

GATE-1999

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

- (a) is a membrane bound enzyme (b) inactivated by phosphodiesterase
(c) catalyses the AMP formation (d) active only when associated with G protein

1.2. Which device is used to increase efficiency of drug delivery via aerosols:

- (a) tube spacers (b) metered valve
(c) actuator (d) pressure valve

1.3. One of the uses of opioids is not correct, identify it:

- (a) antitussive (b) analgesic
(c) antiinflammatory (d) antidiarrheal

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

- (a) benzalkonium chloride (b) phenol
(c) benzoic acid (d) chlorocresol

1.5. The activity of one of the following drug is dependent on Phenyl-N-alkyl piperadine moiety:

- (a) meperidine (b) imipramine
(c) diazepam (d) chlorpromazine

1.6. One of the following mentioned below is used as biological indicator in IP for ethylene oxide sterilization.

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

1.7. The most common causative agent of Bacterial pneumonia is

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

1.8. Creatinine clearance is used as a measurement for

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

1.9. Choose correct starting material for synthesis of ethacrynic acid:

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

1.10. Choose correct metabolic process of phenobarbitone:

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

1.11. Which of the following antihistaminic is basic ether:

- (a) Pheniramine maleate (b) Triprolidine hydrochloride
(c) Diphenhydramine hydrochloride (d) Promethazine hydrochloride

1.12. Conductivity cells are made up of:

- (a) Two silver rods (b) Two parallel sheets of aluminium
(c) Two glass membranes with Ag/AgCl (d) Sb-Sb₂O₃

1.13. The chemical shift value is

- (a) Proportional to field strength (b) Not proportional to field strength
(c) Ratio of number of protons in each group (d) Proportional to the number of protons

1.14. Select the equation that gives the rate of drug dissolution from a tablet

- (a) Fick's law (b) Henderson Hasselbalch equation
(c) Noyes Whitney equation (d) Michaelis Menton equation

1.15. Energy absorbed in UV 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 molecule

1.16. Dose dumping is a problem in 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 determined chiefly by:

- (a) Rate of blood flow to the tissue
- (b) Plasma protein binding of the drug
- (c) Affinity of the tissue
- (d) Stomach emptying time

1.18. Choose the correct characteristics of the epidermal cells and cuticle of *Atropa belladonna* leaf:

- (a) Pitted walls with striated cuticle
- (b) Wavy walls with striated cuticle
- (c) Algal cell walls with smooth cuticle
- (d) Straight walls with wavy cuticle

1.19. Meclizine hydrochloride is prepared from

- (a) 1-(4-chloro benzhydryl)- Pyridine and 3-methylbenzaldehyde
- (b) 1-(2-chloro benzhydryl)- Piperazine and 3-methylbenzaldehyde
- (c) 1-(4-chloro benzhydryl)- Piperazine and 3-methylbenzaldehyde
- (d) 1-(4-chloro benzhydryl)- Piperazine and 2-methylbenzaldehyde

1.20. One of the following is an Ex-Officio member of State Pharmacy Council:

- (a) Chief pharmacist of Government hospital
- (b) Chief administrative medical officer of the state
- (c) Registered pharmacist
- (d) Assistant Drugs Controller

1.21. Phloroglucinol and Hydrochloric acid produces. Pink or red color with

- (a) Cellulose cell walls
- (b) Lignified cell walls
- (c) Cutinized cell walls
- (d) Mucilaginous cell walls

1.22. One of the following mentioned below is used to issue license for wholesale of drugs other than specified in schedule C, C1 and X. Choose the correct one

- (a) 20 B
- (b) 20 BB
- (c) 21B
- (d) 20A

1.23. Choose the correct chemical name for Chlorpromazine hydrochloride

- (a) [3-(2-chlorophenothiazin-10-yl)propyl] diethylamine hydrochloride
- (b) [2-(3-chlorophenothiazin-10-yl)propyl] diethylamine hydrochloride
- (c) [3-(2-chlorophenothiazin-10-yl)propyl] dimethylamine hydrochloride
- (d) [3-(3-chlorophenothiazin-10-yl)propyl] diethylamine hydrochloride

1.24. Wavelength of a radiation is 5.0μ . Wave number corresponding to this is

- (a) 4000cm^{-1}
- (b) 2000cm^{-1}
- (c) 3000cm^{-1}
- (d) 1000cm^{-1}

1.25. Choose the synthetic adrenocortical steroid, which do not occur in nature

- (a) $11\beta, 17\alpha, 21$ -trihydroxy- $1,4$ -pregnadiene- $3,20$ -dione
- (b) $17\alpha, 21$ -dihydroxy pregna- 4 -ene- $3,11,20$ -trione
- (c) $11\beta, 17\alpha, 21$ -trihydroxy pregna- 4 -ene- $3,20$ -dione
- (d) 3 -oxo- 17β hydroxy androst- 4 -ene

2.1. match the correct heterocyclic system present in the medicinal agents given in A to D:

- | | |
|---|--------------------|
| (1) 5H-Dibenz (b-h) azepine | (A) Nitrazepam |
| (2) 1,4-Dihydro-1,8-Naphthyridine-4-one | (B) Carbamazepine |
| | (C) Imipramine |
| | (D) Nalidixic acid |

2.2. Match the titrants for the following:

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|-------------------------|------------------------------------|
| (1) Paracetamol IP | (A) Perchloric acid |
| (2) Pnheytoin sodium IP | (B) EDTA |
| | (C) Cerric ammonium sulphate |
| | (D) Tetra butyl ammonium hydroxide |

2.3. Match the drugs with the starting material for their synthesis:

- | | |
|--------------------------------------|----------------------|
| (1) 2-Amino-5-chloro- benzophenone | (A) ethosuximeide |
| (2) Butanone and ethyl cyano acetate | (B) diazepam |
| | (C) prochlorperazine |
| | (D) propranolol |

2.4. The ring structures present in the alkaloids are given below. Match them

- | | |
|----------------|-------------------|
| (1) Codeine | (A) Phenanthrene |
| (2) Ergotamine | (B) Indole |
| | (C) Quinoline |
| | (D) ISo-quinoline |

2.5. The following terms are used to describe the parts of certain plants listed in A to D. Match them

- | | |
|----------------|-----------------------------------|
| (1) Hypanthium | (A) Prunus communis |
| (2) Rytidona | (B) Cinnamon bark |
| | (C) Roots of Rauwolfia serpentina |
| | (D) Eugena caryophyllus |

2.6. The chief active constituents in the umbiliferous fruits are given in A to D. Match them

- | | |
|-----------------------------------|-------------|
| (1) <i>Foeniculum capillaceum</i> | (A) Anethol |
| (2) <i>Anethum graveolens</i> | (B) Carvone |
| | (C) Khellin |
| | (D) Linalol |

2.7. Some substances are used in the tablet coating process. Match them

- | | |
|-------------------------------------|------------------|
| (1) Shellac | (A) Polishing |
| (2) Hydroxy propyl methyl cellulose | (B) Seal coating |
| | (C) Film former |
| | (D) Sub coating |

2.8. Some substances are used in the manufacture of pharmaceutical dosage forms are given. Match them.

- | | |
|----------------------|--|
| (1) sorbitol | (A) preservative for capsules |
| (2) titanium dioxide | (B) plasticizer in soft gelatin capsules |
| | (C) lubricant for tablets |
| | (D) opacifier for gelatin mass |

2.9. Match the aerosol systems with the correct propellants:

- | | |
|-----------------------------|----------------------------------|
| (1) aerosol for oral use | (A) propane |
| (2) aerosol for topical use | (B) oxygen |
| | (C) methane |
| | (D) trifluoro monofluoro methane |

2.10. Some of the applications for immobilized enzyme systems are given below. Match the process

- | | |
|--------------------------|---|
| (1) Amino cyclase | (A) N-oxidation of drugs containing hydrazine |
| (2) Flavoprotein oxidase | (B) Resolution of DL-amino acid |

(C) D-amino acid production

(D) Nucleotide production from RNA

2.11. Systematic chemical names of the medicinal agents are given in A to D. Match them.

(1) Indomethacin (A) 13β -ethyl- 17β -hydroxy-18,19-dinor- 17α -preg-4-en-20yn-3-one

(2) Levonorgesterel (B) 13β -ethyl- 17α -hydroxy-18-nor- 17α -preg-4-en-20yn-3-one

(C) 1-(2-chloro benzyl)-5-ethhoxy-2-methyl indoyl-3-yl, acetic acid

(D) 1-(4-chloro benzyl)-5-methoxy-2-methyl indoyl-3-yl, acetic acid

2.12. Match the storage temperatures as per IP:

(1) Cold (A) Between 20°C and 8°C

(2) Warm (B) Below 2°C

(C) Between 30°C and 40°C

(D) Above 40°C

2.13. The wazelengths of two different regions of the electromagnetic spectrum are given in A to D. Match tem

(1) Fingerprint region (A) 2.5 to $8.0\mu\text{m}$

(2) Visible region (B) 8.0 to $15.0\mu\text{m}$

(C) 0.2 to $0.35\mu\text{m}$

(D) 0.4 to $0.8\mu\text{m}$

2.14. Mach the correct applications mentioned in A to D with the two equations:

(1) Nerst equation (A) potential

(2) Ilkovic equation (B) migration current

(C) diffusion current

(D) conductance

2.15. Match the drug with correct drug interaction

- | | |
|--------------------------------|--|
| (1) Phenobarbitone and Digoxin | (A) Induction of hepatic microsomal enzymes |
| (2) Aspirin and Methotrexate | (B) Potentiation of activity of Digitalis |
| | (C) Less absorption of Methotrexate |
| | (D) Displacement of protein binding site – increase toxicity of Methotrexate |

2.16. Match the drugs with their mechanism of action

- | | |
|---------------------------|--|
| (1) α -methyl dopa | (A) multiple sites, including α_2 agonism |
| (2) Minoxidil | (B) catecholamine release |
| | (C) sympathetic neuronal block |
| | (D) non-selective vasodilation |

2.17. Given below are some important metabolic products of the drugs given in A to D. Match them.

- | | |
|--|------------------------|
| (1) p-fluoro phenyl acetic acid glycine conjugate | (A) paracetamol |
| (2) diphenyl methoxy acetic acid glutamine conjugate | (B) diloxanide furoate |
| | (C) haloperidol |
| | (D) diphenhydramine |

2.18. Match the drugs with their percentage protein binding:

- | | |
|---------|---------------------|
| (1) 0% | (A) oxyphenbutazone |
| (2) 99% | (B) lisinopril |
| | (C) hexobarbital |
| | (D) morphine |

2.19. The listed items from A to D can be identified by the test given below. Match them.

- | | |
|--------------------|----------------------------------|
| (1) Coomb's test | (A) Candida albicans |
| (2) Coagulate test | (B) Virulent S. aureus |
| | (C) M.tuberculosis |
| | (D) Non agglutinating antibodies |

2.20. Match the drugs with their mechanism of action

- | | |
|--------------------|--|
| (1) spironolactone | (A) non competitive inhibitor of carbonic anhydrase |
| (2) acetazolamide | (B) inhibitor of Na ⁺ and Cl ⁻ in Loop of Henle |
| | (C) Competitive inhibitor of aldosterone |
| | (D) Direct inhibition of Na ⁺ and Cl ⁻ reabsorption in proximal tubule |

2.21. Given below are different schedules. Match them.

- | | |
|-----------------|---|
| (1) Schedule FF | (A) standards for ophthalmic preparations |
| (2) Schedule M | (B) disease or ailments which a drug may not purport to prevent or cure |
| | (C) life period of drugs |
| | (D) requirement of factory premises |

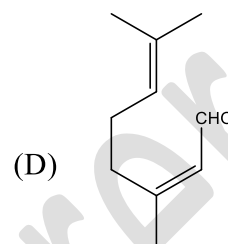
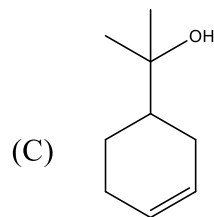
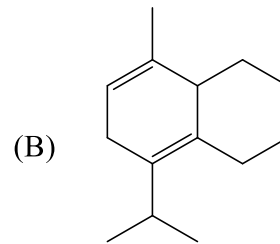
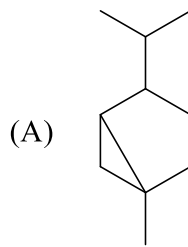
2.22. Match the detectors and the instruments.

- | | |
|-------------------------------|--------------------------|
| (1) Flame ionization detector | (A) IR spectrophotometer |
| (2) Golay pneumatic detector | (B) UV spectrophotometer |
| | (C) Flame photometer |
| | (D) Gas chromatograph |

2.23 Appropriate structural formulae for Monocyclic and Bicyclic monoterpene are given in A to D. Match them

1. Monocyclic Monoterpene

2. Bicyclic Monoterpene



2.24. Match the sterilization methods.

- | | |
|-------------------------|---------------------------|
| (1) Dry heat | (A) rooms |
| (2) γ -radiation | (B) Plastic syringes |
| | (C) Talcum powder |
| | (D) Intravenous admixture |

2.25. Listed are some of the microscopical characters of bark powder obtained from the plant mentioned in the A to D. Match them

- (1) Narrow slender lignified fibers occur slightly 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 longer fibres. Abandoned cork

- (A) *Cinchona succirubra*
(B) *Cinnamomum zeylanicum*
(C) *Cinnamomum cassia*
(D) *Holarrhena antidysentrica*

ANSWER KEY FOR GATE- 1999

1.1. (D)	1.2. (A)	1.3. (C)	1.4. (A)	1.5. (A)	1.6. (B)
1.7. (C)	1.8. (A)	1.9. (A)	1.10. (B)	1.11. (C)	1.12. (B)
1.13. (A)	1.14. (C)	1.15. (D)	1.16. (D)	1.17. (A)	1.18. (B)
1.19. (C)	1.20. (B)	1.21. (B)	1.22. (A)	1.23. (C)	1.24. (B)
1.25. (A)					

2.

2.1. 1 (B), 2 (D)	2.2. 1(C), 2 (A)	2.3. 1(B), 2 (A)	2.4. 1(A), 2 (B)
2.5. 1 (D), 2 (B)	2.6. 1(A), 2 (B)	2.7. 1(B), 2 (C)	2.8. 1(B), 2 (D)
2.9. 1 (D), 2 (A)	2.10. 1(D), 2(B)	2.11. 1(D), 2 (A)	2.12. 1(B), 2 (C)
2.13. 1 (B), 2 (D)	2.14. 1(A), 2 (C)	2.15. 1(A), 2 (D)	2.16. 1(A), 2 (D)
2.17. 1 (C), 2 (D)	2.18. 1(B), 2 (A)	2.19. 1(D), 2 (B)	2.20. 1(C), 2 (A)
2.21. 1 (A), 2 (D)	2.22. 1(D) 2 (A)	2.23. 1(C), 2 (A)	2.24. 1(C), 2 (B)
2.25. 1 (C), 2 (D)			

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