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GPAT-2026

GRADUATE PHARMACY APTITUDE TEST

GATE-1988 TO 2009 | GPAT-2010 TO 2025

Includes

- 38 Previous Year Papers
- Aligned as per GPAT Previous Year Paper
- Answer Key Validated with NTA & NBEMS
- Added GPAT-2025 Paper in this Edition

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by

GDC EDITORIAL BOARD

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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 **38 GATE/GPAT** question papers from previous years up to **GPAT-2025.** 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!

PEEYUSH JAISWAL
Director, GDC

GPAT EXAM PATTERN & QUESTION ANALYSIS

A clear understanding of the GPAT-2026 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	3 hours (02:00 PM to 05:00 PM)
Type of questions	Multiple-choice questions
Total number of questions	125
Maximum marks	500
Marking scheme	4 marks will be awarded for every correct response 1 mark will be deducted for every wrong response No marks for no response

GPAT-2024, 2025 EXAM PAPER ANALYSIS

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

GPAT-2025 EXAM PAPER SUBJECT WISE ANALYSIS

SUBJECT	NUMBERS OF QUESTIONS
PHARMACEUTICS AND ALLIED SUBJECTS	
P' Technology	10
Physical pharmacy	16
P' Engineering	02
P' Jurisprudence	08
Biopharmaceutics	05
Dispensing pharmacy	-
Hospital and Clinical Pharmacy	-
PHARMACOLOGY AND ALLIED SUBJECTS	
General Pharmacology	03
Drugs Acting on ANS	03
Autacoids and Related Drugs	01
Respiratory System Drugs	03
Hormones and Related Drugs	02
Drugs Acting on PNS	01
Drugs Acting on CNS	02
Drugs Acting on CVS	02
Drugs Acting on Kidney	01
Drugs affecting Blood and Blood Formation	03
Gastrointestinal Drugs	01
Antimicrobial Drugs	05
Chemotherapy of Neoplastic Disease	02
Miscellaneous Drugs	01
HAP	03
PATHOPHYSIOLOGY	01
PHARMACOGNOSY AND ALLIED SUBJECTS	
Introduction of pharmacognosy	02
Alkaloids	01
Glycosides	01
Lipids and volatile oil	-
Resins	-
Tannin	01
Carbohydrates and Gum	-
Herbal formulation	-
Fibres	-
PHARMACEUTICAL CHEMISTRY AND ALLIED SUBJECTS	
Organic chemistry	13
Inorganic chemistry	-
Medicinal chemistry	08
Physical chemistry	04
Pharmaceutical analysis	12
OTHER SUBJECTS OF B.PHARM COURSE	
Microbiology	04
Biochemistry	02
Biotechnology	-
P' Management	-
Biostatistics	02

Content

GPAT-2025

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.
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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 (tc) and critical pressure (pc) 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

12. Manufacturing specifications for tooling have been standardized by

(a) Physican Desk reference of Industry
(b) National Drug Code
(c) Academy of Pharmaceutical Sciences
(d) Indian Pharmacopeial Commission

13. Which instrument is used for measurement of structural breakdown in thixotropic material

(a) Viscometer (b) Planimeter
(c) Orifice meter (d) Rotameter

14. Amongst the following liquids, which liquid has a highest surface tension against water at 20°C

(a) Carbon Tetrachloride
(b) Mercury
(c) Oleic acid
(d) Octane

15. When the log number of microrganisms is plotted against time, an essentially straight line results. The inverse slope of this line is called

(a) Half life (b) Thermal death time
(c) D value (d) Z value

16. Which of the following is a characteristic of a deflocculated suspension

(a) A sediment is formed rapidly
(b) Suspension is easily redispersable
(c) A sediment is formed slowly
(d) Particles form loose aggregates

17. For a drug if the label or the container bears the name of an individual or company purporting to be the manufacturer of the drug where the individual or company is fictitious or does not exist, such a drug is called

(a) Adulterated drug (b) Mixed drug
(c) Spurious drug (d) Misbranded drug

18. Match the following

A) Schedule G	P) Life period of drugs
B) Schedule H	Q) Standards for Surgical dressing
C) Schedule F-2	R) Drugs to be used under RMP
D) Schedule P	S) List of Prescription drugs

(a) A-P; B-Q; C-R & D-S (b) A-R; B-S; C-Q & D-P
(c) A-P; B-Q; C-S & D-R (d) A-R; B-S; C-P & D-Q

19. The particle size range that can be analysed by Optical Microscopy method is

(a) 500-1000 µm (b) 0.001-0.1 µm
(c) 200-500 µm (d) 0.5-150 µm

20. Molecules in the smectic liquid crystals are characterized by which one of the following

(a) Mobility in three directions and rotation in one axis
(b) Mobility in two directions and no rotation
(c) Mobility in two directions and rotation in one axis
(d) Mobility in three directions and no rotation

21. Triple point of water occurs at which temperature and pressure

(a) 0.098°C and 4.58 mmHg
(b) 0.0098°F and 4.58 mmHg
(c) 0.098°F and 4.58 mmHg
(d) 0.0098°C and 4.58 mmHg

22. How much volume of raw spirit can an excise officer withdraw as sample

(a) Maximum three samples from a batch each not more than 100 mL
(b) Maximum three samples from a batch each not more than 150 mL
(c) Maximum two samples from a batch each not more than 150 mL
(d) Maximum two samples from a batch each not more than 100 mL

23. According to USP, sparingly soluble refers to how many parts of solvent is required to dissolve one part of the solute

(a) From 30 to 100
(b) From 10 to 30
(c) From 100 to 1000
(d) From 1000 to 10000

24. Which equation is used for explaining the theory of filtration

(a) Dalton's equation
(b) Darcy's equation
(c) BET equation
(d) Stoke's equation

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 $Na^+/K^+/2Cl^-$ 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) Sulphonyl ureas (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	a. Glucagon
2. Beta (β) cell	b. Somatostatin
3. Delta (δ) cell	c. Gastrin
4. G cell	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

61. Which of the following is a characteristic of HIV infection

(a) Increased B cell function
(b) Increased $CD8^+$ T cells
(c) Increased natural killer cell activity
(d) Depletion of $CD4^+$ T cells

62. All of the following are long acting GnRH agonists EXCEPT

(a) Cabergoline (b) Buserelin
(c) Ganirelix (d) Triptorelin

63. Which one of the following is used in the treatment of bronchial asthma and belongs to beta-2 sympathomimetics

(a) Salmeterol
(b) Theophylline
(c) Ipratropium bromide
(d) Ketotifen

64. Which of the following anticancer medications causes Hand - Foot syndrome

(a) Methotrexate (b) Vincristine
(c) Doxorubicin (d) Capecitabine

65. Which nasal decongestant is a selective α-2 adrenergic receptor agonist

(a) Loratadine (b) Oxymetazoline
(c) Cetirizine (d) Montelukast

66. After which phase of clinical trial, can a pharmaceutical company submit new drug application (NDA) to the licensing authority

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

67. Antiviral drugs used for the treatment of influenza act by inhibiting the enzyme

(a) DNA polymerase
(b) Neuraminidase
(c) Reverse transcriptase
(d) Protease

68. $5HT_{2A/2C}$ inhibitor used to treat migraine is

(a) Methysergide (b) Metoclopramide
(c) Renzapride (d) Ketanserin

69. Which electrolyte imbalance is commonly associated with Amphotericin B

(a) Hyponatremia (b) Hypokalemia
(c) Hypermagnesemia (d) Hypercalcemia

70. A type IV PDE inhibitor used for the treatment of COPD is

(a) Roflumilast (b) Reslizumab
(c) Cromoglicate (d) Montelukast

71. Bambuterol is a prodrug of

(a) Albuterol (b) Indacaterol
(c) Terbutaline (d) Salmeterol

72. Which of the following pair is correctly matched in terms of laxative type and its mechanism of action

(a) Lubiprostone : Faecal softener
(b) Lactulose : Stimulant laxative
(c) Senna : Bulk forming laxative
(d) Prucalopride : 5-HT_4 agonist

73. What score range is categorized as 'Probable' in the Naranjo Causality Assessment Scale for adverse drug reactions (ADR)

(a) ≥9 (b) ≤0
(c) 5 - 8 (d) 1 – 4

74. Bempedoic acid, a dicarboxylic acid, is a new class of cholesterol-lowering drug that act by inhibiting

(a) Apolipoprotein B-100 synthesis
(b) Proprotein Convertase Subtilisin/Kexin type 9
(c) ATP-citrate lyase
(d) Microsomal Triglyceride transfer protein

75. Which of the following causes shift in the oxygen-hemoglobin dissociation curve to the right

(a) Decreased H^+ concentration
(b) Increased PO_2
(c) Increased PCO_2
(d) Decreased PCO_2

PHARMACEUTICAL CHEMISTRY

76. Arrange the following alkenes in order of its stability

(a) Cis-2-butene > trans-2-butene > but-1-ene > isobutene

(b) Trans-2-butene > isobutene > cis-2-butene > but-1-ene

(c) Trans-2-butene > cis-2-butene > isobutene > but-1-ene

(d) Isobutene > trans-2-butene > cis-2-butene > but-1-ene

77. Pyridine is a base with K_b equal to

(a) 3.8×10^{-7} (b) 1.7×10^{-12}

(c) 3.2×10^{-6} (d) 2.3×10^{-9}

78. Which technique is employed for the location of radioactive isotopes in biological and other materials by using X-ray sensitive film

(a) Sequential analysis

(b) Autoradiography

(c) Precursor–product sequence

(d) Liquid Scintillation Counter

79. Cis-trans (Z/E) isomerism is exhibited by all except

(a) 2-chloro-3-hexene

(b) 1-butene

(c) 4-chloro-2 -pentene

(d) 2 butene-1-ol

80. Alkyl halides are converted into alkanes by

(a) Birch reduction

(b) Grignard reagent

(c) Sabatier-Senderens reaction

(d) Wurtz reaction

81. Benzene undergoes Friedel-Crafts reaction with isopropyl bromide in the presence of anhydrous aluminum chloride catalyst to give

(a) Acetophenone (b) Isopropylbenzene

(c) n-Propylbenzene (d) Benzophenone

82. n-Butane exists in how many numbers of conformational isomers

(a) One anti and two gauche

(b) One anti and one gauche

(c) Two anti and two gauche

(d) Two anti and one gauche

83. Identify the naturally occurring pilocarpine

(a) 2R,4R-(-)-pilocarpine

(b) 3R,4S-(-)-pilocarpine

(c) 2S,5R-(+)-pilocarpine

(d) 3S,4R-(+)-pilocarpine

84. Total number of stereoisomers for 3-bromo-2-butanol is

(a) 6 (b) 8

(c) 4 (d) 2

85. Ring juncture or backbone carbons in 5α-cholestane molecule are

(a) 5,6,9,10,13 and 14 (b) 5,8,9, 10,11 and 14

(c) 5,8,9,10,13 and 14 (d) 5,8,9,10,13 and 15

86. Morphine shows absorbance of Ultraviolet light at wavelength

(a) 286 nm (b) 266 nm

(c) 276 nm (d) 256 nm

87. Stationary phase used in steroid separation by paper chromatography is

(a) Acetylated paper (b) Silica paper

(c) Carboxyl paper (d) Kieselguhr paper

88. Which of the following is an exception to Markovnikov's rule

(a) Addition of HCl to an alkene

(b) Addition of H_2O to an alkene in the presence of acid

(c) Addition of HI to an alkene

(d) Addition of HBr to an alkene in the presence of peroxides

89. Debye is the unit for measuring

(a) Field effect

(b) Bond energy

(c) Dissociation constant

(d) Dipole moment

OTHER SUBJECTS

118. Which of following test is distribution free, i.e., does not require any assumption to be made about population following normal or any other distribution

(a) Fischer LSD test
(b) ANOVA
(c) Kruskal Wallis test
(d) Student t-test

119. Which statistical test is appropriate for comparing the means of two independent groups

(a) ANOVA (b) Paired t-Test
(c) Pooled t-Test (d) Sample t-Test

120. Glycogenic amino acids entered in TCA cycle except

(a) Glutamate (b) Alanine
(c) Aspartate (d) Glycine

121. Albinism is due to complete or partial absence of the following enzyme

(a) Hydroxylase (b) Tyrosinase
(c) Pyurvase (d) β-hydroxylase

122. Which of the following is used for the evaluation of disinfectants

(a) Draves test (b) VDRL test
(c) Chick Martin test (d) Widal test

123. Match the following with the type of causative agents

DISEASE	CAUSATIVE AGENTS
P. Tuberculosis	i. Bacteria
Q. Diphtheria	ii. Viral
R. Yellow fever	iii. Toxoid
S. Malaria	iv. Protozoa

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

124. Oral vaccines such as Dukoral® and Shanchol™ , provide protection against

(a) Pneumonia (b) Ebola virus
(c) Cholera (d) Polio

125. Which parasitic worm is responsible for causing lymphatic filariasis

(a) *Brugia malayi*
(b) *Ancylostoma duodenale*
(c) *Necator americanus*
(d) *Onchocerca volvulus*

ANSWER KEY GPAT-2025

1-c	2-b	3-d	4-c	5-a	6-d	7-d	8-a	9-d	10-a
11-b	12-c	13-b	14-b	15-c	16-c	17-c	18-b	19-d	20-c
21-d	22-c	23-a	24-b	25-d	26-c	27-b	28-c	29-a	30-b
31-d	32-a	33-a	34-c	35-a	36-c	37-d	38-a	39-d	40-d
41-c	42-b	43-b	44-d	45-d	46-b	47-a	48-a	49-c	50-a
51-a	52-d	53-b	54-b	55-d	56-d	57-b	58-c	59-d	60-c
61-d	62-*	63-a	64-d	65-b	66-c	67-b	68-a	69-b	70-a
71-c	72-d	73-c	74-c	75-c	76-d	77-d	78-b	79-b	80-d
81-b	82-a	83-d	84-c	85-c	86-a	87-*	88-d	89-d	90-b
91-b	92-a	93-a	94-c	95-*	96-c	97-c	98-a	99-c	100-d
101-b	102-a	103-b	104-b	105-a	106-c	107-b	108-b	109-d	110-d
111-c	112-*	113-d	114-d	115-c	116-c	117-d	118-c	119-c	120-*
121-b	122-c	123-b	124-c	125-a					

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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) Hydrotropy (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) $1/10^{th}$ of marketing batch
(b) $1/5^{th}$ of marketing batch
(c) $1/5^{th}$ of production batch
(d) $1/10^{th}$ 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

29. Which of the following is an example of physical incompatibility

(a) Error in dosage form
(b) Alkaloidal incompatibility
(c) Drug interaction
(d) Liquefaction

30. In drying process, which of the following parameters is same as the adiabatic saturation temperature

(a) Wet bulb temperature
(b) Dew point
(c) Absolute humidity
(d) Relative humidity

31. What should be the log P valu..... e for an ideal drug candidate for transdermal permeation

(a) Above 7 (b) 1-3
(c) 5-7 (d) Below 1

32. Which among the following is NOT the process of drug degradation

(a) Hydrolysis (b) Decarboxylation
(c) Photolysis (d) Hemolysis

PHARMACEUTICAL CHEMISTRY

33. According to the SAR of Chloroquine electron

(a) Donating group at 6th position of the quinoline ring is important for the inhibition of hemozoin formation
(b) Withdrawing group at 6th position of the quinoline ring is important for the inhibition of hemozoin formation
(c) Donating group at 7th position of the quinoline ring is important for the inhibition of hemozoin formation
(d) Withdrawing group at 7th position of the quinoline ring is important for the inhibition of hemozoin formation

34. Spin Quantum number of ^{13}C NMR is

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

35. The starting raw material for synthesis of Lignocaine is

(a) 4-Chlorobenzyl cyanide
(b) 2,6-Xylidine
(c) p-Nitroacetophenone
(d) 4-Amino-3-Nitroanisole

36. Which of the following is a meta directing group

(a) $NHCH_3$ (b) CF_3
(c) F (d) NH_2

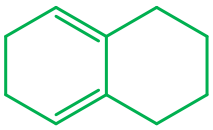
37. Famotidine contains

(a) Pyrrole ring (b) Furane ring
(c) Imidazole ring (d) Thiazole ring

38. Which of the following steps are not involved in gravimetric analysis

(a) Filtration (b) Precipitation
(c) Indicator (d) Digestion

39. Calculate the λ_{max} of the following molecule

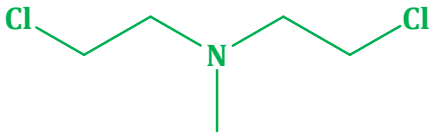


(a) 273 nm (b) 283 nm
(c) 244 nm (d) 234 nm

40. The IUPAC name of tartaric acid is

(a) 2,3-dihydroxybutane-1,4-dioic acid
(b) 2,3-dihydroxy-4-butanoic acid
(c) 1,3-dihydroxybutane-1,4-dioic acid
(d) 2,2-dihydroxy-4-butanoic acid

41. Name the following drug molecule



(a) 6-Mercaptopurine
(b) Chlorambucil
(c) Mechlorethamine
(d) Vincristine

42. The equivalent weight of Potassium permanganate in acidic medium is

(a) 31.6 (b) 41.6
(c) 51.6 (d) 21.6

43. The composition of "Lindlar catalyst"

(a) NH_2NH_2 and KOH
(b) Palladium with Sodium carbonate
(c) Palladium with Calcium carbonate
(d) Amalgamated Zinc and HCl

59. Choose the INCORRECT statement regarding Cathode rays

(a) Cathode rays are fast electrons
(b) Cathode rays are electromagnetic waves
(c) Cathode rays travel in straight route
(d) Cathode rays produce X-rays

60. Which of the following is easily nitrated using a mixture of HNO_3 and H_2SO_4

(a) Toluene (b) Nitrobenzene
(c) Chlorobenzene (d) Fluorobenzene

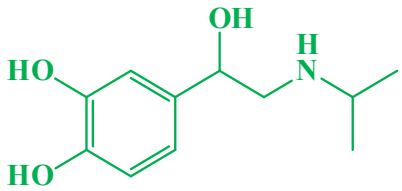
61. In a homologous series of any general anesthetic, increasing the chain length increases the lipid solubility, and produce a corresponding increase in anesthetic potency, is proposed by

(a) Meyer - Philip (b) Hubert Humphrey
(c) John Pemberton (d) Meyer – Overton

62. In which limit test, Thioglycolic acid is used

(a) Limit test for arsenic
(b) Limit test for iron
(c) Limit test for sulphate
(d) Limit test for chloride

63. The below structure represent the drug



(a) Salbutamol (b) Amphetamine
(c) Norepinephrine (d) Isoprenaline

PHARMACOLOGY

64. The Wilson's disease is a rare inherited disorder due to accumulation in brain, liver and other vital organs of

(a) Iodine (b) Calcium
(c) Iron (d) Copper

65. Which antibiotic undergoes light catalysed autoxidation

(a) Sugar derived antibiotics
(b) Polyene antibiotics
(c) Macrolide antibiotics
(d) Beta lactam antibiotics

66. Which of the following is Phase-II metabolism reaction

(a) Acetylation (b) Oxidation
(c) Reduction (d) Hydrolysis

67. Which is the active form of Ganciclovir

(a) Triphosphate (b) Biphosphate
(c) Tetraphosphate (d) Phosphate

68. H_1 receptor protein in humans is made up of

(a) 359 Aminoacids (b) 445 Aminoacids
(c) 487 Aminoacids (d) 390 Aminoacids

69. Which of the following is first prodrug for sulfonamide

(a) Sulfatrim
(b) Sulfamidochrysodine
(c) Trimethoprim
(d) Prontosil

70. The appendicular skeleton in an adult consists of

(a) 120 bones (b) 206 bones
(c) 80 bones (d) 126 bones

71. Which of the following hormone is not secreted by human placenta

(a) HCG (b) LH
(c) Estrogen (d) Progesterone

72. Melatonin is secreted by

(a) Thyrotrophs (b) Adrenal gland
(c) Pineal gland (d) Gonadotrophs

73. Which oral hypoglycemic agent increases the levels of incretin hormone by inhibiting the enzyme dipeptidyl peptidase-4 (DPP-4)

(a) Metformin (b) Sitagliptin
(c) Glipizide (d) Pioglitazone

74. The etiology of jaundice could be haemolytic anaemia if

(a) Unconjugated bilirubin is found more than conjugated bilirubin
(b) Increase in IgE level
(c) Conjugated bilirubin is found more than unconjugated bilirubin
(d) Unconjugated bilirubin is found equal to conjugated bilirubin

91. Sarcoma is the cancer of

(a) Epithelium (b) Plasma cells
(c) Connective tissues (d) Glands

92. The Phase in which two identical copies of DNA are formed is

(a) G_1 phase (b) S phase
(c) G_2 phase (d) M phase

93. Renin is released from

(a) Juxtaglomerular cells (JGCs) of kidney
(b) Microglial cells
(c) Beta-cells of pancreas
(d) Hepatocytes of liver

94. Which of the following cranial nerve is instrumental in motor function

(a) Vestibulocochlear (b) Optic
(c) Accessory (d) Olfactory

95. Leprosy is a

(a) Viral disease (b) Metazoal disease
(c) Fungal disease (d) Bacterial disease

96. Salivary amylase helps in digestion of which of the following nutrients

(a) Fats (b) Vitamins
(c) Proteins (d) Starch

97. The most common neoplasm in patients with AIDS is

(a) Acute myeloid leukaemia
(b) Adenocarcinoma
(c) Kaposi sarcoma
(d) Carcinoma of breast

98. Coomb's test is used for detection of

(a) Typhoid (b) Antiglobulin
(c) Yellow fever (d) Syphilis

99. The fluoroquinolones act by

(a) Inhibiting folic acid synthesis, reducing nucleotide production and DNA synthesis
(b) Inhibiting ribosomal subunits, leading to the cessation of protein synthesis
(c) Disrupting peptidoglycan cross-linking, weakening the bacterial cell wall
(d) Inhibiting DNA gyrase and topoisomerase IV, causing supercoiling and fragmentation of bacterial DNA

100. What is the proposed mechanism of action of Artemisinin in the treatment of malaria

(a) Blocking of the *Plasmodium falciparum* ATPase, disrupting ion homeostasis
(b) Inhibition of the heme polymerase enzyme, causing accumulation of toxic heme
(c) Inhibition of dihydrofolate reductase, interfering with folate synthesis
(d) Generation of reactive oxygen species (ROS) by cleavage of the endoperoxide bridge, leading to parasite death

101. Which of the following is NOT a Class IC anti-arrhythmic drug

(a) Propafenone (b) Mexiletine
(c) Moricizine (d) Flecainide

102. The amount of air that moves in or out of the lungs with each respiratory cycle is

(a) Expiratory reserve volume
(b) Tidal volume
(c) Inspiratory reserve volume
(d) Residual volume

103. The cranial nerve that regulates the heartbeat is

(a) VII (b) IX
(c) X (d) VIII

104. Which one of the following enzymes comprises a major part of enzyme-linked receptors

(a) Receptor Serine Phosphatase
(b) Receptor Tyrosine Kinase
(c) Receptor Histidine Kinase
(d) Receptor Threonine Phosphatase

PHARMACOGNOSY

105. The key intermediate for the biosynthesis of C6-C3 units is

(a) Pyruvic acid
(b) Dehydroquinic acid
(c) Shikimic acid
(d) Mevalonic acid

123. Which of the following is a causative organism for Syphilis

(a) *Clostridium tetani* (b) *Bacillus pertussis*
(c) *Treponema pallidum* (d) *Vibrio cholerae*

124. The optimum temperature for rapid growth of mesophiles is

(a) 40 to 50 °C (b) 50 to 60 °C
(c) 25 to 40 °C (d) 15 to 20 °C

125. Virus mediated transfer of host DNA from one cell to another cell is known as

(a) Transcription (b) Integration
(c) Transduction (d) Transformation

ANSWER KEY GPAT-2024

1-c	2-c	3-b	4-c	5-a	6-d	7-d	8-d	9-a	10-b
11-a	12-*	13-a	14-d	15-c	16-c	17-c	18-d	19-c	20-a
21-c	22-c	23-a	24-d	25-b	26-*	27-d	28-b	29-d	30-a
31-b	32-d	33-d	34-d	35-b	36-b	37-d	38-c	39-b	40-a
41-c	42-a	43-c	44-a	45-c	46-b	47-*	48-c	49-c	50-c
51-d	52-a	53-a	54-a	55-b	56-c&d	57-a	58-a	59-b	60-a
61-d	62-b	63-d	64-d	65-b	66-a	67-a	68-c	69-d	70-d
71-b	72-c	73-b	74-a	75-a	76-a	77-a	78-c	79-d	80-b
81-d	82-d	83-d	84-b	85-b	86-c	87-d	88-b	89-c	90-b
91-c	92-b	93-a	94-c	95-d	96-d	97-c	98-b	99-d	100-d
101-b	102-b	103-c	104-b	105-c	106-d	107-b	108-c	109-a	110-c
111-c	112-a	113-b	114-c	115-c	116-b	117-c	118-a	119-c	120-a
121-c	122-a	123-c	124-c	125-c					

GPAT-2023

PY - PHARMACEUTICAL SCIENCES

SHIFT - I

PHARMACEUTICS

1. **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

2. **The law of relative lowering of vapour pressure was given by**

(a) Raoult (b) Ostwald
(c) Henry (d) Van't Hoff

3. **Dipole-dipole weak interactions are also called as**

(a) London forces (b) Debye interactions
(c) Electrovalent forces (d) Keesom forces

4. **Invert sugar is a product obtained by the hydrolysis of**

(a) Maltose (b) Sucrose
(c) Lactose (d) Dextrin

5. **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

6. **In pharmacokinetic models, the term "Compartment" means**

(a) Blood
(b) Individual organ
(c) Extracellular fluid
(d) Hypothetical pool of tissue

7. **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

8. **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

9. **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

10. **Which of the following pharmaceutical solvent has the highest dielectric constant, at 25 degree C**

(a) Glycerin (b) Ethanol
(c) Acetone (d) Phenol

11. **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

12. **Which of the following emulsifiers has the highest HLB value**

(a) Span 80 (b) Acacia
(c) Tween 80 (d) Sodium lauryl sulfate

13. **Which of the following substances are not used as humectants in emulsions**

(a) Propylene glycol (b) Sorbitol
(c) Tocopherol (d) Glycerol

14. **Under which of the following conditions in-vitro-in-vivo correlation for a drug fails**

(a) When the drug is highly soluble

LIST I FORMULATION INGREDIENT		LIST II ACTIVITY / PROPERTY	
1.	Salts of d-glucuronic acid polypeptides and amino acids	[P]	Are pseudoplastic and plastic in nature
2.	Surfactants, both ionic and nonionic	[Q]	Form a multimolecular film around the dispersed droplets of oil in an o/w emulsion
3.	Magnesium aluminium silicate	[R]	Emulsifier belonging to the class of solid particles form W/O emulsion
4.	Structured vehicles	[S]	Emulsifier belonging to the class of solid particles and form O/W emulsion
		[T]	Have been used to bring about flocculation of suspended particles

Choose the correct answer from the options given below

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

28. What is the percentage of alcohol in a mixture obtained by mixing 5 L of 25%, 3 L of 40% and 2 L of 15% alcohol

(a) 27.5% v/v (b) 30.5% v/v
(c) 25.5% v/v (d) 26.5% v/v

29. For disguising the astringent and metallic taste of iron salts in children's mixture, the following flavoring agent in used

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

30. A tablet excipient, whose function is to ensure that tablet formulation and ejection can occur with low friction between the solid and the die wall, is called

(a) Glidant (b) Lubricant
(c) Anti-adhesive (d) Binder

31. Clathrates crystallize in the form of

(a) Channel type structure
(b) Tetragonal type structure
(c) Cubic type lattice
(d) Cage like lattice

32. Which of the following ointment bases is an "Absorption base"

(a) Yellow ointment, USP
(b) Hydrophilic petrolatum USP
(c) Hydrophilic ointment USP
(d) PEG ointment NF

33. Which of the following surfactants is an ANIONIC surfactant

(a) Lecithin
(b) Sorbitan esters
(c) Benzalkonium chloride
(d) Soaps

34. Which of the following formulations are "Pharmaceutically equivalent"

Match List I with List II

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

Choose the correct answer from the options given below

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

35. What is the approximate amount of Powder (in mg) that can be filled in empty gelatin capsules of size 00

(a) 1040 mg (b) 650 mg
(c) 325 mg (d) 162 mg

67. Following groups exert anyone of the effects on electrophilic aromatic substitution

$-OC_2H_5, -NHCOCH_3, -OCH_3$

Identify whether all three are

(a) Weakly activating
(b) Deactivating
(c) Moderately activating
(d) Strongly activating

68. The correct rank order of orientation of sulfonation in toluene is

(a) 4-methylbenzenesulfonic acid > 2-methylbenzenesulfonic acid > 3 methyl benzene sulfonic acid
(b) 2-methylbenzenesulfonic acid > 3-methyl -benzenesulfonic acid > 4-methylb enzene sulfonic acid
(c) 3-methylbenzenesulfonic acid > 4-methylb -enzenesulfonic acid > 2-methylbenzene sulfonic acid
(d) 3-methylbenzenesulfonic acid > 2-methyl benzenesulfonic acid > 4-methylbenzene sulfonic acid

69. Lucas test is very rapid with

(a) 1°alcohol (b) 2°alcohol
(c) 3°alcohol (d) Phenol

70. As the solution of a strong electrolyte is diluted, the following phenomenon is observed

(a) The specific conductance decreases and equivalent conductance increases
(b) The specific conductance increases and equivalent conductance decreases
(c) Both specific conductance and equivalent conductance increase
(d) Both specific conductance and equivalent conductance decrease

71. The molecule having zero dipole moment is

(a) BF_3 (b) HF
(c) NH_3 (d) CH_3Cl

PHARMACOLOGY

72. Following is an example of atypical anti-psychotic

(a) Haloperidol (b) Clozapine
(c) Thioridazine (d) Fluphenazine

73. Following is not an example of Carbapenem

(a) Thienamycin (b) Imipenem
(c) Piperacillin (d) Meropenem

74. Which of the following Urinary Tract Anti-Infective agents requires an acidic pH of urine for optimum action

(a) Gentamicin (b) Erythromycin
(c) Carbenicillin (d) Streptomycin

75. Which of the following drugs has an apparent volume of distribution approximately 6500 litres [DROPPED QUESTION]

(a) Amoxicillin (b) Ibuprofen
(c) Chloroquine (d) Diazepam

76. Match the following concept in List I with parameters in List II

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

Choose the correct answer from the options given below

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

77. Trastuzumab is a/an

(a) EGFR/HER_2 inhibitor
(b) Angiogenesis inhibitor
(c) EGF receptor (HER_1) inhibitor
(d) BCR-ABL tyrosine kinase inhibitor

78. When is a New Drug Application (NDA) made

(a) Once the animal studies are done and drug is declared safe in animals

102. All the following are true with Metoclopramide EXCEPT

(a) 5-HT_1 receptor antagonist
(b) D_2 receptor antagonist
(c) 5-HT_3 receptor antagonist
(d) 5-HT_4 receptor agonist

103. Given below are two statements

Statement I: Levodopa is metabolized peripherally but capable of crossing Blood Brain Barrier, thus a best drug in treating Parkinsonism

Statement II: Carbidopa crosses Blood Brain Barrier, thus a best combination for protecting levodopa in CNS

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

(a) Both Statement I and Statement II are true
(b) Both Statement I and Statement II are false
(c) Statement I is true but Statement II is false
(d) Statement I is false but Statement II is true

104. Which of the following is a tetracycline anti-depressant that has additional Dopamine D_2 receptor blocking and neuroleptic properties as well as a greater tendency to cause seizures in overdose

[DROPPED QUESTION]

(a) Dothiepin (b) Doxepin
(c) Trazodone (d) Amoxapine

PHARMACOGNOSY

105. Which one is the right sequence of the intermediates in the biosynthesis of opium alkaloids

I. Tyrosine II. Reticuline III. Codeine
IV. Morphine V. Thebaine

Choose the correct answer from the options given below

(a) I, II, III, IV, V (b) I, II, V, III, IV
(c) I, II, V, IV, III (d) I, II, IV, V, III

106. Arrange the following intermediates in the synthesis of isoprenoids in the right sequence

I. Squalene II. Farnesyl PP III. Geranyl PP
IV. Acetyl CoA V. Mevalonate

Choose the correct answer from the options given below

(a) IV, II, III, I, V (b) IV, V, III, II, I
(c) II, III, IV, I, V (d) V, II, III, I, IV

107. If the resins contain benzoic acids or cinnamic acids they are called

(a) Colophony (b) Balsams
(c) Glucoresins (d) Resene

108. Lycopodium spores are used in quantitative microscopy for the following

I. Determine % purity of drugs
II. Estimation of percentage of foreign organic matter
III. Determination of palisade ratio
IV. Measurement of area of single layered tissue

Choose the correct answer from the options given below

(a) I, II and III only (b) I, II and IV only
(c) I only (d) II and IV only

109. The ring structure present in strychnine alkaloid is

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

110. Isabgol belongs to family

(a) Apocynaceae (b) Plantaginaceae
(c) Solanaceae (d) Golaceae

111. Lignin is a complex polymer which can be stained pink in the tissue using the following chemicals

(a) Chloral Hydrate and Phloroglucinol
(b) Chlor-Zinc-Iodine
(c) Phloroglucinol and hydrochloric acid
(d) Chloral Hydrate, Zinc and Ammonia

112. Match the following Ayurvedic formulations under Column I with the process/properties under Column II and choose the correct options

LIST I AYURVEDIC FORMULATIONS		LIST II PROCESS OR PROPERTY	
1.	Bhasma	[P]	Semisolid
2.	Arista	[Q]	Calcination
3.	Churna	[R]	Alcohol generation
4.	Lehya	[S]	Dry powder
		[T]	Decoction

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]

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 phospha -teanion
   (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) $\mathrm{Log}(S_0/S)=2\gamma Mr/2.303RT\rho$
   (b) $\mathrm{Log}(S/S_0)=2\gamma Mr/2.303RT\rho$
   (c) $\mathrm{Log}(S_0/S)=2\gamma Mr/2.303RT\rho r$
   (d) $\mathrm{Log}(S/S_0)=2\gamma M/2.303RT\rho r$

7. Indicate which of the following molecular characteristics will be expected to increase the solubility of a simple solute in an aqueous solution

(a) A high melting point
(b) The presence of polar group
(c) A high molecular surface area
(d) A high boiling point

8. Match List I with List II

LIST- I DISSOLUTION APPARATUS		LIST-II NAME	
1.	Type 1	[P]	Reciprocating holder
2.	Type 5	[Q]	Paddle over disk
3.	USP App 6	[R]	Basket type
4.	USP App 7	[S]	Cylinder apparatus

Choose the correct answer from the options given below

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

9. A clear, sweetened hydroalcoholic liquid containing medicament is known as

(a) Elixir (b) Syrup
(c) Tincture (d) Decoction

10. Match List I with List II

LIST-I NAME OF EMULSIFIER		LIST – II REMARK	
1.	Triethanolamine oleate	[P]	Surface active agent (non-ionic)
2.	N-cethyl N-ethyl morpholinium ethosulfate (Atlas G-263)	[Q]	Hydrophilic colloid
3.	Polyoxyethylene sorbitan mono oleate (Atlas Tween 80)	[R]	Surface- active agent (anionic)
4.	Gelatin	[S]	W/O Emulsifier (HLB= 4.3)
		[T]	Surface active agent (cationic)

Choose the correct answer from the options given below:

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

11. Which of the following equipment is based on the principle of Pohlman liquid whistle

(a) Ultrasonifier
(b) Mechanical stirrer
(c) Silverson homogeniser
(d) Colloid mill

12. Which of the following is the correct choice of particle size measurement technique in scoring order of size

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

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

13. Which one of the following is an example of ointment prepared by trituration and containing liquids and solids

(a) Salicylic and Sulphur Ointment BPC
(b) Whitfield's Ointment BPC
(c) Hamamelis Ointment BPC
(d) Resorcinol Ointment Compound BPC

14. 'Picking' is a term used to describe

(a) Separation of tablet into two or more layers
(b) The situation when the surface material from a tablet that is sticking to and being removed from the tablet's surface by a punch
(c) Unequal distribution of colour on a tablet
(d) Partial or complete separation of the top and bottom crowns of a tablet from the main body of the tablet

15. Which one of the following is an example of a chelate

(a) Cisplatin (b) Hemoglobin
(c) Iodine (d) Ferrocene

16. A 2.0% saline solution is

(a) Hypotonic (b) Hypertonic
(c) Isotonic (d) Iso-osmotic

17. Which of these is not a colligative property

(a) Osmotic pressure
(b) Depression of freezing point
(c) Elevation in boiling point
(d) Polymorphism

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

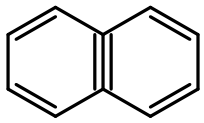
(a) Carbene

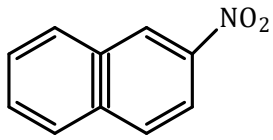
(b) Free radical

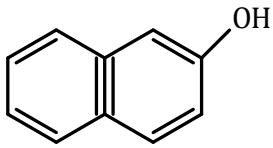
(c) Aromatic carbocation

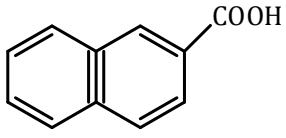
(d) Carbanion

43. Which of the following compound would be expected to have greatest florescence

(a) 

(b) 

(c) 

(d) 

44. Conversion of cyclic ketone to ring expended cyclic ester takes place by

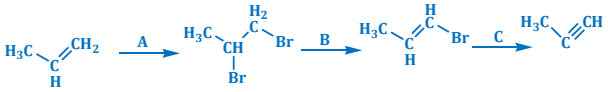
(a) Willgerodt rearrangement

(b) Michael rearrangement

(c) Lossen rearrangement

(d) Baeyer Villiger rearrangement

45. Identify A, B and C in below reaction



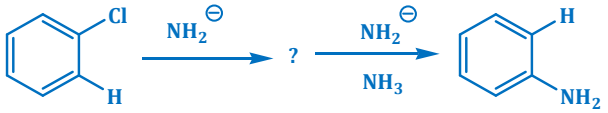
(a) A=Br_2, B=KOH, C=$NaNH_2$

(b) A=Br_2, B=HCl, C=$NaNH_2$

(c) A =Br_2, B = HCl, C = $NaBH_4$

(d) A = Br_2, B = KOH, C = $NaBH_4$

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 NAME OF THE DRUG		LIST - II 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

77. One of the following match is correct choose it

(a) M_1 Acetylcholine receptors confined to brain M_2 Acetylcholine receptors neural M_3 Acetyl choline receptors are cardiac M_4 Acetylcholine receptors glandular

(b) M_1 Acetylcholine receptors neural M_2 Acetylcholine receptors confined to brain M_3 Acetylcholine receptors are cardiac M_4 Acetylcholine receptors glandular

(c) M_1 Acetylcholine receptors neural M_2 Acetylcholine receptors cardiac M_3 Acetylcholine receptors are confined to glandular M_4 Acetylcholine receptors confined to brain

(d) M_1 Acetylcholine receptors glandular M_2 Acetylcholine receptors neural M_3 Acetylcholine receptors are confined to brain M_4 Acetylcholine receptors to cardiac

78. _____ is a protein marker which can be detected within three hours of acute ischemic kidney injury from patient's urine

(a) N-acetyl- β-D-glucose aminidase

(b) Glutathione-S-transferase

(c) Neutrophil gelatinase associated lipocalin

(d) γ-glutamyl transpeptidase

79. Which of the following genes responsible for graft rejection in humans

(a) Highly polymorphic HLA genes

(b) APP genes

(c) hMSH2 gene

(d) FMR1 gene

80. Match List I with List II

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

Choose the correct answer from the options given below

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

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

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

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

81. Most common type of megaloblastic anemia caused by malabsorption of vitamin B_{12} and characterized by decreased production of hydrochloric acid in the stomach and a deficiency of intrinsic factor is

(a) Iron deficiency anemia

(b) Sideroblastic anemia

(c) Pernicious anemia

(d) Aplastic anemia

82. Which of the following is not an ACE inhibitor

(a) Captopril (b) Trandolapril

(c) Verapamil (d) Lisinopril

83. Which of the following combination is correct

(a) Nucleoside reverse transcriptase inhibitors (NRTIs) - Ritonavir

(b) Protease inhibitors - Indinavir

(c) lntegrase inhibitors - Saquinavir

(d) Non-nucleoside reverse transcriptase inhibitors (NNRTIs) - Tenofovir

84. Choose the most appropriate answer

[P] *Enterobius vermicularis*-Pin worm

[Q] *Strongyloides stercoralis*-Thread worm

[R] *Wuchereria bancrofti*-Filarial worm

[S] *Dracunculus medinensis*-Guinea worm

(a) Only Q and R are correct

(b) Only P and Q are correct

(c) P, Q, R and S are correct

(d) Only Q, R and S are correct

85. _____ activates G-protein gated potassium channel resulting in membrane hyperpolarization

(a) α_1 adrenergic receptor

(b) α_1 adrenergic receptor

(c) β_1 adrenergic receptor

(d) β_2 adrenergic receptor

ANSWER KEY GPAT-2023

SHIFT - II

1-c	2-a	3-b	4-c	5-c	6-d	7-b	8-a	9-a	10-b
11-a	12-a	13-d	14-b	15-b	16-b	17-d	18-c	19-c	20-b
21-a	22-a	23-a	24-b	25-d	26-d	27-d	28-c	29-d	30-d
31-b	32-d	33-d	34-a/c	35-c	36-a	37-b	38-a	39-*	40-*
41-a	42-d	43-c	44-d	45-a	46-b	47-c	48-a	49-b	50-b
51-b	52-b	53-a	54-a	55-c	56-a	57-b	58-b	59-a	60-d
61-b	62-d	63-c	64-a	65-a	66-a	67-a	68-a	69-d	70-d
71-a	72-a	73-c	74-b	75-b	76-a	77-c	78-c	79-a	80-c
81-c	82-c	83-b	84-c	85-b	86-a	87-d	88-a	89-a	90-c
91-b	92-b	93-b	94-a	95-b	96-a	97-d	98-a	99-d	100-a
101-c	102-c	103-d	104-b	105-a	106-d	107-a	108-d	109-b	110-c
111-a	112-d	113-a	114-d	115-b	116-c	117-b	118-b	119-b	120-c
121-a	122-a	123-b	124-c	125-b					

GPAT-2022

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. The intracellular fluid volume including those of the blood cells is approximately
   (a) 15 litres (b) 20 litres
   (c) 27 litres (d) 35 litres

2. India's first Central Drug Laboratory was established at
   (a) Mumbai (b) Lucknow
   (c) Kolkata (d) Hyderabad

3. Which of the following instrument is used to determine surface area and pore structure of pharmaceutical powders
   (a) Coulter counter (b) Andrerson apparatus
   (c) Quantasorb (d) Optical microscopy

4. 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

5. The below mentioned complex is not the type of inclusion compounds
   (a) Channel-Lattice type
   (b) Quinhydrone complex
   (c) Layer type
   (d) Clathrates

6. 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

7. 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

8. 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

9. 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

10. Match List I of Unit operations of crystallizers with List II of principle/characteristics properties of crystallizer

CRYSTALLIZER UNIT OPERATIONS	PRINCIPLE/CHARACTERISTICS 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]

11. The process of establishing a product in the minds of target customer is called as

(a) Product positioning
(b) Product differentiation
(c) Product targeting
(d) Market segmentation

12. Which of the following materials are specified as a suitable diluent for powdered opium

[A] Powdered grass
[B] Powdered cocoa husk
[C] Lactose colored with burnt sugar
[D] Powdered digitalis

Choose the correct answer from the options given below

(a) [A] and [D] only (b) [B] and [D] only
(c) [B] and [C] only (d) [A] and [C] only

13. Which of the following statement is false

[DROPPED QUESTION]

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

14. In the process of sugar coating, to prevent moisture penetration into the tablet core, which one of the following step is performed

(a) Seal Coating (b) Subcoating
(c) Syrup Coating (d) Polishing

15. Oral efficacy of Sabin Polio Vaccine can be adequately explained by which of the following processes of absorption

(a) Passive diffusion (b) Active transport
(c) Ion - pair transport (d) Pinocytosis

16. Hospital Formulary contains information on the following parameters EXCEPT

(a) Composition
(b) Indication
(c) Pricing
(d) Dosage and administration

17. Which one of the following is a rate equation for second order bimolecular reaction if, a and b are the initial concentrations of A and B, respectively, and x is the concentration of each species reacting in time t and k is second-order reaction

(a) $k = [2.303/ t(a - b)] \times [\log a(a - x) / b(b - x)]$
(b) $k = [2.303/ t(a - b)] \times [\log b(a - x) / a(b - x)]$
(c) $k = [2.303/ t(a - b)] / [\log b(a - x) / a(b - x)]$
(d) $k = [2.303/ t(a - b)] / [\log a(a - x) / b(b - x)]$

18. Which of the following DRYERS is a "static bed dryer"

(a) Freeze dryer (b) Fluid bed dryer
(c) Spray dryer (d) Flash dryer

19. In thermoplastic materials, which are used as a container/packaging material, additives like polyethylene and polypropylene are used as

[DROPPED QUESTION]

(a) Plasticizer (b) Stabilizers
(c) Surface treatment film (d) Slip agent

20. Match List I with List II

LIST I	LIST II
1. When two dosage forms have equal t_{max}	[P] When their total body clearance is constant
2. AUC values of the two analogs can be compared to measure relative bioavailability	[Q] Absorption rate constants are equal
3. Urinary data is valid to measure bioavailability	[R] When fraction absorbed and elimination rate is constant
4. C_{max} is proportional to the rate of absorption	[S] Excretion of drug and/or metabolite is related to the bioavailable dose

Choose the CORRECT answer from the options given below

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

21. Boston Consulting Group (BCG) Matrix is used for

(a) Product life cycle management
(b) SWOT analysis
(c) Product portfolio management
(d) Gap analysis

41. A typical skin cream consisting of stearic acid, potassium hydroxide, glycerin, water, preservative and perfume, would be commonly known as
(a) Cold cream
(b) Vanishing cream
(c) Foundation cream
(d) All purpose cream

42. Which of the following conjugation reactions DOES NOT REQUIRE reaction with an activated conjugating agent
(a) Glucouronidation
(b) Sulfation
(c) Methylation
(d) Glutathione conjugation

43. Stability index, determined for evaluating the stability of oil– water viscous emulsions, based on electric conductivity changes during non-destructive short heating–cooling–heating cycles
[A] is defined as Δ/h, where h is the change in the conductivity between 35°C and 45°C and Δ is the conductivity interval within the two heating curves at 35°C
[B] Indicates the relative change in enthalpy between two cycles
[C] is defined as 2Δ/h, where h is the change in the conductivity between 35°C and 45°C and Δ is the conductivity interval within the two heating curves at 35°C
[D] Indicates the relative change in conductivity between two cycles
Choose the CORRECT answer from the options given below
(a) [A] and [B] only (b) [B] and [C] only
(c) [C] and [D] only (d) [D] and [A] only

PHARMACOLOGY

44. Match List I with List II Match the following drugs with their classes

LIST I DRUGS	LIST II CLASSES
1. Anakinra	[P] IL-2 receptor antagonist
2. Basiliximab	[Q] TNF_{α} inhibitors
3. Infliximab	[R] Calcineurin inhibitors
4. Tacrolimus	[S] mTOR inhibitors
	[T] IL-1 receptor antagonist

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

45. Which of the following is a malignant type of tumor
(a) Lipoma (b) Adenoma
(c) Melanoma (d) Osteoma

46. In human body _____ system operates to maintain pH of blood plasma
(a) The acetate buffer
(b) The lysis buffer
(c) The potassium citrate
(d) The carbonic acid

47. Match List I with List II Match the following with their mechanism of action

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

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

GPAT-2021

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. **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

2. **Match List I with List II**
   List - I (Equipment)
   1. Low shear mixer
   2. Rotary tablet machine
   3. Capsule filling machine
   4. Compaction mill
   List - II (Model/Trade Name/Type)
   [P] Manestry 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]

3. **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

4. **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

5. **Name the popular system for ocular delivery of Pilocarpine, based on membrance controlled reservoir systems**
   (a) Ocusert (b) Alzet pump
   (c) Progestasert (d) Nitrodur

6. **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

7. **The system volume is increased when sheared is called**
   (a) Dilatant flow (b) Newtonian flow
   (c) Plastic flow (d) Pseudoplastic flow

8. **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

9. **Which of the following ointment bases is an ingredient of an absorption base**
   (a) Petrolatum
   (b) Lanolin
   (c) Hydrogenated castor oil
   (d) Cetyl alcohol

10. **Chitosan possesses which of the following property**
    (a) Hypocholesterolemic
    (b) Antimicrobial
    (c) Wound healing
    (d) All of these

11. **p-gp (p-glycoprotein) is highly expressed on the**
    (a) Lungs
    (b) Pancreas
    (c) Superficial columnar epithelial cells of ileum and colon
    (d) Heart

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 course 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) Peptisation (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

121. Production of Acetyl methyl carbinol can be detected by which of the following test

(a) Voges-proskaver test
(b) Indole test
(c) Citrate utilization test
(d) Methyl red test

122. Following amino acid does not exhibit optical isomerism

(a) Serine (b) Alanine
(c) Glycine (d) Leucine

123. Following is the important sterol in faeces formed from cholesterol by bacteria in lower intestine

(a) 7-α-Hydroxy cholesterol
(b) Coprostanol
(c) 7-Dehydrocholesterol
(d) Lithocholic acid

124. SCHICK Test Toxin is a sterile Filtrate from a culture of

(a) *Rickettsia prowazekii*
(b) *Mycobacterium diphtheriae*
(c) *Corynebacterium diphtheriae*
(d) *Actinobacillus mallei*

125. Which one of the following is NOT the biochemical marker of all death

(a) Phospholipase
(b) Creatine kinase
(c) Lipase
(d) Amylase

ANSWER KEY GPAT-2020

1- b	2- a	3- b	4- d	5- a	6- c	7- b	8- a	9- a	10- d
11- c	12- b	13- b	14- b	15- a	16- c	17- d	18- d	19- c	20- d
21- d	22- d	23- c	24- b	25- b	26- c	27- d	28- b	29- b	30- a
31- c	32- b	33- d	34- d	35- a	36- c	37- c	38- b	39- a	40- c
41- d	42- c	43- c	44- d	45- c	46- d	47- a	48- d	49- b	50- d
51- a	52- b	53- c	54- a	55- d	56- d	57- c	58- c	59- d	60- a
61- c	62- d	63- a	64- b	65- d	66- c	67- d	68- d	69- a	70- c
71- d	72- d	73- d	74- c	75- a	76- c	77- a	78- a	79- a	80- b
81- b	82- c	83- c	84- a	85- c	86- c	87- c	88- b	89- a	90- d
91- a	92- a	93- a	94- a	95- a	96- a	97- c	98- d	99- c	100- b
101- b	102- c	103- d	104- d	105- a	106- d	107- a	108- a	109- a	110- b
111- a	112- a	113- a	114- d	115- c	116- a	117- b	118- d	119- b	120- c
121- a	122- c	123- b	124- c	125- a					

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 emulsification 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 entitles 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) ±75% (b) ±5%
(c) ± 10% (d) ±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

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

- The flagged question simply indicates that you would like to look at the question again.
- If a question is answered than flagged will not be considered in the evaluation.

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.
- **Caution:** Note that if the answer you will not save and you navigate to another question directly by clicking on its question number that will not be marked.

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-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 α = Radius/Height

(b) tan α = 1+ Radius/Height

(c) tan α = 1- Radius/Height

(d) tan α = 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-2017

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. Which of the following is NOT a thermoplastic resin

(a) Phenolic plastic resin
(b) Polystyrene
(c) Polyethylene
(d) Polypropylene

2. Which among the following statements describing surface activity for surfactants is INCORRECT

(a) Increase in length of hydrocarbon chain decreases surface activity
(b) Increase in ethylene oxide chain of polyoxy ethylated nonionic surfactant ethylene decrease of surface activity
(c) Increase in the surface activity results in decrease in surface tension
(d) Relationship between hydrocarbon chain length and surface activity is expressed by Traube's rule

3. Type IV dissolution apparatus as per USP is

(a) Flow through cell
(b) Paddle type apparatus
(c) Reciprocating cylinder
(d) Paddle over disk apparatus

4. (Weight in pounds/150) × Adult Dose = Child dose, The above formula is known as _____ in Posology

(a) Young's formula (b) Dilling's formula
(c) Clark's formula (d) Fried's formula

5. The type of particle diameter obtained by microscopic method of evaluation is

(a) Projected diameter
(b) Surface – Volume diameter
(c) Volume - Surface diameter
(d) Stokes diameter

6. Apparent volume of distribution will be highest in case of the drug with % plasma protein binding

(a) 10 (b) 89
(c) 50 (d) 68

7. The useful variable form in vitro dissolution test data for IVIVC includes

(a) $t_{50\ \%} - t_{63.2\%}$
(b) Sampling interval
(c) Sample volume
(d) Volume of dissolution fluid

8. For the measurement of particle size of powders, the distance measured between two tangents on opposite sides of the particle parallel to some fixed direction is called

(a) Feret diameter
(b) Martin diameter
(c) Projected area diameter
(d) Edmundson diameter

9. If the drug substance has been substituted wholly or in part by another drug or substance, it is called as

(a) Spurious drug (b) Adulterated drug
(c) Misbranded drug (d) Mixed drug

10. Antioxidant used as blocking agent in sterile product is

(a) Ascorbic acid esters
(b) Sodium bisulphate
(c) Ascorbic acid
(d) EDTA

11. Bulk product is defined as

(a) Product completing all processing stages but not necessarily final packing
(b) A product ready for final dispatch
(c) Raw material used for making final dosage form
(d) A defined quantity of raw material from the same batch

12. If the pKa of lidocaine is 7.9 and pH of the infected tissue is 8.9, the fraction of drug in the ionized form will be

(a) 10% (b) 1%
(c) 90% (d) 99%

(a) Distillation under reduced pressure
(b) Molecular distillation
(c) Steam distillation
(d) Fractional distillation

26. Free flowing powders show a flatter cone and have
(a) Smaller angle of repose
(b) Larger angle of repose
(c) Intermediate angle of repose
(d) None of these

27. The number of glucopyranose units in the structure of alpha cyclodextrins are
(a) 8 (b) 9
(c) 7 (d) 6

28. Dielectric constant of Ethanol at room temperature is almost equal to
(a) 24 (b) 48
(c) 54 (d) 72

29. The WIPO is the specialized agency of the United Nations. It promotes protection of _____throughout the world
(a) Intellectual properties
(b) World properties
(c) Pharmaceutical organizations
(d) Finance companies

30. Foaming during liquid filling can be reduced by following ways, EXCEPT
(a) Increase in speed of the filling line
(b) Minimised product turbulence
(c) Closed system filling
(d) Defoaming device

31. Indicate which of the following statements is TRUE
(a) A weakly acidic drug is unionised when pH of the solution is atleast 2 pH units below its pKa
(b) Acidic drugs are noninonized at pH 9
(c) Acidic drugs are less soluble in alkaline solution
(d) The higher the pKa of a weak acid, the stronger is acid

32. As per I.P. if the solubility range of a solute is 30 to 100 parts, it will be
(a) Soluble (b) Freely soluble
(c) Sparingly soluble (d) Slightly soluble

33. The preferred rheological behavior of Pharmaceutical suspensions is that of
(a) Pseudoplasticity and Thixotrophy
(b) Pseudoplasticity
(c) Dilatancy and Thixotrophy
(d) Pseudoplasticity and Rheopexy

34. Using Young's rule, calculate the dose for a 5 year old child if the adult dose is 340mg
(a) 200 mg (b) 100 mg
(c) 400 mg (d) 800 mg

35. Surface tension is categorized as a/an _____ factor
(a) Capacity (b) Intensive
(c) Extensive (d) Tolerance

PHARMACOLOGY

36. Which among the following is a structural variant of GABA and is used as a muscle relaxant
(a) Metocurine (b) Tybamate
(c) Baclofen (d) Cyclobenzaprine

37. A patient receiving warfarin develops rheumatoid arthritis. Which one of the following drugs would be contraindicated
(a) Ibuprofen (b) Tolmetin
(c) Aurothioglucose (d) Aspirin

38. Which of the following statement regarding cerebral hemisphere is TRUE
(a) The right and left hemisphere are symmetrical
(b) This right more important for spoken and written language
(c) The left hemisphere is more important for musical and artistic awareness
(d) Hemispheric lateralization is more pronounced in male than in female

39. Which among the following are the salient features of Glucocorticoids
(a) Gets combined with highly specific cytosolic glucocorticoids
(b) They promote phagocytosis by macrophages
(c) Releases of lytic enzymes
(d) Increases lipid eicosanoids and prostaglandin genes

69. As per first schedule of Drugs and Cosmetics Act 1940 following is name of the book under Siddha system of medicine

(a) Arka Prakasha (b) Yog Ratnakar
(c) Nagamuni (d) Vrinda Chikitsa

70. Which of the following genera is NOT the source for tropane alkaloids

(a) Datura (b) Duboisia
(c) Nicotiana (d) Atropa

71. Which of the following alkaloid (form) is used to treat migrane

(a) Vinca (b) Coca
(c) Ergot (d) Belladonna

72. Glycosides are condensation products of

(a) Protein + Aglycone (b) Sugar + Protein
(c) Sugar + Aglycone (d) Fats + Aglycone

73. Which of the following alkaloids has hypotensive activity

(a) Emetine (b) Quinine
(c) Reserpine (d) Papaverine

PHARMACEUTICAL CHEMISTRY

74. Neuropathy is adverse effect of

(a) Isoniazid (b) Ethambutol
(c) Pyrazinamide (d) Dapsone

75. The compound 2 - (Diethylamino) ethyl [bicyclohexyl]- 1-carboxylate hydrochlo -ride is

(a) Dicycloverine
(b) Diphenhydramine
(c) Both nicotinic and specific antispasmodic
(d) Diagnostic agent for diagnosis of thyroid gland

76. Condensation product of Ethyl isopentyl ester of diethyl malonic acid with urea and sodium ethoxide yields

(a) Amylobarbitone (b) Phenobarbitone
(c) Pentobarbitone (d) Quinobarbitone

77. An intermediate 3- Chloroaniline 4, 6 – disulphonamide on heating with formic acid yields a compound

(a) 6 chloro 2H -1, 2, 4 Benzothiadiazine 7 sulphonamide
(b) 3 chloro-2H-1, 2, 4- Benzothiadiazine 7 sulphonamide
(c) Used in treatment of urinary tract infections
(d) Used as antibacterial

78. Which among the following statements related to ceric sulphate as oxidizing agent, as titrant are correct

(a) Ce (IV) during reaction exists as an anionic complex in media of Sulphuric acid
(b) Ionic equation is $Ce^{3+} \rightarrow Ce^{2+} + e^-$
(c) Formal potential of Ce (III) Ce (II) couple is 1
(d) Ce (IV) does not permit use of HCl as reducing media

79. Naphazoline is

(a) Is used for relief of nasal congestion
(b) Exhibits peripheral beta-adrenoceptor stimulant
(c) Is a pyrazoline derivative
(d) Chemically, is 1H Imidazole, 3, 4-dihydro-2–(3-naphthylmethyl) monohydrochloride

80. Match the following adrenergic drugs with their receptor affinity

1. Epinephrine	**[P] More alpha 1, no beta 1, beta 2 & dopamine**
2. Noradrenaline	**[Q] More alpha 1 & beta 1, less beta 2, no dopamine**
3. Phenylephrine	**[R] More beta 1 & beta 2, no alpha 1 and dopamine**
4. Dobutamine	**[S] More alpha 1 & beta 1, no beta 2 & dopamine**

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

81. Which among the following is an INCORRECT statement with regard to the drug Dantrolene

(a) It is a pyrazoline derivative
(b) It is an imidazoline analogue
(c) It is a nitrophenyl furfurylidene derivative
(d) It is a skeletal muscle relaxant

116. Product,_____and Promotion are four 'P's of marketing

(a) Price and Place
(b) Place
(c) Process
(d) Production, Process, Price, Production

117. Beta oxidation of fatty acids takes place in

(a) Mitochondria (b) Cytoplasm
(c) Nucleus (d) Chloroplast

118. The first vaccine was discovered by

(a) DeBary (b) Paul Ehrlich
(c) Robert Koch (d) Edward Jenner

119. Following are the list of various inherited metabolic disorders that can affect functioning of liver

1. Primary biliary cirrhosis
2. Glycogen storage disease
3. Gilbert's syndrome
4. Haemochromatosis
5. Wilson's disease

(a) 1, 2, 3, 4 (b) 2, 3, 4, 5
(c) 1, 3, 4, 5 (d) 1, 2, 4, 5

120. High lightening differences among brands within the same product category is

(a) Product brand
(b) Brand launch
(c) Product differentiation
(d) Branding

121. The Michaelis-Menten hypothesis

(a) Postulates the formation of an enzyme substrate complex
(b) Enables us to calculate the isoelectric point of an enzyme
(c) States that the rate of a chemical reaction maybe independent of substrate concentration
(d) States that the reaction rate is proportional to substrate concentration

122. The largest gene in human is

(a) Dystrophin (b) Titin
(c) Insulin (d) Phosphofructokinase

123. A labeled piece of DNA that is complementary to the sequence of DNA you are interested in, say the gene you are trying to put into cells, is called as

(a) A probe (b) A receptor
(c) A epitope (d) A target

124. The Michaelis-Menten equation for standard for saturated active transport system is

(a) $V_{max} = k_{cat}[E_0]$ (b) $V_{max} = k_m$
(c) $V_{max} = k_m[S]$ (d) None of these

125. In humans end product of purine catabolism is

(a) Uric acid (b) Urea
(c) Purine oxide (d) Xanthine

ANSWER KEY GPAT-2017

1- a	2-a	3-a	4-c	5-a	6-a	7-a	8-a	9-a	10-a
11-a	12-c	13-b	14-a	15-a	16-a	17-a	18-a	19-a	20-a
21-a	22-d	23-a	24-b	25-b	26-a	27-d	28-a	29-a	30-a
31-a	32-c	33-a	34-b	35-b	36-c	37-d	38-d	39-a	40-a
41-a	42-b	43-a	44-c	45-a	46-c	47-c	48-a	49-a	50-c
51-a	52-a	53-a	54-a	55-a	56-a	57-a	58-a	59-d	60-a
61-a	62-a	63-b	64-a	65-a	66-a	67-b	68-a	69-c	70-c
71-c	72-c	73-c	74-a	75-a	76-a	77-a	78-a	79-a	80-a
81-a	82-b	83-d	84-b	85-a	86-d	87-b	88-a	89-c	90-d
91-a	92-a	93-d	94-c	95-a	96-a	97-b	98-a	99-a	100-a
101-a	102-a	103-a	104-a	105-c	106-a	107-a	108-a	109-a	110-d
111-a	112-a	113-a	114-a	115-a	116-a	117-a	118-d	119-b	120-c
121-a	122-a	123-a	124-a	125-a					

GPAT-2016

PY - PHARMACEUTICAL SCIENCES

PHARMACEUTICS

1. OROS is a technology developed for/as

(a) Oral release rapid onset system

(b) Orally rapid disintegrating tablets

(c) Osmotic controlled oral drug delivery system

(d) Transdermal drug delivery system

2. The Gibb's Phase rule

(a) Holds only for systems with more than components

(b) Predicts that a maximum of three phase can exits in one components system

(c) Does not count phase compositions as intensive variables

(d) Does not count pressure and temperature as intensive variables

3. The displacement value is defined as

(a) Quantity of drug which displace one part of the base

(b) Quantity of base which displace one part of the drug

(c) Quantity of drug which displace one part of the acid

(d) Quantity of base which displace one part of the acid

4. Clausius-Clapeyron equation is use to express the relationship between

(a) Vapor pressure and absolute temperature

(b) Rate of vaporization at a definite temperature

(c) Rate of vaporization at a definite pressure

(d) Vapor pressure and boiling point

5. IPEC deals with

(a) Excipient (b) USFDA

(c) GMP (d) GLP

6. The Reynolds number is defined as

(a) Measure of the ratio of inertial forces $\rho V^2/L$ to viscous forces $\mu V/L^2$

(b) Measure of the ratio of inertial forces $\rho V^2/L$ to Non viscous forces

(c) Measure of the ratio of viscous forces $\mu V/L^2$ to inertial forces $\rho V^2/L$

(d) Measure of the ratio of non-viscous forces to inertial forces $\rho V^2/L$

7. Which of the following equation is CORRECT to determine the pH of weak base

(a) $pH = pK_a$ + log ionized drug conc./unionized drug conc.

(b) $pH = pK_a$ + log unionized drug conc./ionized drug conc.

(c) $pH = pK_a$ - log ionized drug conc./unionized drug conc.

(d) $pH = pK_a$ + antilog unionized drug conc./ ionized drug conc.

8. Which of the following is a propellant number of dichlorotetrafluoroethane

(a) 114 (b) 014

(c) 124 (d) 012

9. Auristillae is the latin term for

(a) Eye drop (b) Ear drop

(c) Nasal drop (d) Spray solution

10. DLVO theory is

[P] Derjaguin Landau Verwey Overbeek theory

[Q] Used to explain double electric layer theory

[R] Used to explain stability ointments

[S] Used to explain Brownian movement of colloids

(a) [P], [Q] (b) [Q], [R]

(c) [R], [S] (d) [Q], [S]

11. 0.1gms contains

(a) 1000 mg (b) 100 mg

(c) 10 mg (d) 1 mg

12. When the angle of contact between a solid and a liquid is 90°, then

(a) Cohesive force > Adhesive force

(b) Cohesive force < Adhesive force

(c) Cohesive force = Adhesive force

(d) Cohesive force >> Adhesive force

PHARMACOLOGY

42. Which of the following is rate limiting step in synthesis of catecholamines

(a) Conversion of Dopa to dopamine by dopa decarboxylase

(b) Conversion of tyrosine to L-Dopa in presence of enzyme tyrosine hydroxylase

(c) Conversion of dopamine to NA by dopamine β-hydroxylase

(d) Conversion of Noradrenaline to adrenaline by N-methyltransferase

43. Colistin is obtained from

(a) Bacteria (b) Fungi

(c) Actinomycetes (d) Herbs

44. Loss of therapeutic efficacy after prolonged/ intensive use of drug

(a) Refractoriness (b) Resistance

(c) Tachyphylaxis (d) Idiosyncrasy

45. Match the following

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

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

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

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

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

46. 5-HT_{2A} antagonist is

(a) Clozapine (b) Ketanserin

(c) Sumatriptan (d) Cisapride

47. Pernicious anemia is a form of which class of anemia

(a) Microcytic normochromic

(b) Microcytic hypochromic

(c) Macrocyclic megaloblastic

(d) Macrocyclic non-megaloblastic

48. LISPRO an analog of insulin defers from insulin by which amino acids

(a) Lysine and proline

(b) Leucine

(c) Lysine and phenylalanine

(d) Leucine and phenylalanine

49. What is the normal glomerular filtration rate

(a) 120ml/min (b) 140ml/min

(c) 240ml/min (d) 120ml/hr

50. Which of the following is an anabolic steroid

(a) Methyltestosterone

(b) Fluoxymesterone

(c) Nandrolone

(d) Danazole

51. Terbinafine acts as

(a) Competitive inhibitor of squalene epoxidase

(b) Noncompetitive inhibitor of squalene epoxidase

(c) Competitive inhibitor of folate synthatase

(d) Noncompetitive inhibitor of folate synthetase

52. Belladona poisoning may occur due to drug overdose or consumption of seeds and berries of belladonna plant, thus that poisoning can be overcome by

(a) Homatropine (b) Digitoxine

(c) Cinchonidine (d) Physostigmine

53. Cisplatin having high

(a) Neurotoxicity (b) Hepatotoxicity

(c) Nephrotoxicity (d) MAO inhibition

54. Which of the following drugs are often found in both prescription and over the counter nasal decongestants

(a) Alpha 2 agonists (b) Alpha 1 agonists

(c) Alpha 1 antagonists (d) Beta 2 agonists

55. A patient with rheumatoid arthritis has been taking acetyl salicylic acid regularly, However, recently she has been experiencing stiffness, swelling and pain due to salicylate resistance. She has occult blood in her faces. Suggest an appropriate drug suitable for her from those mentioned below

(a) Paracetamol (b) Celecoxib

(c) Piroxicam (d) Naproxen

82. Sodium cromoglycate has been developed from the molecule which is found in the *Ammi visnaga* is

(a) Amarogentin (b) Khellin

(c) Tubocurarine (d) Physostigmine

PHARMACEUTICAL CHEMISTRY

83. In S_N2 reaction mechanism the product obtained from optically active halide shows

(a) Complete racemization

(b) Partial racemization

(c) Retention of configuration

(d) Complete inversion of configuration

84. Identify the CORRECT name for CORTISONE

(a) 4 pregnane 17α, 21 diol 3, 11, 20-trione

(b) 3 Pregnane 17α, 21 diol 3, 11, 20-trione

(c) 4 Pregnane 11β, 17α, 21 triol 3, 20-dione

(d) 4 Pregnane 12β, 17α, 21 triol 3, 20-dione

85. The polarity of water molecule is due to

(a) Difference in electronegativity of oxygen and hydrogen atoms in water

(b) The readily ionizing behavior of water

(c) The positive charge of water molecule

(d) The negative charge of water molecule

86. Miglitol is chemically

(a) 2, 3, 4 – pyridine triol

(b) 2, 3, 4 – piperidine triol

(c) 3, 4, 5 – pyridine triol

(d) 3, 4, 5 – piperidine triol

87. An antidiabetic drug is l-[4-[-2-(5-chloro-2-methoxybenzamido) ethyl] phenyl-Sulphonyl)-3- Cyclohexylurea. The generic name of the drug is

(a) Glyburide (b) Gliclazide

(c) Glipizide (d) Gliquidone

88. In Triamterene structure the substitution of $-NH_2$ at different position are

(a) 1, 4, 6 (b) 2, 4, 7

(c) 3, 5, 7 (d) 1, 3, 5

89. In Misoprostol the hydroxyl group at position

(a) 6, 11 (b) 11, 16

(c) 9, 16 (d) 11, 15

90. What is the best definition of Tautomers

(a) Constitutional isomers that readily interconvert

(b) Stereoisomers that do not have a mirror image relationship

(c) Structures that differ only by rotation around single bond

(d) Isomers that have their atoms connected in the same order but have different three dimensional arrangements

91. Identify the one which is a common Auxochrome

(a) –C=C (b) –OH

(c) –C=O (d) R-O-R'

92. Conversion of phenyl acetate into o-hydroxyl acetophenone or p-ortho hydroxyl acetophenone in presence of anhydrous $AlCl_3$, the reaction known as

(a) Friedel crafts reaction

(b) Fries rearrangement

(c) Reimer-Tiemann reaction

(d) Oppenauer oxidation

93. The stereo chemistry of Morphine is

(a) 5S, 6R, 9S, 13R, 14S

(b) 5S, 6R, 9S, 13R, 14R

(c) 5S, 6R, 9S, 13S, 14S

(d) 5R, 6S, 9R, 13S, 14R

94. The correct order of basicity is

[P] Pyrrole [Q] Indole

[R] Pyridine [S] Piperidine

(a) [P]>[Q]>[R]>[S] (b) [Q]>[P]>[R]>[S]

(c) [R]>[P]>[Q]>[S] (d) [S]>[R]>[P]>[Q]

95. Rubreserine is a metabolic product of

(a) Neostigmine (b) Pyridostigmine

(c) Physostigmine (d) Rivastigmine

96. Acridine and Xanthene rings are related to each other in that

(a) Xanthene is oxygen isoster of Acridine

(b) Acridine is oxygen isoster of Xanthene

(c) Xanthene is nitrogen isoster of Acridine

(d) Xanthene is sulfur isoster os Acridine

42. Identify the incorrect statement

(a) Co- solvency is a solubility enhancement technique

(b) Shake flask method is used to determine partition coefficient

(c) Solubility of a highly soluble salt is decreased by adding a common ion in common ion effect

(d) Diffuse Reflectance Spectroscopy is used for drug- excipient study analysis

PHARMACOLOGY

43. Inflammation of soft tissue due to hyaluronidase is called as

(a) Tendinitis

(b) Bursitis

(c) Cellulitis

(d) Cumulative Injury Disorder (CID)

44. Which of the following drug prevents uric acid synthesis by inhibiting the enzyme xanthine oxidase

(a) Paracetamol (b) Allopurinol

(c) Sulfasalazine (d) Aspirin

45. Which of the following substances is a organophosphorus insecticide

(a) Diazoxide (b) Tacrine

(c) Donepezil (d) Rotenone

46. British antilewisite is

(a) Dimercaprol (b) Succimer

(c) D- penicillamine (d) Deferoxamine

47. Which of the following Calcium channel blocker is Phenyl alkyl derivative

(a) Nimodipine (b) Nifedipine

(c) Diltiazem (d) Verapamil

48. Which one of the following is systemic antacid

(a) Magnesium hydroxide

(b) Sodium Citrate

(c) Sucralfate

(d) Carbenoxolone

49. A competitive antagonist is a substance that

[P] Interacts with receptors and produces submaximal effect

[Q] Binds to the same receptor site and progressively inhibits the agonist response

[R] Binds to the nonspecific sites of tissue

(a) [P] true, [Q] & [R] false

(b) [P] & [Q] true, [R] false

(c) [Q] true, [P] & [R] false

(d) [Q] & [R] true, [P] false

50. Antiretroviral Raltegravir is unique, because of which of its following actions

(a) Integrase inhibition

(b) CCR5 Co-receptor antagonism

(c) Fusion inhibition

(d) Reverse transcriptase inhibition

51. Out of the following anticancer drug cardiotoxicity is seen in

(a) Mitomycin-C (b) Doxorubicin

(c) Methotrexate (d) Cyclophosphamide

52. This drug is a Class IC antiarrhythmic drug

(a) Flecainide (b) Sotalol

(c) Lidocaine (d) Verapamil

53. The decreasing order of Narcotic action is

(a) Morphine, Codeine, Papaverine, Narcotine, Thebaine

(b) Morphine, Codeine, Thebaine, Papaverine, Narcotine

(c) Morphine, Papaverine, Codeine, Narcotine, Thebaine

(d) Morphine, Papaverine, Narcotine, Codeine, Thebaine

54 Which of the following pairs has an interaction beneficial for routine clinical use

(a) Pseudoephedrine and $Al(OH)_3$ gel

(b) Tetracycline and milk of magnesia

(c) MAO inhibitors and Tyramine

(d) Chloramphenicol and Tolbutamide

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 Anabasine 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 lebelled as Assertion [A] and the other is lebelled 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]

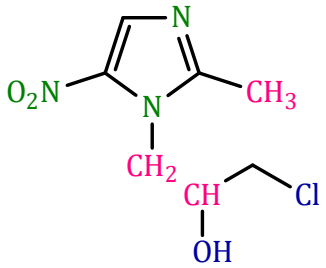
(b) [A] is true but [R] is false

(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

78. Which one of the following statements is NOT true

(a) Accuracy expresses the correctness of measurement
(b) Precision represents reproducibility of measurement
(c) High degree of precision implies high degree of accuracy also
(d) High degree of accuracy implies high degree of precision also

79. In Thiazides following substituent is essential for diuretic activity

(a) Chloro group at position 6
(b) Methyl group at position 2
(c) Sulphamoyl group at position 7
(d) Hydrophobic group at position 3

80. Streptomycin can NOT be given orally for treatment of tuberculosis because

(a) It gets degraded in the GIT
(b) It causes severe diarrhoea
(c) It causes metallic taste in the mouth
(d) It is not absorbed from the GIT

81. In organic molecules, fluorescence seldom results from absorption of UV radiation of wavelengths lower than

(a) 350 nm (b) 200 nm
(c) 300 nm (d) 250 nm

82. Glass transition temperature is detected through

(a) X-Ray diffractometery
(b) Solution calorimetry
(c) Differential scanning calorimetry
(d) Thermogravimetric analysis

83. In Gas-Liquid Chromatography, some of the samples need to be derivatized in order to increase their

(a) Volatility
(b) Solubility
(c) Thermal conductivity
(d) Polarisibility

84. Oxidative phosphorylation involves

(a) Electron transport system
(b) Substrate level phosphorylation
(c) Reaction catalyzed by succinic thiokinase in TCA cycle
(d) None of the above

85. Coulter counter is used in determination of

(a) Particle surface area
(b) Particle size
(c) Particle volume
(d) All of the above

86. Drugs following one compartment open model pharmacokinetics eliminate

(a) Bi-exponentially (b) Tri-exponentially
(c) Non-exponentially (d) Mono-exponentially

87. The temperature condition for storage of drug products under cold temperature is given as

(a) Temperature between 8°C and 25°C
(b) Temperature below 20°C
(c) Temperature at 0°C
(d) Temperature between 2°C and 8°C

88. Many xenobiotics are oxidized by cytochrome P450 in order to

(a) Increase their biological activity
(b) Increase their disposition in lipophilic compartments of the body
(c) Increase their aqueous solubility
(d) All of the above

89. The following protein/polypeptide has a quaternary structure

(a) Chymotrypsin (b) Hemoglobin
(c) Insulin (d) Myoglobin

90. Drugs in suspensions and semi-solid formulations always degrade by

(a) First order kinetics (b) Second order kinetics
(c) Zero order kinetics (d) Non-linear kinetics

91. In nail polish, following polymer is used as a film-former

(a) Nitrocellulose
(b) Polylactic acid
(c) Hydroxypropyl methylcellulose
(d) Cellulose acetate phthalate

92. Rabies vaccine (living) is prepared using

(a) Sheep blood (b) Mice lymph

(c) Horse plasma (d) Fertile eggs

93. A drug (200 mg dose) administered in tablet form and as intravenous injection (50 mg dose) showed AUG of 100 and 200 microgram hr/mL, respectively. The absolute availability of the drug through oral administration is

(a) 125% (b) 250 %

(c) 12.5% (d) 1.25%

94. Geriatric population should be included in the following phase of clinical trials

(a) Phase I (b) Phase II

(c) Phase III (d) Phase IV

95. Class 100 area is referred to

(a) Manufacturing area (b) Aseptic area

(c) Clean room (d) Warehouse

96. How many mL of a 1:500 w/v stock solution should be used to make 5 liters of 1:2000 w/v solution

(a) 750 mL (b) 1000 mL

(c) 1250 mL (d) 1500 mL

97. The Volume of distribution of a drug administered at a dose of 300 mg and exhibiting 30 microgram / mL instantaneous concentration in plasma shall be

(a) 10 L (b) 100 L

(c) 1.0 L (d) 0.10 L

98. It is required to maintain a therapeutic concentration of 10 microgram/mL for 12 hours of a drug having half life of 1.386 hr and V_d of 5 L. The dose required in a sustained release product will be

(a) 600 mg (b) 300 mg

(c) 30 mg (d) 60 mg

99. Which one of the following is NOT an ex-officio member of Pharmacy Council of India

(a) The Director General of Health Services

(b) The Director of Central Drugs Laboratory

(c) The Drugs Controller General of India

(d) The Director of Pharmacopoeia Laboratory

100. In which of the following techniques the sample is kept below triple point

(a) Lyophilization

(b) Spray drying

(c) Spray congealing

(d) Centrifugation

ANSWER KEY GPAT-2010

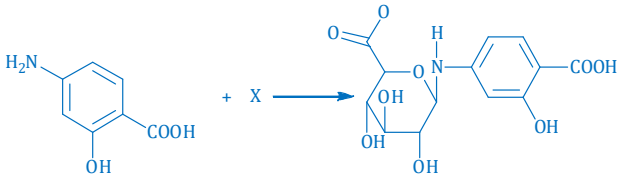
1 - b	2 - c	3 - b	4 - c	5 - d	6 - b	7 - b	8 - c	9 - d	10 - c
11 - b	12 - b	13 - a	14 - c	15 - c	16 - b	17 - b	18 - d	19 - b	20 - d
21 - b	22 - d	23 - d	24 - b	25 - b	26 - b	27 - c	28 - d	29 - d	30 - c
31 - d	32 - d	33 - b	34 - a	35 - c	36 - d	37 - c	38 - a	39 - a	40 - a
41 - b	42 - d	43 - c	44 - b	45 - d	46 - d	47 - b	48 - b	49 - c	50 - b
51 - d	52 - d	53 - c	54 - d	55 - d	56 - c	57 - a	58 - a	59 - b	60 - b
61 - b	62 -c	63 - b	64 - a	65 - d	66 - a	67 - b	68 - a	69 - c	70 - a
71 - b	72 - c	73 - b	74 - c	75 - b	76 - a	77 - b	78 - d	79 - c	80 - d
81 - a	82 - c	83 - d	84 - a	85 - d	86 - d	87 - d	88 - d	89 - b	90 - c
91 - a	92 - d	93 - c	94 - c	95 - b	96 - c	97 - a	98 - b	99 - d	100 - a

58. The drug selected above acts by

(a) Inhibiting topoisomerase I
(b) Inhibiting topoisomerase II
(c) Inhibiting thymidylate synthase
(d) Forming hydrogen peroxide which generates free radicals

Statement for Linked Answer Questions: 59 and 60

59. The compound A combined with X to get converted into B, in the presence of an appropriate enzyme



The reaction can be described as

(a) Bioactivation
(b) Glucuronide conjugation
(c) β-Oxidation
(d) Stereospecific glycine conjugation

60. The significance of the above reaction in drug therapy is that the reaction

(a) Converts water soluble compound into a lipid soluble compound, there by increasing its potency
(b) Converts an uncharged species into a charged species, increasing the shelf life of the compound
(c) Adds an ionic hydrophilic moiety, facilitating its urinary elimination
(d) Adds a bulky substituent to convert it into an active compound

ANSWER KEY GATE-2009

1 - b	2 - b	3 - c	4 - b	5 - c	6 - b	7 - b	8 - d	9 - c	10 - d
11 - c	12 - b	13 - d	14 - c	15 - b	16 - b	17 - a	18 - a	19 - b	20 - c
21 - c	22 - b	23 - d	24 - d	25 - b	26 - b	27 - c	28 - a	29 - a	30 - d
31 - b	32 - b	33 - a	34 - c	35 - d	36 - c	37 - c	38 - c	39 - b	40 - a
41 - c	42 - a	43 - a	44 - a	45 - a	46 - c	47 - d	48 - a	49 - c	50 - a
51 - a	52 - d	53 - c	54 - d	55 - a	56 - b	57 - d	58 - a	59 - b	60 - c

GATE-2008

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-2008

PY - PHARMACEUTICAL SCIENCES

(Q. 1 - 20) CARRY ONE MARK EACH

1. An antidiabetic drug Pioglitazone used in Type 2 diabetes acts by

(a) Decrease of glucose uptake in muscles
(b) Increasing insulin sensitivity
(c) Inhibiting intestinal α-glucosidase
(d) Stimulating insulin secretion

2. An angiotensin-II receptor blocker useful in treating hypertension is

(a) Enalaprilat (b) Valsartan
(c) Atenolol (d) Amlodipine

3. Co-administration of NSAIDs with Warfarin may often lead to

(a) Antagonistic interaction
(b) Interaction due to change in drug transport
(c) Interaction due to disturbances in electrolyte balance
(d) Additive or synergistic interaction

4. Laminaria and Kelp are the principal genera, currently used for the industrial production of

(a) Carrageenan
(b) Agar
(c) Fucans
(d) Alginic acid and alginates

5. A transverse section of *Glycyrrhiza glabra* when treated with 80% sulphuric acid gave

(a) Deep yellow color
(b) No reaction, but only charring
(c) Deep blue color
(d) Deep red color

6. Microscopy of the bulbs of *Urginea indica* family Liliaceae shows

(a) Prisms of calcium oxalate
(b) Calcium carbonate and silica
(c) Rosettes of calcium oxalate
(d) Raphides of calcium oxalate

7. Streptomycin is a

(a) Di-acidic base possessing an aldehydic carbonyl group
(b) Tri-acidic base possessing an aldehydic carbonyl group
(c) Neutral compound possessing a ketonic group
(d) Acid compound possessing a carboxyl group

8. The antihistaminic with diphenyl methyl group is

(a) Methdilazine
(b) Cyclizine hydrochloride
(c) Pheniramine
(d) Phenindamine

9. Heterocyclic rings present in pilocarpine are

(a) Imidazole and Quinoline
(b) Imidazole and Thiazole
(c) Quinoline and phenanthrene
(d) Imidazole and Dihydrofuran

10. The most important microbial virulence factor in etiology of meningitis is

(a) Exotoxin
(b) Components of the capsule
(c) Coagulase
(d) Hyaluronidase

11. Commonly used tetanus vaccine is produced by

(a) Treatment of the causative organism with heat or UV light and finally obtaining the toxoid
(b) Subculturing the virus at pH 10.4
(c) Artificially generating antibodies to viral glycoproteins
(d) Isolating the antigenicity genes from the causative organism

(d) Cell walls containing predominantly polysaccharides and glycoproteins

35. Quaternary structure of a protein molecule refers to

(a) Specific association to two or more copies of a polypeptide chain to result in a biologically active molecule

(b) Regular seen local structure within a polypeptide chain

(c) The portion of the polypeptide chain that comes into contact with another protein molecule

(d) The portion of the structure that gets stabilized upon binding to nucleic acid

36. A blood sample is treated with alkaline phosphotungstic acid to from tungsten blue, which is estimated colorimetrically to give a positive reaction. The sample contains

(a) Protein

(b) Serum creatinine

(c) Serum phenylalanine

(d) Uric acid

37. Two important steps for plant regeneration by organogenesis are

[P] Establishment of callus cultures

[Q] Initiation of somatic embryogenesis

[R] Germination of seeds

[S] Initiation of cell suspensions

(a) [Q], [S] (b) [P], [R]

(c) [P], [S] (d) [Q], [R]

38. Two tests for ephedrine are

[P] A solution in dilute HCl, treated with copper sulphate and sodium hydroxide gives a violet colour

[Q] An alcoholic solution gives a red colour with $FeCl_3$

[R] On shaking with solvent ether, the organic layer shows purple while the aqueous layer becomes blue in colour

[S] A solution of vanillin gives a violet-red colour

(a) [Q], [S] (b) [P], [S]

(c) [P], [R] (d) [Q], [R]

39. Dried fruits of sweet fennel has two the following properties

[P] 80 % of E-anethole, 10 % of methyl chavicol and 5% (+)-fenchone as constituents

[Q] 65-75 % (+) Linalool as a constituent

[R] The fruit is a dialkene, almost cylinder and surrounded by large stylopod

[S] The fruit is elongated and surrounded by calyculus

(a) [P], [R] (b) [Q], [S]

(c) [P], [S] (d) [Q], [R]

40. Dihydroxy acetone phosphate is involved in the biosyntheses of two of the following

[P] Serotonin **[Q] Triacylglycerol**

[R] Pyruvate **[S] Methionine**

(a) [P], [Q] (b) [P], [R]

(c) [Q], [S] (d) [Q], [R]

41. The virus responsible for SARS can be described by two of the following features

[P] It contains double-standards DNA and requires two complementary strands to be synthesized to serve as mRNA

[Q] It has distinctive club shaped particles projecting from the surface, appearing like a crown

[R] It contains plus-strand RNA that can serve directly as mRNA

[S] It is a retrovirus and requires extracellular DNA for replication

(a) [P], [Q] (b) [P], [S]

(c) [Q], [R] (d) [R], [S]

42. Two of the following facts are associated with Ethylene oxide gas

[P] It is non toxic and non inflammable and used for sterilization

[Q] It is a colourless inflammable gas. Toxic in nature and used for sterilization

50. Polarography can be used for the

[P] Simultaneous determination of several analytes

[Q] Study of resistance of solution

[R] Study of current potential relationship

[S] Study of optical activity of organic compounds

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

51. Primary amines show

[P] Two N-H stretching bands in the range of 3500-3300 cm^{-1}

[Q] Only one band in the region 3500-3300 cm^{-1}

[R] -NH band in primary amine results in a broad band in the region 1640-1560 cm^{-1}

[S] The typical $-NH_2$ stretching value at 1715 cm^{-1}

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

52. The drug Disulfiram is

[P] Known to inhibit dopamine β - hydroxylase and cause noradrenaline depletion

[Q] A substance that produce aversive reaction to alcohol

[R] Known to stimulate dopamine β-hydroxylase

[S] Used in barbiturate poisoning

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

53. Two important attributes associated with L-asparaginase

[P] An enzyme obtained from *E coli* and is administered parenterally

[Q] An enzyme obtained from *Streptococcus caespitosus* and is administered orally

[R] Used in acute lymphocytic leukemia

[S] Used as a fibrinolytic agent

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

54. Amikacin is

[P] A semisynthetic aminoglycoside and a derivative of kanamycin

[Q] A semisynthetic aminoglycoside and a derivative of tobramycin

[R] It is administered parenterally and does not cause nephrotoxicity and ototoxicity

[S] It is administered parenterally and is both nephrotoxicity and ototoxicity

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

Q.55-70 Are Matching Exercise Match Group I with Group II and identify the correct combinations

55. Group I

Plant

1. Thorn apple
2. Henbane
3. Deadly night shade
4. Foxglove leaves

Group II

Source

[P] Dried leaves and flowering tops of *Hyoscyamus niger*

[Q] Dried leaves and flowering tops of *Datura atramonium*

[R] Leaves of Diditalis purpurea dried at a Temperature below 60^0C

[S] Dried leaves and other aerial parts of *Atropa bellodona* or *Atropa acuminate*

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

69. **Group I**

Test

1. Direct agglutination test

2. Passive agglutination

3. Haemagglutination inhibition test

4. Coomb's test

Group II

Principle

[P] Measures antibody titres after soluble antigens are attached to inert particles and incubated with antibodies

[Q] Detects blocking-type antibodies, globulins and complement that are attached to red cell antigens.

[R] RBCs coated with homologous antigens added to antibodies incubated with soluble antigens

[S] RBC antigen incubated with antibodies and antibody titre visually examined

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

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

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

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

70. **Group I**

Enzymes

1. Na^+/K^+ ATPase

2. Cytochrome c oxidase

3. Malate dehydrogenase

4. Tyrosine kinase

Group II

Function

[P] Electron transport

[Q] Pathway converting pyruvate to oxaloacetate

[R] Generation of electrochemical potential gradient across membranes

[S] Signal transduction

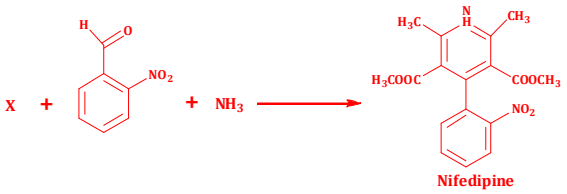
(a) 1-[R], 2-[P], 3-[Q], 4-[S]

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

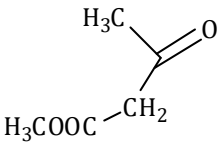
(c) 1-[Q], 2-[S], 3-[P], 4-[R]

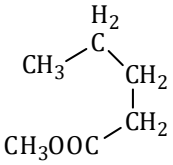
(d) 1-[S], 2-[Q], 3-[R], 4-[P]

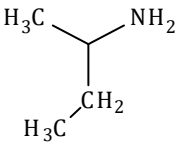
COMMON DATA FOR QUESTION 71,72,73

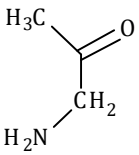


71. **Reagent X is**

(a) 

(b) 

(c) 

(d) 

72. **Nifedipine when exposed to day light is readily converted into derivative of**

(a) 4-phenyl pyridine

(b) Nitrosophenyl pyridine

(c) Diazophenyl pyridine

(d) Nitrobenzene

73. **The B.P. assay of Nifedipine is by a titration of a**

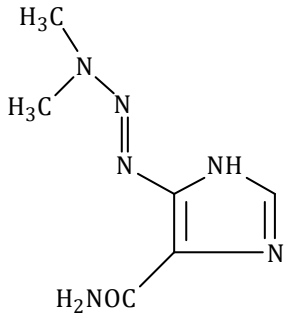
(a) Solution in anhydrous acetic acid with 0.1 perchloric acid

(b) Solution in previously neutralized acetone with 0.1N sodium hydroxide; end point by potentiometry

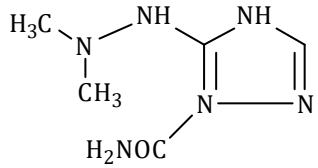
(c) Solution is previously neutralized acetone against standard potassium dichromate solution

(d) A solution in 2-methyl 2-propanol and perchloric acid with 0.1 M cerium sulphate using ferroin as indicator

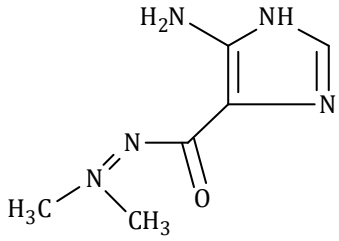
(b)



(c)



(d)



Statement for Linked Answer Question 82 and 83

A 250 mg dose of a drug was administered to a patient by rapid IV injections. The initial plasma concentration was 2.50µg/mL. After 4 hours the plasma concentration was 1.89µg/mL. Assuming that the drug was eliminated by a pseudo first order process and the body behaves as one compartment model

82. K_{el} **is**

(a) $0.0699h^{-1}$ (b) $0.0349h^{-1}$

(c) $1.623h^{-1}$ (d) $0.699h^{-1}$

83. Biological half life is

(a) 4.95 hours (b) 19.82 hours

(c) 99.1 hours (d) 9.91 hours

Statement for Linked Answers Question 84 and 85

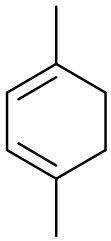
As per the woodward-Fieser rule, the absorption maxima of the compound shown is calculated from the base value and the ring residue values

84. λ_{max} **Base value for homocyclic 1,3-butadiene is**

(a) 215nm (b) 253nm

(c) 240nm (d) 217nm

85. Calculate the absorption maxima for given compound



(a) 273 nm (b) 258 nm

(c) 265 nm (d) 237 nm

ANSWER KEY GATE-2008

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

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

64. **Group I**
Reponses/Incidents
1. False transmitter
2. St. Antony's fire
3. Triple response
4. Straub phenomenon
Group II
Bioactive substances
[P] Histamine
[Q] Methyldopa
[R] Morphine
[S] Ergot alkaloid
(a) 1-[Q], 2-[S], 3-[P], 4-[R]
(b) 1-[P], 2-[S], 3-[R], 4-[Q]
(c) 1-[R], 2-[Q], 3-[P], 4-[S]
(d) 1-[S], 2-[R], 3-[Q], 4-[P]

65. **Group I**
Adverse effects
1. Reye's syndrome
2. Hypertrichosis
3. Grey baby syndrome
4. Pinpoint pupil
Group II
Drugs
[P] Chloramphenicol
[Q] Morphine
[R] Aspirin
[S] Minoxidil
(a) 1-[P], 2-[Q], 3-[S], 4-[R]
(b) 1-[R], 2-[S], 3-[P], 4-[Q]
(c) 1-[S], 2-[P], 3-[Q], 4-[R]
(d) 1-[S], 2-[R], 3-[Q], 4-[P]

66. **Group I**
Technique used
1. Polarography
2. Potentionmetry
3. Conductometry
4. Amperometry
Group II
Analytical method of evaluation
[P] Potential-volume curve
[Q] Current-potential
[R] Conductance-volume curve
[S] Current-volume curve.
(a) 1-[P], 2-[S], 3-[R], 4-[Q]
(b) 1-[Q], 2-[P], 3-[R], 4-[S]
(c) 1-[R], 2-[Q], 3-[S], 4-[P]
(d) 1-[S], 2-[P], 3-[Q], 4-[R]

67.

Group I	Group II
Type of Radiation	**Wave length**
1. Radio frequency	**[P] > 100 mm**
2. UV	**[Q] 200-380 nm**
3. X-ray	**[R] 10 pm- 10 nm**
4. Mid-IR	**[S] 2.5-50 µm**

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

68. **Group I**
Spraying reagents used in Chromatographic methods
1. $SbSI_3$ in $CHCI_3$
2. Bromocresol green
3. Aniline phthalate
4. 2,4 dinitrophenyl hydrazine
Group II
Type of substance
[P] Carboxylic acid
[Q] Aldehyde or ketone
[R] Steroid
[S] Sugar
(a) 1-[Q], 2-[P], 3-[S], 4-[R]
(b) 1-[R], 2-[P], 3-[S], 4-[Q]
(c) 1-[P], 2-[R], 3-[Q], 4-[S]
(d) 1-[S], 2-[P], 3-[Q], 4-[R]

50. Two of the following attributes are characteristic to a natural drug obtained from *Syzygium aromaticum*

[P] Quadrangular stalked portion- the hypanthium, surmounted by four divergent lobes of sepals which surround a globular head

[Q] Powdered drug shows fragments of hypanthium showing the epidermis and the parenchyma containing large oil glands, singly occurring short fibres, cluster crystals of calcium oxalate

[R] Aromatic, pungent, globular berries, remains of stigma at the apex. Kernel white and hollow at the Centre, consists of perisperm and endosperm

[S] Tubular epidermal cells, followed by thin walled parenchymatous hypodermis with rectangular stone Cells. Pericarp and perisperm containing oil glands, abundant starch grains

Identify the correct statements

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

51. Two metabolites that could transiently accumulate as result of inhibition of squalene synthase are

[P] Dimethyl allyl pyrophosphate
[Q] Cholesterol
[R] Farnesyl pyrophosphate
[S] Prednisolone

Identify the correct statements

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

52. Two possible targets against which inhibitors can be designed for use in diabetes treatment are

[P] Carbonic anhydrase
[Q] Insulin
[R] Glycogen phosphorylase
[S] Glucose-6-phosphatase

Identify the correct statements

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

53. Two important advantages of using micro-organisms for bio-transformations in drug synthesis are

[P] Having been produced from micro-organisms, they are certain to have antibacterial properties

[Q] They are abundant in nature and hence reduce the processing cost significantly

[R] They produce the specific stereoisomer only

[S] They are highly selective and therefore yield products with high purity

Identify the correct statements

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

54. Aminotransferases are directly involved in the biosynthesis of

[P] Aspartate
[Q] Alanine
[R] Oleate
[S] 3-phosphoglycerate

Identify the correct statements

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

(Q. 55-70) ARE MATCHING EXERCISES

55. GROUP I

Reactions

1. p-nitrobenzaldehyde and acetone to form 1-(4-nitrophenyl-3-oxo-butene)
2. Isobutyl benzene is treated with acetyl chloride and anhydrous $AlCl_3$
3. Pregnenolone acetate is saponified and then treated with an aluminium alcoholate to yield progesterone
4. Benzalacetone and 4-hydroxy coumarin in presence of pyridine

GROUP II

Names

[P] Claisen-Schmidt condensation
[Q] Michael condensation
[R] Friedel-Crafts acylation
[S] Oppenauer oxidation

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

(b) 1-(2,4 Dicholoro batyl)-2-(2-imidazolyl)-ethanol
(c) 1-(2,4 Dicholoro acetophenyl)-2-(1-imidazolyl)-ethanol
(d) 1-(2,4 Dicholoro phenyl)-2-(1-imidazolyl)-ethanol

77. The antifungal drug obtained is

(a) Miconazole (b) Luliconazole
(c) Saperconazole (d) Butenafine

Statement for linked Answer Question 78 and 79

The calculated λ_{max} for 2,4 Pentadiene is 222 nm. Choose the correct base value and increment due to the substituent

78. The base value (in nm) is

(a) 215 (b) 210
(c) 217 (d) 205

79. The increment due to the substituent (in nm) is

(a) 7 (b) 12
(c) 17 (d) 5

Statement for linked Answer Questions 80 and 81

A solution of the drug was freshly prepared at a concentration of 600 mg/ml. After 30 days of Storage at 25^{0}C, the drug concentration in the solution was found to be 150 mg/ml. The drug can be assumed to undergo zero order kinetics

80. The rate constant is

(a) 15 mg/ml/day (b) 1.5 mg/ml/day
(c) 0.15 mg/ml/day (d) 7.5 mg/ml/day

81. Half life of the drug solution under these condition is

(a) 2 days (b) 20 days
(c) 10 days (d) 100 days

Statement for linked Answer Questions 82 and 83

There are many types of antidepressant drugs and many of them are long acting, while some are short acting

82. An example of a short acting antidepressant drug is

(a) Fluoxetine (b) Valproate
(c) Etorphine (d) Moclobemide

83. The drug selected above, acts by

(a) Inhibiting MAO-A
(b) Inhibiting Na/5HT reuptake
(c) Blocking 5-HT_3 receptors
(d) Inhibiting ACE

Statement for linked Answer Questions 84 and 85

***Myristica fragrans* belongs to the family Myristicaceae**

84. A part of the fruit of *Myristica fragrans* Houtt is

(a) Testa (b) Plumule
(c) Mace (d) Anther

85. The substance present in that part selected above, which produces a red color with iodine, is

(a) Myristicin (b) Safrole
(c) Elemicin (d) Amylodextrin

ANSWER KEY GATE-2006

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

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 C_3 and C_6
(c) Absence of double bond between C_4 and C_6
(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 indiscrim - inate use of

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

xxx. In radioactive pharmaceuticals half life of compound means

(a) The time taken for one half of the compound to find with serum albumin
(b) The time taken for onset of its action
(c) The time taken for the activity to decay to one half of its initial value
(d) The time taken for its complete metabolism

xxxi. Wagner's test is used to detect the presence of

(a) Steroids (b) Alkaloids
(c) Glycoside (d) Terpenes

xxxii. Metronidazole inhibits anaerobic bacteria and protozoa by

(a) Affecting the structure of DNA molecule of the organism
(b) Destroying the ribosome
(c) Inhibiting the cytochrome system
(d) Inhibiting the protein synthesis

xxxiii. Most common oestrogen progesterone preparation used as oral contraceptive agent contains

(a) Methanol + Progesterone
(b) Estrone + Progesterone
(c) Diethyl stilbestrol + Norgestrel
(d) Ethinyloestradiol + Norethindrone

xxxiv. Before washing the ampoules the mouth of each ampoule is rotated in Bunsen flame to melt down the rough edge .This process is called as

(a) Flaming (b) Charging
(c) Annealing (d) Grounding

xxxv. In Benzothiadiazides reduction of the double bond between the position 3 and 4 gives rise to compound with

(a) Decreased diuretic activity
(b) Increase the diuretic activity
(c) No diuretic activity
(d) No change in diuretic activity

xxxvi. Peripheral neurotransmitter is

(a) Histamine (b) Noradrenaline
(c) Hydroxytryptamine (d) Prostaglandin

xxxvii. Beer's law states that

(a) Absorbance of a solution is indirectly proportional to the absorbing solute
(b) Absorbance of a solution is indirectly proportional to the length of cell
(c) Absorbance of a solution is directly proportional to the absorbing solute
(d) Transmittance of a solution is directly proportional to the absorbance solvent

SECTION - II (MATCH THE FOLLOWING)

Q.2 Match of the following

i. Given below are the hypertensive agents . Match their mode of action [P] to [T]

1. Minoxidil
2. Prazosin
3. Alpha methyldopa
4. Clonidine

[P] Alpha adrenoreceptor antagonist
[Q] Beta adrenoreceptor antagonist
[R] From alpha methyl norepinephrine
[S] Direct action on blood vessel (Vasodilation)
[T] Decrease sympathetic activity through brain

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

ii. Indicate the from the group [P] to [T] the correct compound for the given source

1. *Urginea maritima*	**[P] Camphene**
2. *Rheum palmatum*	**[Q] Scilliroside**
3. *Myristica fragrans*	**[R] Emodin**
4. *Claviceps purpurea*	**[S] Atropine**
	[T] Ergometrine

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

23. How will you avoid 'Caramelisation' in the preparation of injection? What is 'Leaker Test'?

24. How the entry of drugs molecule into the CNS is controlled? What are the other biological varriers

25. How do the Blister package protect the content from moisture

26. Given below are some absorption frequencies in an IR spectrum. Indicate the appropriate functional group for the same

(a) 3500- 330 cm^{-1} (b) 3030-3010 cm^{-1}

(c) 1750 cm^{-1}

27. Give only names of the enzymes involved in the biosynthesis of epinephrine form tyrosine

ANSWER KEY GATE-1988

PART - A (SECTION - I)

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

PART - A (SECTION - II)

i - b	ii - a	iii - d	iv - b	v - a	vi - a	vii - c
viii - c	ix - d	x - b	xi - a	xii - c	xiii - d	xiv - c
xv - b	xvi - b	xvii - d	xviii - b	xix - a	xx - a	

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