GPAT QUESTION PAPER 1999 WITH ANSWER KEY

PHARMACEUTICAL SCIENCE

Time: 3 hours Maximum Marks: 150

Read the following instruction carefully.

- All answers must be written only in the answer-book provided.
- 2. This question paper consists of TWO SECTIONS: Section 'A' and 'B'.
- 3. **Section A** consists of two questions of the multiple choice type. Question 1 consists of **TWENTY FIVE** sub-questions of **ONE** mark each and Questions 2 consists of **TWENTY FIVE** sub-question of **TWO** marks each.
- 4. The answers to the multiple type questions must be written only in the boxes provided in the sheet of the answer-book.
- 5. Answers to **Section B** should be started on a fresh page and should not be mixed with the answers to **Section A**. Question numbers must be written legibly and correctly in the answer-book.
- 6. Secttion B consists of **TWENTY** questions of FIVE marks each. Any **FIFTEEN** out of them have to be answered. If more number of questions are attempted, strike off the answer not to be evaluated, else only the first **FIFTEEN** unscored answers will be considered strictly.
- 7. In all questions of 5 marks. write, clearly the inportant steps in your answer. These steps carry partial credit.
- 8. There will be **NO NEGATIVE** marking.



- **R1.** (i) This question consists of 25 (Twenty five) multiple choice questions each carrying one mark.
 - (ii) Choose the correct answer.
 - (iii) Enter (a) or (b), (c) or (d) as the case may be in the boxes corresponding to the questions in the first page of the answer book.
- 1.1. One of the following statements for adenyl cyclase is wrong. Identify.
 - (a) Is a membrane bound enzyme

(b) Inactivated by Phosphodiesterase

(c) Catalyses the A.M.P. formation

- (d) Active only when associated with G Protein
- 1.2 Which one of the following device is used to increase the efficiency of drug delivery via aerosols?
 - (a) Tube spacers
- (b) Actuator
- (c) Metered valve
- (d) Pressure valve

- 1.3 One of the uses given below for opoids is not correct. Indicate
 - (a) Antitussive
- (b) Analgesic
- (c) Anti-inflammatory
- (d) Antidiarrhoeal
- 1.4 Which one of the following is used as a preservative in ophthalmic preparations?
 - (a) Benzalkonium Chloride

(b) Phenol

(c) Benzoic acid

(d) Chlorocresol

1.5	The	activity of the following drugs is dependent on Pl	heny	-N-alkyl one piperidine moiety?
	(a)	Meperidine	(b)	Impipramine
	(c)	Diazepam	(d)	Chlorpromazine
1.6	One	of the organism mentioned below is used as a bio	logic	cal indicator in I.P. for ethylene oxide sterilization.
	Cho	ose the correct one.		
	(a)	Bacillus stearothermophilus	(b)	Spores of Bacillus subtilis
	(c)	Bacillus pumilus	(d)	Spores of Bacillus cereus
1.7	The	most common causative agent of Bacterial Pneu	ımon	iia is:
	(a)	Staphylococcus aureus	(b)	Escherichia coli
	(c)	Streptococcus pneumoniae	(d)	Mycoplasma pneumoniae
1.8	Cre	atinine clearance is used as a measurement for		
	(a)	Glomerular filtration rate	(b)	Renal excretion rate
	(c)	Drug metabolism rate	(d)	Passive renal excretion
1.9	Cho	ose the correct starting material for the synthesi	is of	Ethacrynic Acid
	(a)	2, 3-Dichloro phenoxy acetic acid	(b)	2, 3-Dibromo phenoxy acetic acid
	(c)	2, 3-Dichloro phenoxy propionic acid	(d)	2, 3-Dichloro phenoxy butyric acid
1.10	Cho	ose the correct metabolic process for Phenobar	bitor	ne
	(a)	p-Hydroxylation followed by reduction	(b)	p-Hydroxylation followed by glucuronidation
	(c)	p-Hydroxylation followed by acetylation	(d)	p-Hydroxylation followed by oxidation
1.11	Wh	ich one of the following antihistaminic is a basic	ethe	r?
	(a)	Pheniramine Maleate	(b)	Triprolidine hydrochloride
	(c)	Diphenhydramine hydrochloride	(d)	Promethazine hydrochloride
1.12	Con	ductivity cells are made up of		
	(a)	Two silver rods	(b)	Glass membrane with Ag/AgCl
	(c)	Two parallel sheets of platinum	(d)	Sb-Sb ₂ O ₃
1.13	The	chemical shift value is		2 3
		Proportional to field strength	(b)	Not proportional to field strength
	(c)	Ratio of the number of Protons in each group	(d)	Proportional to the total number of protons
1.14	Sele	ct the equation that gives the rate of drug dissol	utioi	n from a tablet
	(a)	Fick's law	(b)	Henderson Hasselbatch equation
	(c)	Noyes Whitney equation	(d)	Michelis Menten equation
1.15	Ene	rgy absorbed in U.V. region produces changes in		
	(a)	The rotational energy of the molecule	(b)	The vibrational energy of the molecule
	(c)	The electronic energy of the molecule	(d)	All the three energy levels of the molecule
1.16	Dos	e dumping is a problem in the formulation of		
	(a)	Compressed tablets	(b)	Suppositories
	(c)	Soft gelatin capsules	(d)	Controlled release drug products

1.17	The	initial distribution of a drug into the tissue is de	term	ined chiefly by		
	(a)	Rate of blood flow to the tissue	(b)	Plasma protein bindir	ng of	the drug
	(c)	Affinity for the tissue	(d)	Stomach emptying tim	ne	
1.18	Cho	ose the correct characteristic of the epidermal ce	ells a	nd cuticle of Atropa be	llado	nna leaf
	(a)	Pitted walls with striated cuticle	(b)	Wavy walk with striat	ed c	uticle
	(c)	Algal cell walk with smooth cuticle	(d)	Straight walls with wa	vy cı	ıticle
1.19	Med	clizine hydrochloride is prepared from which one	e of t	the following?		
	(a)	$1\hbox{-}(4\hbox{-}chloro\ benzhydryi)\hbox{-}Pyridine\ and\ 3\hbox{-}methyl$	benz	zaldehyde		
	(b)	1-(2-chloro benzhydryi)-Piperazine and 3-meth	ıyl b	enzaldehyde		
	(c)	1-(4-chloro benzhydryl)- Piperazine and 3-meth	hyl b	enzaldehyde		
	(d)	1-(4-chloro benzhydryl)- Piperazine and 2-meth	ıyl b	enzaldehyde		
1.20	Whi	ich one of the following is an Ex-Officio member o	of th	e State Pharmacy Cour	icil?	
	(a)	Chief Pharmacist of Government hospital http://	//ww	w.xamstudy.com		
	(b)	$\label{lem:chief-Administrative Medical Officer of the state} Chief Administrative \ Medical \ Officer \ of the \ state$				
	(c)	Registered Pharmacist				
	(d)	Assistant Drug Controller				
1.21	Phlo	proglucinol and Hydrochloric acid produces pink	or r	ed colour with		
	(a)	Cellulose cell walls	(b)	Lignified cell walls		
	(c)	Cutinized cell walls	(d)	Mucilaginous cell wall	S	
1.22	One	of the forms mentioned below is used to issue l	icen	ce for wholesale of dru	gs ot	ther than specified in
	sche	edule C, C_1 and X. Choose the correct one.				
	(a)	20.B (b) 20 B.B	(c)	21 B	(d)	20 A
1.23	Cho	ose the correct chemical name for Chloroproma	zine	hydrochloride		
	(a)	[3-(2-chrophenothiazin-10-yl) propyl] diethylan	nine	hydrochloride		
	(b)	[2-(3-chrophenothiazin-10-yl) propyl] diethylan	nine	hydrochloride		
	(c)	[3-(2-chlorophenothiazin-10-yl) propyl] diethyl	amin	ie hydrochloride		
	(d)	[3-(3-chlorophenothiazin-10-yl) propyl] diethyk	amin	ie hydrochloride		
1.24	Wav	velength of a radiation is 5.0 μ. Wave number cor	resp	onding to that is:		
	(a)	4000 cm ⁻¹ (b) 2000 cm ⁻¹	(c)	3000 cm ⁻¹	(d)	1000 cm ⁻¹
1.25	Cho	ose the synthetic adrenocortical steroid, which d	lo no	t occur in nature.		
	(a)	11 β , 17 α , 21-Trihydroxy-1, 4-pregnadiene-3, 20	-dio	ne		
	(b)	17α , 21-Dihydroxy pregna-4-ene-3, 11, 20-trion	ıe			
	(c)	11 β , 17 α , 21-Trihydroxy pregna-4-ene-3,20-dio	ne			
	(d)	3-oxo-17β, Hydroxy androst-4-ene.				
R2.	Mat	tch each of the items 1 and 2 on the left with	ı an	appropriate item on	the	right [A.B.C.D] and
		wer in the specific space provided in the ansy				G [,-,-,-]

2.1	Match the correct	heterocyclic system pre	esent in	the medicina	agents given in (A) to (D).
	(1) 5H Dibenz (b	-f) azepine		(A) Nitrazepa	m
	(2) 1, 4-Dihydro-	1,8-Naphthyridine-4-or	ie	(B) Carbama:	zepine
				(C) Imiprami	ne
				(D) Nalidixic	acid
	(a) 1-B, 2-D	(b) 1-A, 2-B		(c) 1-C, 2-A	(d) 1-A, 2-D
2.2.	Match the titrants	used for the following:			
	(1) Paracetamol I	.Р.		(A) Perchlori	c acid
	(2) Phenytoin sol	d-I.P.		(B) EDTA	
				(C) Ceric amı	nonium sulphate
				(D) Tetra but	yl ammonium hydroxide
	(a) 1-B, 2-D	(b) 1-A, 2-B		(c) 1-C, 2-A	(d) 1-A, 2-D
2.3.	Starting material f	or the synthesis of med	icinal a	gents are liste	d below. Match them with the correct ones
	from (A) to (D).				
	(1) 2-Amino-5-ch	iloro-benzophenone	(A)	Ethosuximide	
	(2) Butanone and	l ethyl cyano acetate	(B)	Diazepam	
			(C)	Prochloroper	azine
			(D)	Propranolol	
	(a) 1-B, 2-A	(b) 1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D
2.4.	The ring structure	es present in the alkaloi	ds liste	d below are gi	ven in (A) to (D). Match them.
	(1) Codeine	•		Phenanthren	
	(2) Ergotamine		. ,	Indole	
			. ,	Quinoline	
			. ,	Iso-quinoline	
	(a) 1-B, 2-D	(b) 1-B, 2-A		1-C, 2-A	(d) 1-A, 2-D
2.5.	The following terr	ms are used to describe	the par	rts of certain p	lants listed in (A) to (D). Match them.
	(1) Hypanthium		_	Prunuscomm	
	(2) Rhytidoma			Cinnamon ba	
	(=)				volfia serpentine
				Eugenia cary	•
	(a) 1-D, 2-B	(b) 1-A, 2-B		1-C, 2-A	(d) 1-A, 2-D
26			. ,		e listed in (A) to (D). Match them with the
2.0.	correct source.			rous rruns ur	
	(1) Foeniculum co	anillaceum	(A)	Anethol	
	(2) Anethum gra	•		Carvone	
	(2) Imeenant gra		. ,	Khellin	
				Linalol	
	(a) 1-R 2 D	(b) 1-4 2 P			(d) 1-A 2-B
	(a) 1-B, 2-D	(b) 1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-B

2.7.	Some substances	used in tablet coating p	orocess a	are given. Match	them with their correct use mentioned	ir
	(A) to (D).					
	(1) Shellac		(A)	Polishing		
	(2) Hydroxy prop	pyl methyl cellulose	(B)	Seal coating		
			(C)	Film former		
			(D)	Sub-coating		
	(a) 1-B, 2-C	(b) 1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.8.	Some materials u	ised in the manufactu	ire of pl	narmaceutical d	losage forms are given. Match them wi	tl
	correct use menti	oned in (A) to (D).				
	(1) Sorbitol		(A)	Preservative f	or capsules	
	(2) Titanium diox	xide .	(B)	Plasticizer in s	oft gelatin capsules	
			(C)	Lubricant for	tablets	
			(D)	Opacifier for g	elatin mass	
	(a) 1-B, 2-D	(b) 1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.9.	Given below are tl	he aerosol systems. M	atch the	m with their co	rrect propellants given in (A) to (D).	
	(1) Aerosol for o	ral use	(A)	Propane		
	(2) Aerosol for to	opical use	(B)	Oxygen		
			(C)	Methane		
			(D)	Trichlro-mono	fluoro methane	
	(a) 1-B, 2-D		(b)	1-D, 2-A		
	(c) 1-C, 2-A		(d)	1-A, 2-D		
2.10	.Some of the appli	cations for immobilize	ed enzyn	ne systems are g	given below. Match with the process liste	ed
	in (A) to (D).					
	(1) Amino cyclase	e	(A)	N-oxidation of	drugs containing Hydrazine	
	(2) Flavoprotein	oxidase	(B)	Resolution of I	DL-amino acid	
			(C)	D-amino acid j	production	
			(D)	Nucleotide pro	duction from RNA	
	(a) 1-B, 2-D		(b)	1-D, 2-B		
	(c) 1-C, 2-A		(d)	1-A, 2-D		
2.11.	Systematic chemica	al names of the medici	inal ager	nts are given in ((A) to (D). Match them.	
	(1) Indomethacin			13 β-methyl-17 en-20 yn-3-one	β hydroxyl -18, 19 dinor-17α-Pregn-4	
	(2) Levonorgestro	ol .		13 β-methyl-1 -20 yn-3- one	7α hydroxyl-18 nor-17-α-Pregn-4-e	n
			(C)		nzyl)-5-ethoxy-2-methyl indolyl-3-y	l,
			(D) 1	I-(4 chloro bei	nzolv-5-methoxy 2-methyl indol-3-vl	

acetic acid

(a	ı) 1-D, 2-A	(b)	1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.12.St	orage conditions as	s per l	.P. for differe	ent prepara	ations are give	en. Match them with the cor	rect temperature
p	rescribed.						
(1	l) Cold			(A)	Between 20°	'C and 8°C	
(2	?) Warm			(B)	Below 20°C		
				(C)	Any tempera	ature between 30°C and 40	°C
				(D)	Above 40°C		
(a	i) 1-B, 2-C			(b)	1-A, 2-B		
2.13.Tl	ne wave lengths of	two	different reg	gions of th	ne electromag	netic spectrum are given	from (A) to (D).
M	atch them.						
(1) Finger print regi	ion		(A)	2.5 to 8.0 µm	l .	
(2) Visible region			(B)	8.0 to 15.0 μι	m	
				(C)	0.2 to 0.35 μι	m	
				(D)	0.4 to 0.8 μm	ı	
(a) 1-B, 2-D			(b)	1-A, 2-B		
(c) 1-C, 2-A			(d)	1-A, 2-D		
2.14.M	atch the correct app	plicat	ions mentio	ned in (A)	- (D)with the	two equations.	
(1) Nernst equation			(A)	Potential		
(2) Ilkovic equation			(B)	Migration cu	rrent	
				(C)	Diffusion cur	rent	
				(D)	Conductance		
(a) 1-B, 2-D			(b)	1-A, 2-B		
(c) 1-A, 2-C			(d)	1-A, 2-D		
2.15.Ce	ertain drug combir	nation	ns are given	below. M	latch them w	rith the correct drug inter	action given in
(A) to (D).						
(1) Phenobarbitone	and I	Digitoxin	(A)	Induction of digitalization	f Hepatic Microsomal	enzyme under
(2) Aspirin and Met	hotre	xate	(B)	Potentiation	of the activity of Digitalis	
				(C)	Less absorpt	ion of Methotrexate	
				(D)	Displacemen	t of Protein Binding site-i	ncrease toxicity
					of Methotrex	ate	
(a) 1-B, 2-D			(b)	1-A, 2-B		
(c	1-C, 2-A			(d)	1-A, 2-D		
2.16. M	echanism of action	of dr	ugs listed b	elow are g	iven (a)to (D)	. Match them.	
(1) α-Methyl Dopa			(A)	Multiple sites	including α_2 agonism	
(2) Minoxidil			(B)	Catecholamin	ie release	
				(C)	Sympathetic	neuronal block	
				(D)	Non-selective	vasodilation	

(a)	1-B, 2-D			(b)	1-A, 2-B		
(c)	1-C, 2-A			(d)	1-A, 2-D		
2.17.List	ed below are som	e imj	portant metabolic	prod	lucts of the drugs	given in (A) to (D). Match them.	
(1)	p-Fiuro phenyl a	cetic	acid glycine conju	gate		(A) Paracetamol	
(2)	Diphenyl methox	у асе	etic acid glutamibn	e co	njugate	(B) Diloxanide furoate	
						(C) Halaperidol	
						(D) Diphenhydramine	
(a)	1-B, 2-D	(b)	1-C, 2-D	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.18.List	ed below is the pe	ercen	tage of Protein bir	nding	g of some drugs g	ven in (A) to (D). Match them.	
	0%				Oxyphenbutazon		
	99%				Lisinopril		
					Hexobarbital		
				(D)	Morphine		
(a)	1-B, 2-A	(b)	1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.19.The	items listed from	(A)	to (D)can be ident	ified	by the tests given	below.	
(1)	Coomb's test			(A)	Candida albicans		
(2)	Coagulase test			(B)	Virulent Staphylo	coccus aureus	
				(C)	Mycobacterium t	uberculosis	
				(D)	Non agglutinating	antibodies	
(a)	1-B, 2-D	(b)	1-D, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.20.For	the following drug	gs,sp	ecific mechanism	of ac	tion is given in (A	to (D). Match them.	
(1)	Spiranolactone			(A)	Non competitively	inhibit the enzyme carbonic anhydra	ise
(2)	Acetazolamide			(B)	Inhibit the transp	ort of Na ⁺ and Cl ⁻ in loop of Henle	
				(C)	Competitive inhi	bitor of aldosterone at the receptor	rs
					in the distal tubul	2	
				(D)	Direct inhibition	of Na ⁺ and Cl ⁻ reabsorption at proxin	nal
					Portion		
(a)	1-B, 2-D	(b)	1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	
2.21.Give	en below are diffe	erent	schedules as per	the	(D) and (C) Act	Match them with items mentioned	in
(A)	to (D).						
(1)	Schedule FF			(A)	Standards for oph	thalmic preparations	
(2)	Schedule M			(B)	Diseases or ailme	ents which a drug may not purport	to
					prevent or cure		
				(C)	Lite period of dru	ıgs	
				(D)	Requirements of	factory premises	
(a)	1-B, 2-D	(b)	1-A, 2-B	(c)	1-C, 2-A	(d) 1-A, 2-D	

2.22. Two types of detectors are given below. Match them with the instrument given in (A) to (D). (1) Flame ionization detector (A) IR Spectrophotometer (2) Golay pneumatic detector (B) UV Spectrophotometer (C) Flame photometer (D) Gas chromatograph (a) 1-D, 2-A (b) 1-A, 2-B (c) 1-C, 2-A (d) 1-A, 2-D 2.23. Appropriate structural formulae for Monocyclic monoterpene and Bicyclic monoterpene are given in (A) to (D). Match them. (1) Monocyclic monoterpene (B) (2) Bicyclic monoterpene (D) (a) 1-B, 2-D (b) 1-A, 2-B (c) 1-C, 2-A (d) 1-A, 2-D 2.24. Two methods of sterilization are given for the materials listed from (A) to (D). Match them correctly. (1) Dry heat (A) Rooms (2) γ - radiation (B) Plastic syringes (C) Takum powder (d) Intravenous admixture (a) 1-B, 2-D (b) 1-A, 2-B (d) 1-A, 2-D (c) 1-C, 2-B 2.25.Listed are some of the microscopical characters of bark powder obtained from the plants mentioned in (A) to (D). Match them. (1) Narrow slender lignified phloem fibres occur (A) Cinchona succirubra singly or tangential rows of 2-5, Lignified, colourless narrow sub rectangular parenchyma with small starch grains. Less amount of cork. (2) Wider phloem fibres, Larger-Starch grains (B) Cinnamomum zeylanicum Longer fibres abundant cork (C) Cinnamomum cassia (D) Holarrhena antidysentrica (d) 1-A, 2-D (a) 1-C, 2-D (b) 1-A, 2-B (c) 1-C, 2-A

SECTION - B

This section consists of 20 (TWENTY) questions of 5 (FIVE) marks each. Attempt ANY 15 (FIFTEEN) questions. Answers must be given in the answer book provided. Answer for each question must start on a fresh page and must appear at one place only.

- 3. Draw the structres of Anthraquinone, Oxanthrone, Anthranol Anthrone and Dianthrone.
- 4. Starting from m-choroaniline, draw a scheme for the preparations of chlorothiazide and then to hydrochlorothiazide. Give the structural formulae of all reactants, reagents and products.
- 5. Write complete equations for the following reaction:
 - (a) $[1-(4 \text{ hydroxy phenyl})-2-amino propanol] + 1-phenoxy-2-propyl bromide <math>\rightarrow$
 - (b) What is the common name of the medicinal agent formed?
 - (c) To which pharmacological category it can be included.
- 6. (a) Complete the following synthesis by writing the full equation: Ethyl- α -hydroxy- α -methyl Propionate + Urea $\xrightarrow{C_2H_5ONa}$ (2).... $\xrightarrow{(CH_3O)_2SO_2}$ (3)....
 - (b) Streptomycin acts as a triacidic base which groups are responsible for this.
- 7. Draw the structural formulae of the products obtained at 1,2, 3, 4 and 5.

Phthalic anhydride
$$\xrightarrow{Zn}$$
 (1)..... $\xrightarrow{Cl_2}$ (2)...... $\xrightarrow{H_2N-NH_2\cdot H_2O}$ (3)...... $\xrightarrow{POCl_3}$ (4)...... $\xrightarrow{H_2N\cdot NH_2H_2O}$ (5)......

- 8. (a) What is cell constant? How is it determined?
 - (b) Give the reason for the following:
 - (i) In conductometric titration the titrant should be at least ten times as concentrated as the solution being titrated. http://www.xamstudy.com
 - (ii) Temperature control is important in conductometric titations.
- 9. (a) Define [Answer each in one or two sentences only]
 - (a) Palisade ratio

(b) Stomatal number

(c) Stomatal index

(d) Vein islet number

- (e) Vein islet termination number
- 10. (a) Name the types of Stomata present in the following medicinal plants:
 - (i) Digitalis purpurea leaves

(ii) Datura stramonium leaves

(iii) Cassia acutifolia leaves

(iv) Mentha piperita

(b) Give the murexide test for detecting purine derivatives.

11.	 (a) How Benzodiazepines produce claming effect? (b) How anxiolytic activity can be correlated? (c) Why presence of 3(-OH) group confers shorter duration of action? (d) Why intravenous solution of diazepam cause precipitation when mixed with aqueous solution? (e) What is the clinical use of Adenosine?
12.	List the quality control tests specified in I.P. for injections.
13.	A solution of a drug contained 1000 units/milliliter when prepared. It was analysed after a period of 40 days and was found to contain 600 units/milliliter. Assuming the decomposition is of first order, at what time will the drug have decomposed to one half of its original concentration?
14.	What are the five basic components present in tablet compressing machine? Give their specific uses. (Answer each point in one sentence only).
15.	(a) Name the principle on which freeze drying works.(b) Name the four basic components of freeze drier.
16.	Define the following in or two sentences only: (i) Diploid (ii) Erythropoietin (iii) Genome (iv) Plasmid (v) Virion
17.	Name five important components of a gas chromatograph.
18.	 (a) Given below are the names of common microorganisms and starting materials used for bio-conversion. Name the probable compounds formed or changes effected: http://www.xamstudy.com (i) Accetobacter suboxydans/D Sorbitol (ii) Rhizopus arrhizus/progesterone (iii) Curvularia lunata/Progesterone
	(b) Name the enzymes present in the following microbes:
	(i) Asperigillus oryzae (ii) Clostridium histolyticum
19.	Some of the anticancer drugs act at the following specific sites in a manner exclusive for them: (a) Converted to fraudulent and inhibits purine biosynthesis. (b) Converted to fraudulent inhibits thymidylate synthetase. (c) Intercalates in DNA and stabilizes the DNA topo isomerase II complex.
	(d) Binds tubulin and inhibits microtubule formation.
	(e) Inhibits proliferation of lymphocytes.
	Name the class of compounds accordingly.
20.	(a) Give the mechanism of action of:
	(i) Nystatin (ii) Griseofulvin (iii) Omeprazole
	(b) (i) Give the names of the immediate precursor of catecholamines.
	(ii) Which is the rate limiting enzyme in catechlolamine biosynthesis?

- 21. In the microbiological assay of Bacitracin I.P., mention:
 - (i) Method adopted
- (ii) Organism used
- (iii) pH of the media
- (iv) Incubation time
- (v) Incubation temperature
- 22. (a) Give three methods of record the IR spectra of solids.
 - (b) Name two ways (phases) by which partition chromatography can be conducted.

End of paper

ANSWER KEY GATE 1999

Section - A(R1)

1.1	d	1.2	a	1.3	С	1.4	a
1.5	a	1.6	b	1.7	С	1.8	a
1.9	a	1.10	b	1.11	С	1.12	b
1.13	a	1.14	с	1.15	d	1.16	d
1.17	a	1.18	b	1.19	С	1.20	b
1.21	b	1.22	a	1.23	с	1.24	b
1 25	а						

Section - A(R2)

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