation reaction of alkanes, abstract of primary hydrogen yields a primary radical, and abstract of secondary hydrogen yields a secondary radical



The above example is of

- (a) High reactivity and low selectivity
(b) Low reactivity and high selectivity
(c) High reactivity and high selectivity
(d) Low reactivity and low selectivity

106. Identify the correct descending order of strength of nucleophilic solvents from the below- given options

- (a) Trifluoroethyl alcohol, methanol, formic acid, acetic acid
(b) Formic acid, acetic acid, methanol, trifluoroethyl alcohol
(c) Methanol, formic acid, acetic acid, trifluoroethyl alcohol
(d) Methanol, acetic acid, formic acid, trifluoroethyl alcohol

107. According to the $n + 1$ rule, what would be the multiplicities of the signals in the proton NMR spectrum of 1, 1- dibromoethane

- (a) Triplet and doublet
(b) Quartet and doublet
(c) Triplet and quartet
(d) Triplet and triplet

108. According to Mohr method, the silver nitrate solution can be standardized against primary-standard grade

- (a) Sodium carbonate
(b) Sodium chloride
(c) Sodium hydrogen carbonate
(d) Sodium metabisulfite

109. Match the symbols in the List I with the terms used in the List II of conductance measurements and symbols

LIST I	LIST II
Symbols	Terms
1. Ω^{-1}	[P] Specific conductance
2. Λ	[Q] Electrical conductance
3. k	[R] Specific resistance
4. ρ	[S] Equivalent conductance

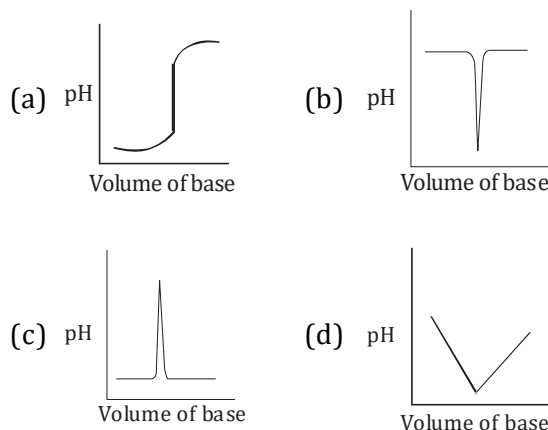
Choose the CORRECT answer from the options given below

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

110. Benzene theoretically can have ____ number of possible fundamental absorption bands in the IR spectrum

- (a) 30 (b) 15
(c) 6 (d) 0

111. The titration of a strong acid with a strong base is represented by plot



GPAT-2021

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GPAT-2021

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

- The USP defines ____ as liquid preparations of vegetable drugs, containing alcohol as a solvent or as a preservative, or both, so made that, unless otherwise specified in an individual monograph, each milliliter contains the therapeutic constituents of 1 gram of the standard drug that it represents
(a) Tinctures (b) Extracts
(c) Infusion (d) Fluid extracts
- Match List I with List II
List - I (Equipment)
 - Low shear mixer
 - Rotary tablet machine
 - Capsule filling machine
 - Compaction mill**List - II (Model/Trade Name/Type)**
[P] Manesty Drycota
[Q] Chilsonator (Fitzpatrick)
[R] Slanted Double Cone Mixer
[S] Prosolv (JRS Pharma)
[T] PCF 1200 Model (Pharma Land)
Choose the correct answer from the options given below
(a) 1 - [P], 2 - [Q], 3 - [S], 4 - [R]
(b) 1 - [Q], 2 - [R], 3 - [P], 4 - [S]
(c) 1 - [R], 2 - [P], 3 - [S], 4 - [Q]
(d) 1 - [P], 2 - [Q], 3 - [R], 4 - [S]
- The properties of solutions containing surface active agents change sharply over a narrow concentration range and are called as
(a) Critical micelle concentration
(b) Ionic concentration
(c) Hydrogen ion concentration
(d) Surface tension
- HEPA filters are defined as A or more efficient in removing, from the air. B particles generated by vaporization of the hydrocarbon Emory 3004
(a) A - 99.99 % B - 0.1 mm
(b) A - 99.00 % B - 0.3 mm
(c) A - 99.99 % B - 0.3 mm
(d) A - 99.00 % B - 0.1 mm
- Name the popular system for ocular delivery of Pilocarpine, based on membrane controlled reservoir systems
(a) Ocusert (b) Alzet pump
(c) Progestasert (d) Nitrodur
- The phenomenon of increasing the solubility of weak electrolytes and non-polar molecules by the addition of a water miscible solvent in which the drug has good solubility is called
(a) Complexation (b) Co-solvency
(c) Solubilization (d) Hydrotropy
- The system volume is increased when sheared is called
(a) Dilatant flow (b) Newtonian flow
(c) Plastic flow (d) Pseudoplastic flow
- The value of R in energy of activation is
(a) 1.98 cal/deg.molecule
(b) 1.89 cal/deg.molecule
(c) 8.91 cal/deg.molecule
(d) 9.18 cal/deg.molecule
- Which of the following ointment bases is an ingredient of an absorption base
(a) Petrolatum
(b) Lanolin
(c) Hydrogenated castor oil
(d) Cetyl alcohol
- Chitosan possesses which of the following property
(a) Hypocholesterolemic
(b) Antimicrobial
(c) Wound healing
(d) All of these
- p-gp (p-glycoprotein) is highly expressed on the
(a) Lungs
(b) Pancreas
(c) Superficial columnar epithelial cells of ileum and colon
(d) Heart



64. 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 contra - indicated in sick sinus syndrome

- (a) Nifedipine (b) Amlodipine
(c) Diltiazem (d) Verapamil

65. Prostaglandin analogues have therapeutic utility in the following EXCEPT

- (a) Impotence
(b) Peripheral vascular disease
(c) Palliative treatment of patent ductus arteriosus
(d) Pulmonary hypertension

PHARMACOGNOSY

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

Assertion [A] : The Ayurvedic drug Asava contains self-generated alcohol.

Reason [R] : For preparation of Asava the extract of drugs is subjected to a process of calcination

In light of the above statements. Choose the most appropriate answer from the options given below

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

67. The following classification of herbal drugs gives better understanding of biosynthetic pathway in the drug

- (a) Botanical (b) Chemotaxonomical
(c) Taxonomical (d) Chemical

68. Match the types of terpenes under column I with their respective examples under Column II

COLUMN - I

(TYPES OF TERPENES)

1. Monoterpenes
2. Diterpenes
3. Sesquiterpenes
4. Tetraterpenes

COLUMN - II

(EXAMPLES)

- [P] Lycopene
[Q] Camphor
[R] Taxol
[S] Zingiberene

Choose the CORRECT answer from the options given below

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

69. The ring structure present in Strychnine is

- (a) Indole (b) Purine
(c) Imidazole (d) Phenanthrene

70. Limit for the following heavy metal/s is/are mentioned in the WHO guidelines for herbal drug evaluation

- [A] Cadmium [B] Lead
[C] Mercury [D] Arsenic

Choose the correct answer from the options given below

- (a) A, B and D only (b) Only D
(c) Only B and D (d) Only A and C

71. Match the following under chemical compounds under Column I with their respective chemical tests under Column II

COLUMN - I

(COMPOUNDS)

1. Quinine
2. Digitoxin
3. Atropine
4. Sennosides

COLUMN - II

(CHEMICAL TESTS)

- [P] Borntrager's
[Q] Thalleoquin
[R] Vitali Morin
[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]



GPAT-2020

These instructions should be followed by candidates while appearing in the Online Mode examination. This will familiarise candidates with the pattern / procedure of the examination.

The medium of Question Paper shall be in English only.

GPAT is an online Computer Based Test of 3 hours duration with 125 objective type questions.

1. Each question carries 04 (four) marks.
 2. For each correct response candidate will get 04 (four) marks.
 3. For each incorrect response 01 (one) mark will be deducted from the total score.
- The clock will be set at the server. The countdown timer in the top right corner of screen will display the remaining time available for you to complete the examination. When the timer reaches zero, the examination will end by itself. You will not be required to end or submit your examination.
 - The question palette displayed on the right side of screen will show the status of each question using one of the following symbols



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Navigating to a question

To answer a question do the following

- Click on the question number in the question palette to go to that question directly.
- Select an answer for a multiple choice type question. Click on Save and next to save your answer for the current question and then go to next question.
- Click on Flagged and Next to save your answer for the current question, mark it for review and then go to next question.
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You can view all the questions by clicking on the question paper button. Note that the options for multiple choice type question will not be shown

GPAT-2020

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. **Hydrated proton is called**
(a) Water proton (b) Hydronium ion
(c) Oxonium ion (d) Proton pump
2. **Burow's solution is**
(a) Aluminium acetate solution strong
(b) Calcium phosphate solution strong
(c) Ammonium acetate solution strong
(d) Calcium hydroxide solution strong
3. **When the concentration of an aqueous sodium chloride solution has the same colligative properties as the solution in question, the value so obtained is known as**
(a) Normality (b) Isotonicity value
(c) Molarity (d) Molality
4. **As per the Drugs and Cosmetics Act-1940, if a drug is not labelled in prescribed manner it is a**
(a) Spurious drug (b) Substandard drug
(c) Adulterated drug (d) Misbranded drug
5. **The general purpose soda lime glass is not a suitable material for fabricating the container for**
(a) Parenteral
(b) Oral solutions
(c) Liquids for external use
(d) Dry powders
6. **The mechanism by which fluorides inhibit dental caries is**
(a) By increasing susceptibility to acid
(b) By increasing the sensitivity of tooth enamel
(c) Decreased acid solubility of enamel
(d) Increased acid solubility of enamel
7. **When a solid forms a gel more readily when gently shaken or otherwise sheared than when allowed to form the gel while the material is kept at rest, the phenomenon is known as**
(a) Thixotropy (b) Rheopexy
(c) Negative rheopexy (d) Anti thixotropy
8. **The dispersion of coarse material by shearing in a narrow gap between a static cone and a rapidly rotating cone is caused by**
(a) Colloid Mill (b) Electrical Dispersion
(c) Peptization (d) Ultrasonic Irradiation
9. **Which of the following is not a fundamental (primary) factor considered for selection of a location for the construction of pharmaceutical or chemical plant**
(a) Soil (b) Market for products
(c) Labour supply (d) Raw materials
10. **The drug concentration between Minimum effective concentration (MEC) and maximum safe concentration (MSC) is called**
(a) Toxic range (b) Therapeutic index
(c) Therapeutic ratio (d) Therapeutic range
11. **Violin gut is obtained from intestine of**
(a) Horse (b) Cat
(c) Sheep (d) Camel
12. **In capsule making the Bloom strength of gelatin is proportional to molecular weight of the gelatin and is a measure of the**
(a) Cohesive strength of the solvent molecules
(b) Cohesive strength of the crosslinking that occurs between gelatin molecules
(c) Adhesive strength of gelatin with dipping pins
(d) Adhesive strength of gelatin with other polymer
13. **Dimethyl sulfoxide acts as penetration enhancer for topical formulations by**
(a) Increasing solubility
(b) Denaturing proteins
(c) Increasing transepidermal loss
(d) Altering solvent nature of membrane
14. **Relative sweetness of sucrose, to saccharin**
(a) 1: 200 (b) 1: 500
(c) 1: 100 (d) 1: 400
15. **Choose the wrong statement from the following with regard to Amorphous solids**
(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



GPAT-2019

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GPAT-2019

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. Which of the following is NOT a mechanism for achieving gastroretention
(a) Osmosis (b) Floating
(c) Mucoadhesion (d) Swelling
2. Which of the following oxide is NOT used for achieving Amber color to glass
(a) Manganese (b) Iron
(c) Cobalt (d) Carbon
3. Theories of emulification are characterized by one of the following EXCEPT
(a) Film formation
(b) Phase inversion
(c) Monomolecular adsorption
(d) Solid particle adsorption
4. Movement of charged particle through a liquid under the influence of an applied potential difference is known as
(a) Sedimentation potential
(b) Streaming potential
(c) Electrophoresis
(d) Electroosmosis
5. As per US FDA, NDA's for new chemical entities are classified as either
(a) 'P' for product review or 'S' for standard review
(b) 'P' for priority review or 'S' for standard review
(c) 'P' for product review or 'S' for safety review
(d) 'P' for priority review or 'S' for safety review
6. In tablet, hydroxy propyl methyl cellulose is used as
(a) Diluent (b) Film former
(c) Disintegrant (d) Binder
7. Which one of the following is the property of microemulsion
(a) They have particle size more than 1 micron
(b) They have poor stability
(c) They exhibit a viscoelastic gel phase, when internal phase is added in excess
(d) They have milky yellow colour
8. 21 CFR part 211 of USFDA describes
(a) Current good clinical practice
(b) Current good packaging practice
(c) Current good manufacturing practice
(d) Current good laboratory practice
9. "Shake well" label must be placed on the containers of
(a) Ophthalmic suspension
(b) Occuserts
(c) Ophthalmic solution
(d) Ophthalmic gels
10. In case of Aerosol testing valve delivering acceptance criteria for a volume of 54 ml or less
(a) $\pm 75\%$ (b) $\pm 5\%$
(c) $\pm 10\%$ (d) $\pm 15\%$
11. Containers may be rendered free from pyrogens by adequate cleaning and by
(a) Autoclaving at 121°C for 15 minutes
(b) Heating at 210°C for 3-4 hours
(c) Autoclaving at 121°C for 1 hour
(d) Heating at 100°C for 3-4 hours
12. GMP regulation are pertaining to minimum requirements to be met by industry when
(a) Manufacturing, packaging and holding of human drugs and veterinary drugs
(b) Manufacture of human drugs and veterinary drugs
(c) Manufacture and packaging of human drugs and veterinary drugs
(d) Manufacture and holding of human drugs and veterinary drugs
13. Which one of the following viscometers can be used for characterizing non-Newtonian system
(a) Falling sphere viscometer
(b) Cup and Bob viscometer
(c) Capillary viscometer
(d) Hoeppler viscometer



GPAT-2018

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GPAT-2018

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. Following are endogenous carriers use for targeted drug delivery EXCEPT
 - (a) Lipoprotein
 - (b) Serum Albumin
 - (c) Erythrocyte
 - (d) Microparticulates
2. Keesom interactions has a force of
 - (a) 0.5- 1 kcal/mol
 - (b) 1-7 kcal/mol
 - (c) 1-3 kcal/mol
 - (d) None of these
3. Dipole - induced dipoles are also known as
 - (a) London forces
 - (b) Keesom forces
 - (c) Debye forces
 - (d) Hydrogen bonding
4. The angle of repose is calculated by
 - (a) $\tan \alpha = \text{Radius/Height}$
 - (b) $\tan \alpha = 1 + \text{Radius/Height}$
 - (c) $\tan \alpha = 1 - \text{Radius/Height}$
 - (d) $\tan \alpha = \text{Height/Radius}$
5. Which method is used by pharmacists for complete blending of potent powders with large quantities of diluents
 - (a) Spatulation
 - (b) Levigation
 - (c) Trituration
 - (d) Geometric dilution
6. IVIVC utilizes the principles of statistical moment analysis
 - (a) Level A
 - (b) Level B
 - (c) Level C
 - (d) Level D
7. As per Factories Act 1948, in CHAPTER VI dealing with working hours of adults, no adult worker shall be required or allowed to work in a factory for more than _____ hours in a week
 - (a) 30
 - (b) 40
 - (c) 48
 - (d) 56
8. Which of the following is not patentable in India as per the Patents Act 1970
 - (a) New product
 - (b) New process
 - (c) New use of existing drug
 - (d) New process for existing drug
9. Which of the following agencies is not classified as an 'executive agency' for administration of the act under the provision of Drugs and Cosmetics Act 1940
 - (a) Licensing authority
 - (b) Drug inspectors
 - (c) Drugs Consultative Committee
 - (d) Customs collectors
10. Statement 1 : Vortex formation can be minimized by push pull mechanism
Statement 2 : Vortex formation reduces the mixing intensity by increasing the velocity of impeller
 - (a) True, False
 - (b) True, True
 - (c) False, False
 - (d) False, True
11. Which statements are correct for the micelle formation
 - [P] Micelles are dynamic structures that are continually formed and broken down in solution
 - [Q] The typical micelle diameter is about 2-3 μm and so they are visible under the light microscope
 - [R] Micelle formation is a spontaneous process
 - [S] When the surfactant concentration is increased above the CMC, the number of micelles increases and the free surfactant concentration decreases below CMC
 - (a) [P] and [Q]
 - (b) [P] and [R]
 - (c) [P] and [S]
 - (d) [R] and [S]
12. When considering drug delivery to the brain which of the following is false
 - (a) The cells in the blood vessels that supply the brain are tightly connected which restricts drug absorption
 - (b) Only relatively small lipophilic molecules readily, passively diffuse in to the brain



GPAT-2015

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GPAT-2015

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. **"Stealth Liposomes" have been developed to**
 - (a) Extend their half life
 - (b) Decrease the drug's toxicity
 - (c) Enable site specific drug delivery
 - (d) Alter the size of vesicles
2. **What is the objective of trademark**
 - (a) To claim exclusive properties of products or services
 - (b) To claim innovation of products or services
 - (c) To deal with market place of expressive ideas
 - (d) To protect consumers from being misled
3. **How the wetting agent act in the suspension**
 - (a) Increase contact angle between substance and solvent
 - (b) Reduce contact angle between substance and solvent
 - (c) No change in contact angle between substance and solvent
 - (d) None of the above
4. **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**
 - (a) Ball milling
 - (b) Hammer mill
 - (c) Colloid mill
 - (d) Rotary cutter mill
5. **Schulze-Hardy rule is for**
 - (a) Lyophilic colloid
 - (b) Hydrophilic colloid
 - (c) Association colloid
 - (d) Both (b) and (c)
6. **Brookfield viscometer is**
 - (a) Single point
 - (b) Rotational
 - (c) Falling sphere type
 - (d) Capillary type
7. **Amount of dextrose in large volume infusion fluids**
 - (a) 5% w/v
 - (b) 10% w/v
 - (c) 25% w/v
 - (d) 50% w/v
8. **The antioxidants action of sodium metabisulphite is due to**
 - (a) Release of CO_2
 - (b) Release of O_2
 - (c) Release of SO_2
 - (d) Release of Sodium ions
9. **How much of 90 % and 20 % alcohols are required to produce 350 ml of 60 % alcohol**
 - (a) 250 ml, 100 ml
 - (b) 300 ml, 50 ml
 - (c) 200 ml, 150 ml
 - (d) 150 ml, 200 ml
10. **Units for rate constant (K) for second order kinetics**
 - (a) S^{-1}
 - (b) Moles /Litre S
 - (c) $\text{Moles}^{-1} \text{Litre S}^{-1}$
 - (d) $\text{Moles Litre}^{-1} \text{S}^{-1}$
11. **Passive diffusion follows which order of kinetics**
 - (a) Non selective and mixed order
 - (b) Selective and first order
 - (c) Non selective and first order
 - (d) Selective and mixed order
12. **Conc v/s time curve drawn from single oral dose, which parameter can be calculated**
 - (a) Elimination constant
 - (b) Rate constant
 - (c) Absorption peak
 - (d) Plasma conc.
13. **If a basic drug reabsorbed significantly from kidney which of the following statement will be correct**
 - (a) Its renal clearance increases in basic urine
 - (b) Its renal clearance decreases in basic urine
 - (c) Its renal clearance increases in acidic urine
 - (d) Its renal clearance decreases in acidic urine
14. **'Sparging' is the process where**
 - (a) Silanol groups react with trimethylsilyl group
 - (b) An inert gas is bubbled through the solvent reservoir to remove dissolved gases
 - (c) Solvents are mixed together in a fixed ratio
 - (d) Column is washed with solvents from nonpolar to polar and reverse



68. Following is an example of preformed and not lipid derived mast cell mediator of inflammatory process

- (a) LTC₄ (b) PGD₂
(c) PAF (d) Kallidin

PHARMACOGNOSY

69. Who is known as the Father of tissue culture

- (a) Reinert (b) White
(c) Haberlandt (d) Gautheret

70. Biosynthesis of alizarin follows the

- (a) Shikimic acid pathway
(b) Mevalonic acid pathway
(c) Both (a) and (b)
(d) Acetate pathway

71. Taxol is

- (a) Monoterpenoid
(b) Sesquiterpenoid
(c) Diterpenoid
(d) Triterpenoid

72. Which of the following compound from marine source shows antiviral activity

- (a) Aplysistain (b) Eudistomin
(c) Aeropolysnin (d) Carrageenan

73. Belladonna alkaloid contains

- (a) Anisocytic stomata, non glandular trichomes, cluster calcium crystals, multilayered palisade cells
(b) Anisocytic stomata, glandular trichomes, cluster calcium crystals, single layered palisade cells
(c) Anisocytic stomata, glandular trichomes, acicular calcium crystals, single layered palisade cells
(d) Anomocytic stomata, non glandular trichomes, cluster calcium crystals, single layered palisade cells

74. Precursor of Anabesine is

- (a) Lysine (b) Leucine

- (c) Phenylalanine (d) Tryptophan

75. One of the following is not characteristic of mother clove

- (a) Dark brown colour
(b) Starch grain present
(c) Starch grain absent
(d) Inferior in volatile content

76. Which of the herbal preparation metallic content in their formulation

- (a) Asvas and Aristas (b) Bhasma
(c) Churna (d) Avleha

77. Given below are two statements one is labelled as Assertion [A] and the other is labelled as Reason [R]

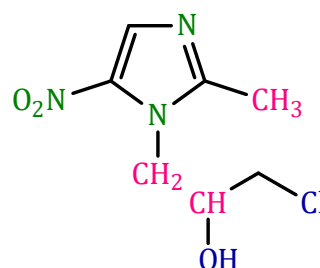
Assertion [A] : After collecting cascara bark, it is allowed to stored for atleast 1 year

Reason [R] : Fresh bark containing Anthranol which causes gripping effect, can be oxidized to anthraquinone upon storage

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

PHARMACEUTICAL CHEMISTRY

78. The given structure shows is



- (a) Metronidazole (b) Tinidazole
(c) Ornidazole (d) Secnidazole

79. IUPAC Name of Metronidazole is

- (a) 1-methyl-5-nitroimidazole-2-ethanol
(b) 2-methyl-5-nitroimidazole-1-ethanol
(c) 5-methyl-1-nitroimidazole-2-ethanol
(d) 1-methyl-2-nitroimidazole-5-ethanol



GPAT-2012

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 150

Read the following instruction carefully

1. This Question Paper is your Question Paper
 2. This Question Paper has 100 questions of total 100 Marks.
 3. The Question Paper code is printed on the right-hand top corner of this page.
 4. This Question Paper contains blank sheets for your rough work, No additional sheets will be provided for rough work.
 5. Clip board, log tables, slide rule, calculator, cellular phone and electronic gadgets in any form are NOT allowed.
 6. Write your name and registration number in the space provided at the bottom.
 7. All answers are to be marked only on the machine gradable Optical Response Sheet (ORS) provided along with this booklet, as per the instruction therein.
 8. This Question Paper along with the Optical Response Sheet (ORS) must be handed over to the invigilator before leaving the examination hall.
-
- (a) For each correct answer, you will be awarded 1 marks.
 - (b) For each wrong answer, you will be awarded -0.25 mark.
 - (c) Multiple answers to a question will be treated as a wrong answer
 - (d) For each un-attempted question, you will be awarded 0 (Zero) mark.

GPAT-2012

PY - PHARMACEUTICAL SCIENCES

1. Which of the following respective Phase-I and Phase-II reactions are the most common drug biotransformation reactions
 - (a) Oxidation and Glucuronidation
 - (b) Reduction and Acetylation
 - (c) Hydrolysis and Glucuronidation
 - (d) Oxidation and Glutathione conjugation
2. Which one of the following drugs has positive inotropic & negative chronotropic action
 - (a) Dopamine (b) Epinephrine
 - (c) Digoxin (d) Isoprenaline
3. Which one of the following therapeutic classes has been proved clinically as a first line therapy for heart failure and has shown decreased hospitalization, improved symptoms and delayed disease progression
 - (a) Cardiac glycosides
 - (b) ACE Inhibitors (ACEIs)
 - (c) Renin Antagonists
 - (d) Nitrites
4. Which one of the following glucose transporters is the new drug target for the management of Type-2 diabetes mellitus
 - (a) Sodium glucose linked transporter-2 (SGLT2)
 - (b) Glucose transporter-1 (GLUT1)
 - (c) Sodium glucose linked transporter-1 (SGLT1)
 - (d) Glucose transporter-2 (GLUT2)
5. Which one of the following modes of HIV transmission carries highest relative risk of infection with single exposure
 - (a) Transfusion of blood and blood products
 - (b) Perinatal - from mother to child
 - (c) Sexual contacts with infected partners
 - (d) Syringe sharing with drug addicts
6. Which of the followings are the critical neurotransmitters playing major role in depression
 - (a) Acetylcholine, Norepinephrine and Dopamine
 - (b) Dopamine, Norepinephrine and Serotonin
 - (c) Serotonin, Dopamine and g-aminobutyric acid
 - (d) Acetylcholine, Serotonin and g-aminobutyric acid
7. A 55 years old man is under DOTS treatment for pulmonary tuberculosis for the last four months. Now, he has developed symptoms of peripheral neuritis. Which one of the followings is the right addition to his therapy to manage peripheral neuritis
 - (a) Cyanocobalamin
 - (b) α -Lipoic acid
 - (c) Pyridoxine
 - (d) Prednisolone
8. What is the primary mechanism of action of local anesthetics
 - (a) Activation of ligand-gated potassium channels
 - (b) Blockade of voltage-gated sodium channels
 - (c) Stimulation of voltage-gated N-type calcium channels
 - (d) Blockade of GABA-gated chloride channels
9. Which one of the following anti-asthmatic drugs can cause convulsions and arrhythmia
 - (a) Prednisolone (b) Salmeterol
 - (c) Zafirlukast (d) Theophylline
10. Which one of the following anti-arrhythmic drugs acts by inhibiting potassium, sodium and calcium channels
 - (a) Quinidine (b) Lignocaine
 - (c) Amiodarone (d) Flecainide
11. A 48 years old woman is having the symptoms of weight gain, cold intolerance, constipation, bradycardia, puffy face, lethargy and dry skin. These symptoms are suggestive of which of the followings
 - (a) Over use of corticosteroid
 - (b) Hypothyroidism
 - (c) Estrogen deficiency
 - (d) Over use of thyroxine sodium



59. Read the following statements carefully about non-aqueous titrations

[P] Acetate ion is the strongest base capable of existence in acetic acid

[Q] Mixtures of bases of different strengths can be analyzed by selecting a differentiating solvent for the bases

[R] Acetic acid acts as a leveling solvent for various acids like perchloric and hydrochloric acids

[S] Mixtures of bases of different strengths can be analyzed by selecting a leveling solvent for the bases

Choose the correct answer

- (a) P and Q are true and R and S are false
- (b) P and S are true and R and Q are false
- (c) R and Q are true and P and S are false
- (d) R and S are true and P and Q are false

60. Read the following statements carefully about Volhard's method

[P] In Volhard's titration, silver ions are titrated with thiocyanates in acidic solution

[Q] Ferric ions act as indicator in Volhard's method, yielding reddish brown ferric thiocyanate

[R] Volhard's method is used to determine halides

[S] Volhard's method is a direct titration

Choose the correct set of answers

- (a) P, Q and R are true and S is false
- (b) Q, R and S are true and P is false
- (c) R, S and P true and Q is false
- (d) P, Q, R and S all are true

61. Identify the group of enzymes that utilizes NADP or NAD as coenzymes and catalyzes biochemical reactions by the transfer of electrons from one molecule to another

- (a) Isomerases
- (b) Oxidoreductases
- (c) Transferases
- (d) Ligases

62. Glucose is the only source of energy for one of the followings. Identify that

- (a) Cardiac cells
- (b) Nephrons
- (c) RBCs
- (d) Thrombocytes

63. Determine the correctness or otherwise of the following Assertion [a] and Reason [r]
Assertion [a] : Halogens are unusual in their effect on electrophilic aromatic substitution; they are deactivating yet ortho-, para - directing

Reason [r] : In electrophilic aromatic substitution reactions, reactivity is controlled by stronger inductive effect while orientation is controlled by the stronger hyperconjugation effect

Choose the correct statement

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

64. Given are the four statements about dehydration of alcohols to give alkenes

[P] Ease of dehydration of alcohols takes place in the order $3^\circ > 2^\circ > 1^\circ$

[Q] Dehydration is acid catalyzed

[R] Orientation of the alkene formed is strongly Saytzeff

[S] Dehydration is irreversible

Choose the correct combination of statements

- (a) P and Q are correct while R and S are not
- (b) P, Q and R all three are correct but S is not
- (c) P, Q, R and S all are correct
- (d) P, Q and S all three are correct but R is not

65. Choose the correct statement regarding the synthesis of phenyl n-propyl ether

- (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



GPAT-2010

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 100

Read the following instruction carefully

1. This Question Paper is your Question Paper
 2. This Question Paper has 100 questions of total 100 Marks.
 3. The Question Paper code is printed on the right-hand top corner of this page.
 4. This Question Paper contains blank sheets for your rough work, No additional sheets will be provided for rough work.
 5. Clip board, log tables, slide rule, calculator, cellular phone and electronic gadgets in any form are NOT allowed.
 6. Write your name and registration number in the space provided at the bottom.
 7. All answers are to be marked only on the machine gradable Optical Response Sheet (ORS) provided along with this booklet, as per the instruction therein.
 8. This Question Paper along with the Optical Response Sheet (ORS) must be handed over to the invigilator before leaving the examination hall.
-
- (a) For each correct answer, you will be awarded 1 marks.
 - (b) For each wrong answer, you will be awarded -0.25 mark.
 - (c) Multiple answers to a question will be treated as a wrong answer
 - (d) For each un-attempted question, you will be awarded 0 (Zero) mark.

GPAT-2010

PY - PHARMACEUTICAL SCIENCES

1. The vitamin essential in tissue culture medium is
 - (a) Pyridoxine
 - (b) Thiamine
 - (c) Nicotinic acid
 - (d) Inositol
2. *Ginkgo biloba* is used for its
 - (a) Expectorant activity
 - (b) Lipid lowering activity
 - (c) PAF antagonistic activity
 - (d) Antidepressant activity
3. The amount of barbaloin present in *Aloe vera* is
 - (a) <1%
 - (b) 3.5-4%
 - (c) 1-1.5%
 - (d) 2-2.5%
4. Sildenafil is used for treatment of one of the following disorders
 - (a) Systolic hypertension
 - (b) Unstable angina
 - (c) Pulmonary hypertension
 - (d) Hypertension due to eclampsia
5. Cardiac glycosides have the following configuration in the aglycone part of the steroid nucleus
 - (a) 5 α , 14 α
 - (b) 5 α , 14 β
 - (c) 5 β , 14 α
 - (d) 5 β , 14 β
6. Quassia wood is adulterated with
 - (a) *Brucea antidysenterica*
 - (b) *Cassia angustifolia*
 - (c) *Cinnamomum zeylanicum*
 - (d) *Cephaelis ipecacuanha*
7. Eugenol is present in
 - (a) Fennel
 - (b) Tulsi
 - (c) Cardamom
 - (d) Coriander
8. Which one of the following drugs is prescribed for the treatment of Philadelphia chromosome positive patients with chronic myeloid Leukemia
 - (a) Pentostatin
 - (b) Methotrexate
 - (c) Imatinib
 - (d) L-Asparaginase
9. Which of the following monoclonal antibodies is prescribed for patients with non Hodgkin's Lymphoma
 - (a) Infliximab
 - (b) Abciximab
 - (c) Gemtuzumab
 - (d) Rituximab
10. Identify the drug which is NOT used in the treatment of malaria caused by *Plasmodium falciparum*
 - (a) Artemisinin
 - (b) Primaquine
 - (c) Quinine
 - (d) Mefloquine
11. Which one of the following drugs does NOT act through G-Protein coupled receptors
 - (a) Epinephrine
 - (b) Insulin
 - (c) Dopamine
 - (d) TSH
12. Which one of the following drugs is most effective in preventing transmission of HIV virus from the mother to the foetus
 - (a) Lamivudine
 - (b) Zidovudine
 - (c) Indinavir
 - (d) Ribavirin
13. Improvement of memory in Alzheimer's disease is brought about by drugs which increase transmission in
 - (a) Cholinergic receptors
 - (b) Dopaminergic receptors
 - (c) GABAergic receptors
 - (d) Adrenergic receptors
14. Which of the following non-opioid analgesic is a prodrug
 - (a) Piroxicam
 - (b) Celecoxib
 - (c) Nabumetone
 - (d) Ketorolac
15. Which one of the following drugs is NOT a typical anti-psychotic agent
 - (a) Chlorpromazine
 - (b) Haloperidol
 - (c) Risperidone
 - (d) Flupentixol
16. Which one of the following is a plasminogen activator
 - (a) Tranexamic acid
 - (b) Streptokinase
 - (c) Aminocaproic acid
 - (d) None of these



GATE-2009

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 150

Read the following instruction carefully

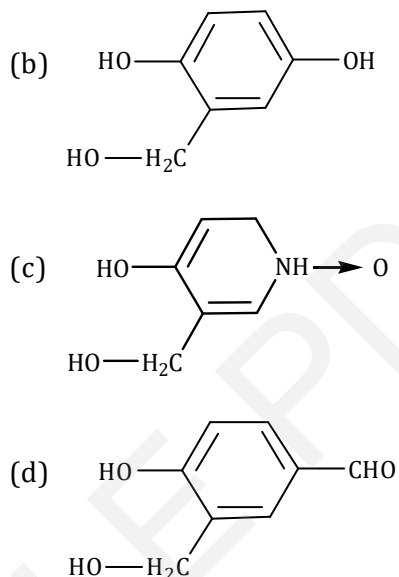
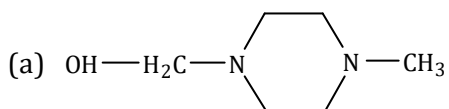
1. This question paper contains all objective questions. **Q. 1 to Q.20** carry **one mark** each and **Q.21 to Q.85** carry **two marks** each.
2. Answer all the questions.
3. Questions must be answered on Objective Response Sheet (ORS) by darkening the appropriate bubble (**marked a, b, c, d**) using HB pencil against the question number on the left hand side of the ORS. Each question has only one correct answer. In case you wish to change an answer, erase the old answer completely.
4. Wrong answers will carry **negative** marks. For **Questions 1 to 20**, **0.25 marks** will be deducted for each wrong answer. For **Questions 21 to 75, 76, 78, 80, 82, and 84**, **0.5 marks** will be deducted for each wrong answer. However, there is **no negative** marking for **Questions 77, 79, 81, 83, and 85**. In the linked questions (Questions 76 to 85), if the first question in the pair is answered correctly, then the mark for the second question will be added to the total score.
5. Write your registration number, name and name of the centre at the specified locations on the right half of the ORS.
6. Using HB pencil, darken the appropriate bubble under each digit of your registration number and the letters corresponding to your paper code.
7. Calculator is allowed in the examination hall.
8. Charts, graph sheets or tables are NOT allowed in the examination hall.
9. Rough work can be done on the question paper itself. Additionally blank pages are given at the end of the question paper for rough work.

GATE-2009

PY - PHARMACEUTICAL SCIENCES

(Q. 1 - 20) CARRY ONE MARK EACH

1. Different species of *Ephedra* can be identified by observing the nature of
 - (a) Inner surface
 - (b) Outer surface
 - (c) Trichomes
 - (d) Scaly leaves
2. Indian Rhubarb can be distinguished from Rhapontic Rhubarb by the fluorescence it emits under UV light. Indian Rhubarb gives
 - (a) Deep yellow
 - (b) Deep violet
 - (c) Orange
 - (d) Pale green
3. Genetically modified species of *Papaver* namely *Papaver bracteatum* and *Papaver orientale* contain the predominant alkaloid
 - (a) Morphine
 - (b) Codeine
 - (c) Thebaine
 - (d) Narcotine
4. Increased risk of atherosclerosis is associated with decreased serum levels of
 - (a) LDL
 - (b) HDL
 - (c) Triglycerides
 - (d) VLDL
5. A peptide hormone which inhibits bone resorption and given as nasal spray is
 - (a) Cortisol
 - (b) Alendronate
 - (c) Calcitonin
 - (d) Calcitriol
6. An inorganic ion which is used prophylactically in bipolar depression is
 - (a) Valproate
 - (b) Lithium
 - (c) Chromium
 - (d) Valium
7. A β -lactamase inhibitor which contains an 1-oxopenam structure is
 - (a) Tazobactam sodium
 - (b) Clavulanate potassium
 - (c) Sulbactam sodium
 - (d) Thienamycin
8. Salbutamol is prepared from



9. Antihypothrombinemic effect of one stereochemical form is two to five times more than others
 - (a) (S)-(+)-Warfarin
 - (b) R-(+)-Warfarin
 - (c) (S)-(-)-Warfarin
 - (d) (RS)-Warfarin
10. Some of the organic reactions are catalysed by a product obtained from starch on treatment with amylase from *Bacillus macerans*. It is
 - (a) Amylopectin
 - (b) Amylose
 - (c) Cellulose
 - (d) Cyclodextrin
11. Florentine receiver is used to separate the liquids based on
 - (a) Molecular weight
 - (b) Sedimentation rate
 - (c) Density
 - (d) Freezing point
12. The official dissolution test apparatus of the blade is positioned from inside bottom of the vessel at
 - (a) 18 to 22 mm
 - (b) 23 to 27 mm
 - (c) 20 to 24 mm
 - (d) 25 to 29 mm



Q. 36 TO 50 ARE MATCHING EXERCISES

Match group I with Group II and Identify the correct combinations

36. **Group I** **Group II**
Glycoside **Type**
 1. **Gentisin** [P] **Flavonol**
 2. **Genistein** [Q] **Flavone**
 3. **Apigenin** [R] **Xanthone**
 4. **Quercetin** [S] **Isoflavone**

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

37. **Group I**
Bark Diagnostic

1. **Kurchi**
 2. **Cascara**
 3. **Cinnamon**
 4. **Cinchona**

Group II

Microscopical Characters

[P] **Heavily lignified phloem fibres with Y-shaped pits, secretory canals, microcrystals of calcium oxalate**

[Q] **Pericycle with stone cells having horse-shoe shaped thickening, oil cells, minute needles of calcium oxalate**

[R] **Alternating layers of stone cells and phloem, nonlignified pericyclic fibres, prismatic crystals of calcium oxalate**

[S] **Wavy medullary rays, groups of heavily lignified sclereids, crystal sheath of calcium oxalate**

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

38. **Group I**
Drug

1. **Levofloxacin**
 2. **Caspofungin**
 3. **Aztreonam**
 4. **Rifabutin**

Group II

Mechanism of action is by inhibition of

[P] **DNA dependent RNA polymerase**

[Q] **Topoisomerase II (DNA gyrase) the enzyme that Produces a negative supercoil**

[R] **The synthesis of $\beta(1-2)$ glycan**

[S] **Cell wall synthesis preferentially binding to a Specific penicillin binding protein**

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

39. **Group I**

Drug

1. **Granisetron**
 2. **Pirenzepine**
 3. **Acebutolol**
 4. **Baclofen**

Group II

Receptor agonist/antagonist

[P] **β_1 adrenergic receptor antagonist**

[Q] **GABA agonist**

[R] **5HT₃ antagonist**

[S] **M₁ antagonist**

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

40. **Group I**

Drug

1. **Chlorpromazine**
 2. **Thioridazine**
 3. **Diazepam**
 4. **Thiopentone**

Group II

Biotransformation

[P] **S-oxidation**

[Q] **Microsomal hydroxylation**

[R] **Desulphurisation**

[S] **N-dealkylation**

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



COMMON DATA FOR QUESTION 74 AND 75

Teniposide is a natural product used for the management of certain diseases

74. It is derived from

- (a) Flavonolignans from *Silybum marianum*
- (b) Lignans from *Podophyllum peltatum*
- (c) Lignans from *Schisandra chinensis*
- (d) Neolignans from *Piper futokadsura*

75. This drug is used in the management of

- (a) Candidiasis
- (b) Trypanosomiasis
- (c) Cardiac arrhythmia
- (d) Acute leukemia in children

LINKED ANSWER QUESTION: Q.76 TO Q.85 CARRY TWO MARKS EACH.

Statement for Linked Answers Question 76 and 77

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

76. One of the important alkaloid is

- (a) (-) Phyllandrene
- (b) (+) Hollarhenine
- (c) (+) Tubocurarine
- (d) ($\pm$) Colchicine

77. This alkaloid has

- (a) Bis benzyl tetrahydro isoquinoline ring
- (b) Quinoline ring
- (c) Phenanthrene ring
- (d) Pyrido pyrimidine ring

Statement for Linked Answers Question 78 and 79

Several drugs are used for migraine

78. Acute migraine is treated with

- (a) Prazosin (b) Formoterol
- (c) Sumatriptan (d) Dopamine

79. The drug chosen is the agonist of

- (a) α_1 adrenocip toe
- (b) α_2 adrenoceptor
- (c) M_2 receptor
- (d) 5-HT_{1D} receptor

Statement for Linked Answer Question 80 and 81

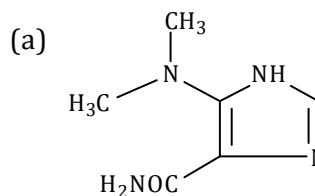
A drug which is used for malignant melanoma is obtained as follows



80. X is

- (a)
- (b)
- (c)
- (d)

81. X on treatment with dimethylamine gives the drug



GATE-2006

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 150

Read the following instruction carefully

1. This question paper contains all objective questions. **Q. 1 to Q.20** carry **one mark** each and **Q.21 to Q.85** carry **two marks** each.
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GATE-2006

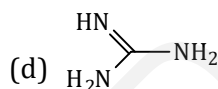
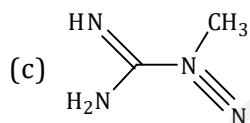
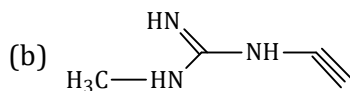
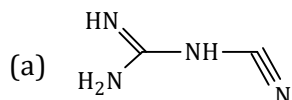
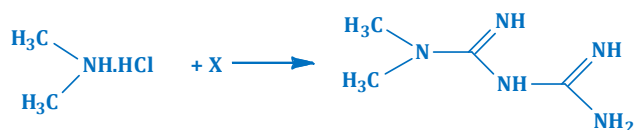
PY - PHARMACEUTICAL SCIENCES

(Q. 1 - 20) CARRY ONE MARK EACH

1. 5,6-methylene dioxyindole is treated with oxalyl chloride to give a keto acid chloride. The method is useful for introducing a two carbon side chain at

- (a) Dioxy group of indole
- (b) NH-group of indole
- (c) 7-position of indole
- (d) Electron rich 3-position of indole

2. Identify X in the following reaction



3. An antineoplastic agent methotrexate inhibits the enzyme dihydrofolate reductase. They bind so tightly that their inhibition has been termed "pseudo irreversible"- basis of the binding is due to

- (a) Free carboxyl group
- (b) N-methyl p- amino benzyl group
- (c) Diamino pyrimidine
- (d) Glutamic acid

4. β -lactamase inhibitor clavulanic acid is

- (a) 1,1-dioxo penicillanic acid
- (b) Δ^2 carbapenem
- (c) Cepham
- (d) 1-oxopenam structure and has no 6-acyl amino side chain of Penicillin

5. A mixture of following gases can be used in flame photometry to get a temperature of 2045°C

- (a) Hydrogen and nitrous oxide
- (b) Acetylene and oxygen
- (c) Hydrogen and air
- (d) Hydrogen and air

6. Tesla is a unit to express

- (a) Frequency
- (b) Pressure
- (c) Voltage
- (d) Magnetic field strength

7. A monochromator is not used in

- (a) UV spectrophotometer
- (b) FT-IR spectrophotometer
- (c) Spectrofluorimeter
- (d) IR-spectrometer

8. The properties of solutions containing surface active agents change sharply over a narrow concentration range is called as

- (a) Critical micellar concentration
- (b) Ionic concentration
- (c) Hydrogen ion concentration
- (d) Surface tension

9. Certain suspensions with a high percentage of dispersed solids exhibit a resistance to flow with increasing rates of shear. Such systems actually increase in volume when sheared and are termed as

- (a) Thixotropic
- (b) Dilatant
- (c) Plastic
- (d) Newtonian



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

68. Group I

Synonyms of Crude drugs

1. Jesuits bark or Peruvian bark
2. Ma-huang
3. Deadly nightshade leaf
4. South American arrow poison

Group II

Chemical nature of constituents

[P] Curare alkaloids

[Q] Tropane alkaloids

[R] Quinoline alkaloids

[S] Phenyl ethyl amine alkaloids

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

69. Group I

Aberrant protein

1. Glucose-6-phosphate dehydrogenase
2. Prion
3. β -Subunit of haemoglobin
4. Phenylalanine hydroxylase

Group II

Disease

[P] Haemolytic anaemia

[Q] β -Thalassemia

[R] Scrapie

[S] Phenylketonuria

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

70. Group I

Antibiotic

1. Gentamicin
2. Tetracycline
3. Streptomycin
4. Bacitracin

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

Group II

Test organism for microbiological assay I.P.

- [P] *Bacillus cereus*
 [Q] *Bacillus subtilis*
 [R] *Micrococcus luteus*
 [S] *Staphylococcus epidermidis*

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

COMMON DATA FOR (Q. 71 - 73)

All anthracycline antibiotic Doxorubicin, is an important anticancer drug

71. Doxorubicin is isolated from

- (a) *Streptococcus pyogenes*
 (b) *Staphylococcus aureus*
 (c) *Clostridium difficile*
 (d) *Streptomyces neovius var caesi*

72. Doxorubicin acts by

- (a) Inhibiting asparaginase
 (b) Inhibiting topoisomerase II
 (c) Inhibiting adenosine deaminase
 (d) Inhibiting functions of microtubules

73. A significant adverse action of Doxorubicin in

- (a) A potentially irreversible cumulative dose related cardiac toxicity
 (b) Hematuria
 (c) Sedation
 (d) Fluid retention

COMMON DATA FOR (Q. 74 - 75)

An antidiabetic drug is 1-[4-[2] [5-chloro-2-methoxybenzamido) ethyl]-phenyl]-3-cyclohexylurea

74. The generic name of the antidiabetic drug is

- (a) Glibenclamide (b) Gliclazide
 (c) Glipizide (d) Gliquidone

75. Official assay for the drug is by titration using a standard solution of

- (a) Sodium nitrite
 (b) Iodine
 (c) Potassium permanganate
 (d) Sodium hydroxide

LINKED ANSWER QUESTIONS: (Q. 76 - 85)

Statement for linked Answer Questions

76 and 77

Imidazole is treated with ω -bromo-2, 4 dichloroacetophenone. The resulting product on reaction with NaBH_4 gives and intermediate X, X is then treated with NaH followed by 2,4 dichlorobenzyl bromide to get an antifungal drug

76. The intermediate compound X is

- (a) 1-(2,4 Dichloro phenyl)-2-(1-imidazolyl)-methanol



GATE-2005

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 150

Read the following instruction carefully

1. This question paper contains all objective questions. **Q. 1 to Q.30** carry **one mark** each and **Q.31 to Q-85** carry **two marks** each.
2. Answer all the questions.
3. Questions must be answered on Objective Response Sheet (ORS) by darkening the appropriate bubble (**marked a, b, c, d**) using HB pencil against the question number on the left hand side of the ORS. Each question has only one correct answer. In case you wish to change an answer, erase the old answer completely.
4. Wrong answers will carry **NEGATIVE** marks. In **Q.1 to Q.30**, **0.25 mark** will be deducted for each wrong answer. In **Q.31 to Q.80**, **Q.81(a)**, **Q.82 (a)**, **Q.83 (a)**, **Q.84 (a)** and in **Q.85 (a)** **0.5 mark** will be deducted for each wrong answer. However, there is **no negative** marking in **Q.81(b)**, **Q.82 (b)**, **Q.83 (b)**, **Q.84 (b)** and in **Q.85 (b)**. More than one answer bubbled against a question will be taken as an incorrect response.
5. Write your registration number, name and name of the Centre at the specified locations on the right half of the ORS.
6. Using HB pencil, darken the appropriate bubble under each digit of your registration number and the letters corresponding to your paper code.
7. Calculator is allowed in the examination hall.
8. Charts, graph sheets or tables are NOT allowed in the examination hall.
9. Rough work can be done on the question paper itself. Additionally blank pages are given at the end of the question paper for rough work.

GATE-2005

PY - PHARMACEUTICAL SCIENCES

(Q. 1 - 30) CARRY ONE MARK EACH

1. If the Carr's index of a powder is 10 % then the type of powder flow is
(a) Poor (b) Excellent
(c) Very poor (d) Good
2. Mixing of semisolids is carried out using
(a) Double cone mixer
(b) Rotating cube mixer
(c) Planetary mixer
(d) Fluidized bed mixer
3. In the preparation of small pox vaccine, the drying process used is
(a) Spray drying (b) Vacuum drying
(c) Drum drying (d) Freeze drying
4. In cosmetic preparations, an oxidant used in an aqueous system, is
(a) Sodium formaldehyde sulphonylate
(b) α -Tocopherol
(c) Methyl paraben
(d) Phenol
5. In tablet coating process, inadequate spreading of the coating solution before drying causes
(a) Orange peel effect (b) Sticking effect
(c) Blistering effect (d) Picking effect
6. Presence of one of the following characteristics show that the *Rauwolfia serpentina* is adulterated with other species of *Rauwolfia*
(a) Compound starch grains
(b) Cluster crystals of calcium oxalate
(c) Lignified sclereids
(d) Unlignified pericyclic fibres
7. Chinese rhapontic rhubarb can be distinguished from Indian rhubarb by fluorescence developed in UV light which is
(a) Deep yellow (b) Deep violet
(c) Green (d) Blue
8. Citrus flavonoids are rich in
(a) Aesculetin (b) Fraxin
(c) Hesperidin (d) Scopoletin
9. The quantitative values determined for the identification of leaf drugs remain constant throughout the age of plant EXCEPT
(a) Stomatal number
(b) Vein termination number
(c) Vein islet number
(d) Stomatal Index
10. The alkaloid which inhibits the cholinesterase undergoes hydrolysis in solution to give Methyl carbamic acid and Eseroline is
(a) Scopolamine (b) Pyridostigmine
(c) Neostigmine (d) Physostigmine
11. Luminescence is the term applied to
(a) Absorbed radiation
(b) Re-emission of previously absorbed radiation
(c) Excited radiation
(d) Transmitted radiation
12. Polarogram of a solution containing an electro-reducible substance is obtained by plotting the graph of
(a) Current Vs. Volume
(b) Current Vs. Potential
(c) Resistance Vs. Time
(d) Potential Vs. Volume
13. Silica gel used in most of the absorbent columns contains -OH groups. So it is
(a) Basic (b) Neutral
(c) Acidic (d) Both acidic and basic
14. The electronic transition possible in Br_2 is
(a) $\sigma - \sigma^*$
(b) $\sigma - \sigma^*$ and $n - \sigma^*$
(c) $\sigma - \pi^*$ and $\pi - \pi^*$
(d) $n - \pi^*$ and $\sigma - \pi^*$
15. Ferrous ion is very weakly coloured for colorimetric analysis. It can be converted into a highly colored complex using
(a) H_2SO_4 (b) PDAB
(c) Thymol blue (d) 1,10-Phenanthroline



[R] Forms adducts with DNA

[S] Interferes with amino acid transport by action on the membrane

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

63. Group-I

Terms

- 1. Saturated air
- 2. Dew point
- 3. Humid volume
- 4. Humidity

Group-II

Explanation

[P] Pounds of water vapour carried by one pound of dry air under any given set of conditions

[Q] The water vapour is in equilibrium with liquid water at the given conditions of temperature and pressure

[R] The volume is cubic feet occupied by one pound of dry air and its accompanying water vapour

[S] Temperature to which a mixture of air and water vapour must be cooled in order to become saturated

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

64. Group-I

Antibiotic

- 1. Bleomycin
- 2. Nystatin
- 3. Carbenicillin
- 4. Streptomycin

Group II

Test organism for microbiological assay IP

[P] *Pseudomonas aeruginosa*

[Q] *Mycobacterium smegmatis*

[R] *Bacillus subtilis*

[S] *Saccharomyces cerevisiae*

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

65. Group-I

Pathoimmunological condition

- 1. Urticaria
- 2. Autoimmune thrombocytopenia
- 3. Rheumatoid arthritis
- 4. Organ transplant rejection

Group-II

Drugs used in the treatment

[P] Cyclosporin

[Q] Antihistamines

[R] Intravenous immunoglobulin

[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]

DATA FOR Q.66-80 ARE BASED ON THE STATEMENT/PROBLEM. CHOOSE THE CORRECT ANSWER FOR QUESTION FROM THE OPTION A,B,C AND D

COMMON DATA FOR QUESTIONS 66, 67

A sample of *Cinnamomum zeylanicum* purchased from the market was evaluated for its authenticity.

66. It shows

- (a) Presence of cork and cortex
- (b) Absence of cork and cortex
- (c) Absence of phloem fibres
- (d) Presence of xylem parenchyma

67. Volatile oil should not be less than

- (a) 0.05%
- (b) 0.20%
- (c) 0.50%
- (d) 1.00%



GATE-2000

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 150

1. This question paper contains two parts A and B.
2. Answer all the questions from part A.
3. Answer Any 15 questions from part B.

PART-A

1. There are 2 sections in this part
2. Answer all the question in both sections – 1 and 2.
3. Answer should be given serial order in the answer book.
4. Do not skip question while writing the answers.
5. Write the question number and show your answer by writing the alphabet (against the No.) in Capital letters.
6. In section 1 each question carries 1-Marks.
7. In section 2 each question carries 2-Marks.
8. A model is shown at the beginning of each section in part A.
9. Answer to the question in this part must be Written in the first three pages only.

PART-B

1. Answer any fifteen questions.
2. If more than 15 questions are attempted only the first 15 will be considered.
3. Answer should not exceed 15 lines.
4. All question carry equal marks.

GATE-2000

PY - PHARMACEUTICAL SCIENCES

PART - A

SECTION - I (CHOOSE THE CORRECT ANSWER)

- Q.1** (i) This question consists of 25 (Twenty five) multiple choice questions each carrying one mark.
(ii) Choose the correct answer.
(iii) Enter (a) or (b), (c) or (d) as the case may be in the boxes corresponding to the questions in the first page of the answer book.
- 1.1.** One of the substances is listed is used as mucoadhesive. Identify
(a) Acacia (b) S.C.M.C
(c) Burnt sugar (d) Saccharin
- 1.2.** In the preparation of multilayer tablets one of the substances listed is used to Hydrophilic matrix coating
(a) C.M.C (b) Shellac
(c) Stearyl alcohol (d) Bees wax
- 1.3.** Choose the correct pH of the lacrimal fluid
(a) 8.0 (b) 6.2
(c) 7.4 (d) 9.0
- 1.4.** The dip tube in an aerosol container is made from one of the following. Choose the correct one
(a) Polypropylene (b) Glass
(c) Stainless steel (d) Aluminium
- 1.5.** The diameter of the mesh aperture in the I.P disintegration test apparatus is given below. Choose the correct size
(a) 2.00 mm (b) 4.00 mm
(c) 1.00 mm (d) 1.50 mm
- 1.6.** Choose the correct source of radiation for N.M.R from the listed ones
(a) Klystron oscillator
(b) Globar source
(c) Radio frequency oscillator
(d) Deuterium lamp
- 1.7.** Choose the correct semi-rigid gel used for exculsion chromatography
(a) Sephadex (b) Gelatin
(c) Cellulose (d) Alumina
- 1.8.** One the following is measured in amperometric titration
(a) Resistance (b) Conductance
(c) Voltage (d) Current
- 1.9.** The oil obtained from *Cymbopogon flexuosus* contains one of the following
(a) Citral (b) α -terpeniol
(c) α -pinene (d) Neral
- 1.10.** Choose the correct key intermediate for the biosynthesis of C_6 - C_3 units, which serves as a precursor for the biosynthesis of amino acid
(a) Shikimic acid
(b) Pyruvic acid
(c) Dehydro quinic acid
(d) Mevalonic acid
- 1.11.** β -phenyl-N-alkyl piperidine moiety is largely responsible for activity in one of the following. Choose the correct one
(a) Buprenorphine (b) Pethidine
(c) Cycloserine (d) Amitryptiline
- 1.12.** Which one of the following is a Histamine H_1 receptor antagonist
(a) 4-(5-H di benzo [a, d] cyclohepten-5-ylidene)-1-methyl pyridine hydrochloride
(b) 4-(5-H di benzo [a, d] cyclohepten-5-ylidene)-1-methyl pyrimidine hydrochloride
(c) 4-(5-H di benzo [a, d] cyclohepten-5-ylidene)-1-methyl piperidine hydrochloride
(d) 4-(5-H di benzo [a, d] cyclopentane-5-ylidene)-1-methyl piperidine hydrochloride



SECTION - II
(MATCH THE FOLLOWING)

Q.2 Match each of the items 1 and 2 on the left with an appropriate item on the right [P,Q,R,S] and write in the specific space provide in the answer book as shown below.

2.1. Taste sensation of some liquid oral formulation are given. Match the compatible flavour used in the formulation

- | | |
|---------|-----------------|
| 1. Salt | [P] Wild cherry |
| 2. Sour | [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] |

2.2. Excipients used in parenteral products are given. Match them

- | | |
|----------------------|----------------------|
| 1. Chelating agents | [P] Benzyl alcohol |
| 2. Local anaesthetic | [Q] Phenol |
| | [R] Gelatin |
| | [S] Disodium edetate |

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

2.3. H.L.B values are given. Match them with correct surfactant

- | | |
|----------|------------------------|
| 1. 0 - 3 | [P] Solubilizing agent |
| 2. 4 - 6 | [Q] Detergent |
| | [R] Antifoaming agent |
| | [S] W/O emulgents |

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

2.4. Given below are the type of excipients. Match them with the examples

- | | |
|-----------------|-------------|
| 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] |

2.5. Listed below are the Schedules to the Drugs and Cosmetics Act. Match them

1. Schedule 'M'

2. Schedule 'O'

[P] Standard for disinfectant fluids

[Q] Standard for ophthalmic preparation

[R] Requirement of factory premises

[S] Standard for cosmetics

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

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

2.6. The following receptor are associated with drug mentioned. Match them

1. H₁ receptor [P] Ketanserin

2. 5HT₃ receptor [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]

2.7. Match the following drug with their receptor sub types

1. Methadone

2. Enkephalins

[P] Agonist of μ & δ receptor

[Q] Antagonist of μ , δ & κ receptor

[R] Agonist of μ receptor

[S] Agonist of μ , δ & κ receptor

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

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

2.8. Match the drug with their mechanism of action

1. Mebendazole

2. Ivermectin

[P] Unknown mechanism

[Q] Neuromuscular blockade by interaction with nicotinic receptor

[R] Intensifies GABA mediated neurotransmission in nematode and cause immobilization of parasite

[S] Selectively inhibits microtubule synthesis in nematodes

(a) 1-[S], 2-[R] (b) 1-[R], 2-[S]

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



(d) Which one of the following microorganisms is particularly dangerous to the eye

- (i) *E.coli*
- (ii) *S.thermophilus*
- (iii) *Ps.aeruginosa*

(e) Which one of the following drugs is used as an immuno-suppressant

- (i) Amantadine
- (ii) Cyclosporine
- (iii) Tetracycline

ANSWER KEY GATE-2000

PART - A (SECTION - I)

1.1 - b	1.2 - a	1.3 - c	1.4 - a	1.5 - a	1.6 - c	1.7 - a
1.8 - d	1.9 - a	1.10 - a	1.11 - b	1.12 - c	1.13 - a	1.14 - b
1.15 - d	1.16 - b	1.17 - d	1.18 - d	1.19 - c	1.20 - c	1.21 - a
1.22 - d	1.23 - c	1.24 - b	1.25 - d			

PART - A (SECTION - II)

2.1 - a	2.2 - d	2.3 - b	2.4 - d	2.5 - c	2.6 - b	2.7 - c
2.8 - a	2.9 - c	2.10 - b	2.11 - a	2.12 - a	2.13 - d	2.14 - a
2.15 - a	2.16 - b	2.17 - a	2.18 - c	2.19 - a	2.20 - b	2.21 - b
2.22 - c	2.23 - d	2.24 - a	2.25 - c			



GATE-1999

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 100

1. This question paper contains two parts A and B.
2. Answer all the questions from part A.
3. Answer Any 20 questions from part B.

PART-A

1. There are 2 sections in this part
2. Answer all the question in both sections – 1 and 2.
3. Answer should be given serial order in the answer book.
4. Do not skip question while writing the answers.
5. Write the question number and show your answer by writing the alphabet (against the No.) in Capital letters.
6. In section 1 each question carries 1-Marks.
7. In section 2 each question carries 2-Marks.
8. A model is shown at the beginning of each section in part A.
9. Answer to the question in this part must be written in the first three pages only.

PART-B

1. Answer any fifteen questions.
2. If more than 15 questions are attempted only the first 15 will be considered.
3. Answer should not exceed 15 lines.
4. All question carry equal marks.

GATE-1999

PY - PHARMACEUTICAL SCIENCES

PART - A

SECTION - I (CHOOSE THE CORRECT ANSWER)

1. (i) This question consists of 25 (Twenty five) multiple choice questions each carrying one mark.

(ii) Choose the correct answer.

(iii) Enter (a) or (b), (c) or (d) as the case may be in the boxes corresponding to the questions in the first page of the answer book.

1.1. One of the following statements for adenyl cyclase is wrong. Identify

- (a) Is a membrane bound enzyme
- (b) Inactivated by Phosphodiesterase
- (c) Catalyses the A.M.P. formation
- (d) Active only when associated with G-Protein

1.2. Which one of the following device is used to increase the efficiency of drug delivery via aerosols

- (a) Tube spacers (b) Actuator
- (c) Metered valve (d) Pressure valve

1.3. One of the uses given below for opioids is not correct. Indicate

- (a) Antitussive (b) Analgesic
- (c) Anti-inflammatory (d) Antidiarrhoeal

1.4. Which one of the following is used as a preservative in ophthalmic preparations

- (a) Benzalkonium chloride
- (b) Phenol
- (c) Benzoic acid
- (d) Chlorocresol

1.5. The activity of the following drugs is dependent on Phenyl-N-alkyl one piperidine

moiety

- (a) Meperidine (b) Imipramine
- (c) Diazepam (d) Chlorpromazine

1.6. One of the organism mentioned below is used as a biological indicator in I.P. for ethylene oxide sterilization. Choose the correct one

- (a) *Bacillus stearothermophilus*
- (b) Spores of *Bacillus subtilis*
- (c) *Bacillus pumilus*
- (d) Spores of *Bacillus cereus*

1.7. The most common causative agent of Bacterial Pneumonia is

- (a) *Staphylococcus aureus*
- (b) *Escherichia coli*
- (c) *Streptococcus pneumoniae*
- (d) *Mycoplasma pneumoniae*

1.8. Creatinine clearance is used as a measurement for

- (a) Glomerular filtration rate
- (b) Renal excretion rate
- (c) Drug metabolism rate
- (d) Passive renal excretion

1.9. Choose the correct starting material for the synthesis of Ethacrynic Acid

- (a) 2, 3-Dichloro phenoxy acetic acid
- (b) 2, 3-Dibromo phenoxy acetic acid
- (c) 2, 3-Dichloro phenoxy propionic acid
- (d) 2, 3-Dichloro phenoxy butyric acid

1.10. Choose the correct metabolic process for Phenobarbitone

- (a) p-Hydroxylation followed by reduction
- (b) p-Hydroxylation followed by glucuronidation
- (c) p-Hydroxylation followed by acetylation
- (d) p-Hydroxylation followed by oxidation



GATE-1994

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 200

1. This question paper contains two parts A and B.
2. Answer all the questions from part A.
3. Answer Any 20 questions from part B.

PART-A

1. There are 2 sections in this part
2. Answer all the question in both sections – 1 and 2.
3. Answer should be given serial order in the answer book.
4. Do not skip question while writing the answers.
5. Write the question number and show your answer by writing the alphabet (against the No.) in Capital letters.
6. In section 1 each question carries 1-Marks.
7. In section 2 each question carries 2-Marks.
8. A model is shown at the beginning of each section in part A.
9. Answer to the question in this part must be written in the first three pages only.

PART-B

1. Answer any twenty questions.
2. If more than 20 questions are attempted only the first 20 will be considered.
3. Answer should not exceed 15 lines.
4. All question carry equal marks.

GATE-1994

PY - PHARMACEUTICAL SCIENCES

PART - A

SECTION - I (CHOOSE THE CORRECT ANSWER)

Q.1 Multiple choice questions

i. Natural camphor is

- (a) An optically inactive aldehyde obtained from *cinnamomum camphora*
- (b) A white dextrorotatory ketone obtained from the wood of *cinnamomum camphora*
- (c) A white optically inactive ketone obtained from the bark of *cinnamomum camphora*
- (d) A white volatile aldehyde obtained from the bark of *cinnamomum camphora*

ii. Ingredients used for capsulation in soft capsule should flow by gravity at a temperature not exceeding

- (a) 35°C (b) 30°C
- (c) 25°C (d) 20°C

iii. The region of the electromagnetic spectrum below 200 nm is known as

- (a) Vacuum ultra violet region
- (b) Far UV region
- (c) Low UV region
- (d) Microwave region

iv. O/W micro emulsion containing hydrophilic surfactant produces

- (a) Translucent emulsion
- (b) Transparent emulsion
- (c) Milky white emulsion
- (d) Intense white emulsion

v. Which of the following steroids shows predominant mineralocorticoid action

- (a) Hydrocortisone (b) Spironolactone
- (c) Dexamethasone (d) Fludrocortisone

vi. The factors affecting diffusion current in polarography can be denoted by

- (a) Nernst equation
- (b) Ilkovic equation
- (c) Lambert's law
- (d) Mark-Houwink equation

vii. Rotasort is an equipment used

- (a) To separate unfilled capsules
- (b) To fix the cap and body of the capsules after filling
- (c) To separate the improper tablets
- (d) To adjust the required compression for the tablets

viii. As per G.M.P. permitted limit of solid contents in water for injection is

- (a) 100 ppm (b) 1.0 ppm
- (c) 0.1 ppm (d) 10.0 ppm

ix. Nujol is

- (a) Hexachlorobutadiene
- (b) Mineral oil
- (c) Perfluorokerosene
- (d) Fluorolube

x. Which of the following is a microsomal enzyme inducer

- (a) Indomethacin (b) Clofibrate
- (c) Tolbutamide (d) Glutethimide

xi. Fiducial limit is a term used in

- (a) Microbiological assay
- (b) Biological assay
- (c) Chemical assay
- (d) Instrumental methods of assay

xii. Phenothiazines are metabolized

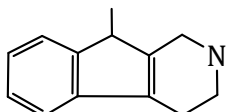
- (a) In the hepatic microsomal system by hydroxylation followed by conjugation with glucuronic acid
- (b) In the liver by oxidation
- (c) In the hepatic microsomal system by reduction



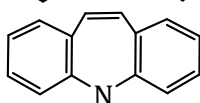
PART - B

This section consist of 25 Questions of 5 Marks each. Attempt any 20 Questions

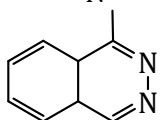
5. Following ring structures are present in well known drugs on their pharmacological category is indicated. Complete the structure by introducing the relevant groups and their common name



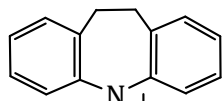
An antihistaminic



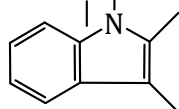
Analegestic specific in trigeminal neuralgia



Antihypertensive



Antidepressant



Antiinflammatory Analgesic

6. Give the names of five important factors which protect the chemical stability of medicaments in parenterals
7. Give reasons for the following
- Temperature programming gives the best result in gas chromatography.
 - The detectors used in U.V. and visible region cannot be used in longer wave length.
 - In polarographic analysis expelling dissolved oxygen by passing of inert gas is done before the actual measurement
 - Phenol and anisole fluorescence at pH 7, but at pH 12 Phenol does not show fluorescence.
 - Buffer solution is always used in E.D.T.A. titration.
8. Draw inferences for the following
- Microscopic examination of powdered digitalis leaves showed small leaf parts with densely

covered large wooly hairs.

- Two different samples of squill . One gives reddish purple colour with iodine and another pale yellow colour.
- A transverse section of Belladonna root sample showed number of concentric cambia, Parenchyma shows acicular calcium oxalate crystals.
- To an alkaloidal salt solution in water bromine water and dilute ammonia solution are added - a bright green colour is produced.
- An alkaloid when treated with p-dimethyl amino benzaldehyde reagent in presence of H_2SO_4 and traces of Ferric chloride gives blue violet colour.

9. Give the mechanism of action of the following drugs. Answer each in not more than two sentences

- Nifedipine
- Hexamethonium
- Interferons
- Pyrantel pamoate
- Erythromycin

10. Draw the heterocyclic system present in the drugs listed below and name them

- Nitrofurantoin
- Cloxacillin
- Primidone
- Mebendazole
- Methotrexate

11. Give reasons for the following

- Using opaquant-extenders in film-coating of tablets.
- Elevation of storage temperature in Accelerated stability studies.
- Grossing in syrup coating
- Application of Stoke's law in emulsion preparation

12. Mention 5 important factors for selection of Fluid Bed Spray Granulator.

13. (A) Draw the configurational, boat and chair structures of:
- 3a Hydroxy tropane
 - 3b Hydroxy tropane
 - 6, 7b Epoxy-3a-hydroxy tropane



GATE-1993

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 180

1. This question paper contains two parts A and B.
2. Answer all the questions from part A.
3. Answer Any 20 questions from part B.

PART-A

1. There are 2 sections in this part
2. Answer all the question in both sections – 1 and 2.
3. Answer should be given serial order in the answer book.
4. Do not skip question while writing the answers.
5. Write the question number and show your answer by writing the alphabet (against the No.) in Capital letters.
6. In section 1 each question carries 1-Marks.
7. In section 2 each question carries 2-Marks.
8. A model is shown at the beginning of each section in part A.
9. Answer to the question in this part must be Written in the first three pages only.

PART-B

1. Answer any twenty questions.
2. If more than 20 questions are attempted only the first 20 will be considered.
3. Answer should not exceed 15 lines.
4. All question carry equal marks.

GATE-1993

PY - PHARMACEUTICAL SCIENCES

PART - A

SECTION - I (CHOOSE THE CORRECT ANSWER)

Q.1 Multiple choice questions

i. Triamcinolone is

- (a) 9 α -Fluoro-16 α -hydroxyprednisolone
- (b) 9 β -Fluoro-16 α -hydroxyprednisolone
- (c) 9 α -Fluoro-16 β -hydroxyprednisolone
- (d) 9 α -Bromo-16 α -hydroxyprednisolone

ii. Surfactants are characterized by the presence of

- (a) Water solubilising groups alone
- (b) Fat solubilizing groups alone
- (c) Water and fat solubilising groups in the same molecule
- (d) Groups with positive charge

iii. Gamma-globulin is separated from serum by

- (a) Agglutination
- (b) Dialysis
- (c) Centrifugation
- (d) Salting out

iv. The stationary phase in Thin-layer chromatography is

- (a) Liquid held between glass
- (b) Silica gel
- (c) Glass Plate
- (d) None of the above

v. Benzoyl peroxide is

- (a) An astringent
- (b) An emollient
- (c) A preservative
- (d) A keratolytic

vi. Water for injection differs from sterile distilled water as it is free from

- (a) Carbon dioxide
- (b) Pyrogens
- (c) Preservatives

(d) Antioxidant

vii. The correct equivalent for -10°C is

- (a) -10°F
- (b) $+22^{\circ}\text{F}$
- (c) -18°F
- (d) $+14^{\circ}\text{F}$

viii. The active metabolite of anti-cancer cyclophosphamide is

- (a) N - hydroxyl cyclophosphamide
- (b) N - methyl cyclophosphamide
- (c) 4 - hydroxyl cyclophosphamide
- (d) N - acetyl cyclophosphamide

ix. Mebendazole, an anthelmintic drug, has one group at 5-position in the benzimidazole structure. It is

- (a) $\text{S} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$
- (b) $-\text{S} - \text{Ph}$
- (c) $\text{Ph} - \text{SO}_2 -$
- (d) $\text{Ph} - \text{CO} -$

x. Sedative action of barbiturates is due to substituents at C_5 . It is due to

- (a) High lipophilicity of groups at C_5 position
- (b) Electronic withdrawing effect
- (c) Steric effect
- (d) Metal chelation

xi. Monoamine oxidase (MAO) inhibitors have serious side effects and toxicities. The alternate drugs of choice are

- (a) Tricyclic antidepressants
- (b) Hallucinogens
- (c) Amphetamines
- (d) Xanthine alkaloids

xii. Sterility test for the materials meant for surgical suture requires incubation for

- (a) 7 days
- (b) 14 days
- (c) 21 days
- (d) 28 days

xiii. Silver-Silver chloride electrode consists of

- (a) Silver wire coated with calomel
- (b) Silver wire coated with potassium chloride



GATE-1988

PY : PHARMACEUTICAL SCIENCES

Time : 3 hours | Maximum Marks : 180

1. This question paper contains two parts A and B.
2. Answer all the questions from part A.
3. Answer Any 20 questions from part B.

PART-A

1. There are 2 sections in this part
2. Answer all the question in both sections – 1 and 2.
3. Answer should be given serial order in the answer book.
4. Do not skip question while writing the answers.
5. Write the question number and show your answer by writing the alphabet (against the No.) in Capital letters.
6. In section 1 each question carries 1-Marks.
7. In section 2 each question carries 2-Marks.
8. A model is shown at the beginning of each section in part A.
9. Answer to the question in this part must be Written in the first three pages only.

PART-B

1. Answer any twenty questions.
2. If more than 20 questions are attempted only the first 20 will be considered.
3. Answer should not exceed 15 lines.
4. All question carry equal marks.

GATE-1988

PY - PHARMACEUTICAL SCIENCES

PART - A

SECTION - I (CHOOSE THE CORRECT ANSWER)

Q.1 Multiple choice questions

i. To understand the drug receptor interaction is necessary to quantify the relation between

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

ii. Penicillinase resistance penicillin is

- (a) Amoxicillin
- (b) Ampicillin
- (c) Penicillin V
- (d) Methicillin

iii. Morphine is present in

- (a) *Atropa belladonna*
- (b) *Papaver somniferum*
- (c) *Ricinus communis*
- (d) *Solanum nigrum*

iv. Ion exchange chromatography is the method of choice for separation of

- (a) Metals
- (b) Sugar
- (c) Fatty acid
- (d) Sterols

v. Rideal Walker test is performed by using the strain

- (a) *Escherichia coli*
- (b) *Staphylococcus niruri*
- (c) *Staphylococcus pyogenes*
- (d) *Salmonella typhi*

vi. Pheniramine maleate is an antihistaminic agent belonging to the class

- (a) Ethylenediamine derivative
- (b) Cyclic basic class analogs
- (c) Aminoallyl ether analoges
- (d) None of these

vii. Tetracycline undergo epimerization C-4 between pH 4 and 8 to give

- (a) Isotetracycline
- (b) Epitetracyclines
- (c) Nortetracycline
- (d) None of these

viii. Tyndallization means

- (a) Successive autoclaving with a bactericide
- (b) Successive heating with a bactericide
- (c) Successive heating at low temperature
- (d) Successive autoclaving at low temperature and incubation

ix. Morphine and Heroin differ from each other in respect of

- (a) Methyl group on nitrogen
- (b) Acetyl groups at C₃ and C₆
- (c) Absence of double bond between C₄ and C₆
- (d) Absence of D ring

x. Vincristine and Vinblastine act by

- (a) Binding with the protein tubulin and arrest at metaphase
- (b) Inhibiting the protein synthesis
- (c) Acting as antimetabolite
- (d) Inhibiting the enzyme system

xi. A rhamno-glucoside on complete hydrolysis will give

- (a) Aglycone + Fructose + Rhamnose
- (b) Aglycone + Ribose + Rhamnose
- (c) Aglycone + Rhamnose + Glucose
- (d) Rhamnose + Fructose

xii. The technique employed to study the insoluble film at oil water interface is

- (a) Micellization
- (b) Deflocculation
- (c) Electrostatic balance
- (d) Film balance

xiii. Gray baby syndrome is due to the indiscriminate use of

- (a) Streptomycin
- (b) Chloramphenicol
- (c) Penicillin
- (d) Tetracycline

