

GATE-1998

1.1 The Opium alkaloids in *Papaver somniferum* is present as one of the following. Identify:

- (a) Free alkaloids
- (b) As salts of citric acid
- (c) As salts of meconic acid
- (d) None of these

1.2. In expressing Vitamin A activity, one of the following is true:

- (a) One RE represents the biological activity of 1 μg of all trans retinol
- (b) One RE represents the biological activity of 30mg of all trans retinol
- (c) One RE represents the biological activity of 0.334 μg of all trans retinol
- (d) None of these

1.3. Which of the following antineoplastic agent is metabolized by xanthine oxidase?

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

1.4. If a drug has a very small Volume of distribution, it is likely that the drug

- (a) has a short biological half life
- (b) does not accumulate in various tissues and organs
- (c) not bioavailable
- (d) will not be effective

1.5. The energy of a photon is given by the relationship $E=h\nu$, where:

- (a) E is energy of photon in kilo calories
- (b) E is energy of photon in cycles/sec
- (c) E is the energy of photon in joules
- (d) E is the energy of photon in Ergs

1.6. Gas chromatographic technique can be used for:

- (a) qualitative analysis only
- (b) quantitative analysis only
- (c) both of these
- (d) none of these

1.7. Reference compound widely used in NMR spectroscopy in non aqueous medium is:

- (a) Silane
- (b) Tetramethylsilane
- (c) DPPH
- (d) Peroxylamide sulphonate

1.8. Lisosomes are:

- (a) uni or bi layer vesicles of phospholipids
- (b) types of enzymes
- (c) fibrinopeptides
- (d) red blood cells

1.9. The gonadal hormones such as estrogens and progestins bind with:

- (a) receptors located in cytoplasm
- (b) receptors located in nucleus of cells
- (c) receptors located in contractile vacuoles
- (d) none of the above

1.10. A highly sensitive semi quantitative method for detecting microbial agents in biological fluids is:

- (a) Coulter counter electrophoresis
- (b) Nitroblue tetrazolium dye test
- (c) Coomb's test
- (d) Radio immune electrophoresis

1.11. Polyene antibiotics such as Amphoterecin B are most likely to

- (a) inhibit bacterial DNA synthesis
- (b) bind to prokaryotic ribosomes
- (c) act as antimetabolites
- (d) react with sterols in membranes

1.12. Among the following statements, most appropriate for γ -interferon is:

- (a) They are virus specific substances, not host specific, naturally occurring glycoproteins
- (b) They are not virus specific substances, however, they are naturally occurring glycoproteins
- (c) They are not virus specific substances, however they are not host specific either, they are naturally occurring glycoproteins
- (d) They are virus specific and host specific, naturally occurring glycoproteins

1.13. The tear secretion contains an antibacterial enzyme known as:

- (a) zymase
- (b) diatase
- (c) lysozyme
- (d) lipase

1.14. Which of the following ACE inhibitor is not a prodrug:

- (a) benzepril
- (b) captopril
- (c) quinapril
- (d) ramipril

1.15. Which of the following is not a pharmacological effect of Morphine:

- (a) constriction of pupil
- (b) CNS depression
- (c) diarrhea
- (d) respiratory depression

1.16. Half-life equation for First order reaction

- (a) $t/2 = a/2K$
- (b) $t/2 = 0.693/K$
- (c) $t/2 = 1/aK$
- (d) $t/2 = 3/2a^2K$

1.17. Which of the following is true for alkaloidal bases:

- (a) water solubility and organic solvent insolubility
- (b) water insolubility and organic solvent insolubility
- (c) water solubility and organic solvent solubility
- (d) water insolubility and organic solvent solubility

1.18. The conductivity of the solution of electrolysis is:

- (a) non temperature dependent
- (b) temperature dependent
- (c) pressure dependent
- (d) none of these

1.19. Which of the following is commonly used for film coating:

- (a) hydroxypropyl methyl cellulose
- (b) acacia
- (c) simple syrup
- (d) bees wax

1.20. Lamination is:

- (a) separation of tablet into two or more distinct layers
- (b) partial or complete separation of top and bottom crowns
- (c) process of sub coating of tablets
- (d) none of these

1.21. Which opioid is equipotent on μ , δ , κ_1 and κ_3 receptors:

- (a) fentanyl
- (b) methadone
- (c) morphine
- (d) etorphine

1.22. In amperometric titrations which of the following is kept constant:

- (a) current
- (b) resistance
- (c) voltage applied
- (d) conductance

1.23. Disposable syringes are made up of:

- (a) polypropylene
- (b) transparent polystyrene
- (c) glass
- (d) poly tetra chloro ethylene

1.24. Typhoid vaccine IP is a sterile suspension of a freeze dried solid prepared from:

- (a) *Staphylococcus aureus*
- (b) *Staphylococcus epidermis*
- (c) *Salmonella typhi*
- (d) *Bacillus pumilus*

1.25. In the microbiological assay of Bacitracin IP, the test organism used is:

- (a) *Staphylococcus aureus*
- (b) *Salmonella paratyphi*
- (c) *Micrococcus luteus*
- (d) *Salmonella enteritidis*

1.26. In the general formula R-X-C-C-N; X=Nitrogen, or Carbon, R-Different groups. Then this formula represents:

- (a) antitussive
- (b) antipyretic
- (c) analgesics
- (d) antihistaminics

1.27. The biological source of cinnamon bark is:

- (a) dried inner bark of the shoot of coppiced trees of *Cinnamomum zeylanicum*. Family-Lauraceae
- (b) dried inner bark of the shoot of coppiced trees of *Cinnamomum indicum*. Family-Lauraceae
- (c) dried wood bark of *Cinnamomum camphora*. Family- Lauraceae
- (d) dried inner bark of the shoot of coppiced trees of *Cinnamomum loureirii*. Family-Lauraceae

1.28. Chemically Cortisone is:

- (a) 4-Pregnene-17 α ,21-diol-3,11,20-trione
- (b) 3-Pregnene-17 α ,21-diol-3,11,20-trione
- (c) 4-Pregnene-11 β , 17 α , 21-triol-3,11,20-trione
- (d) 4-Pregnene-12 β , 17 α , 21-triol-3,20-dione

1.29. Which of the following carbonic anhydrase inhibitors can inhibit only luminal carbonic anhydrase enzyme:

- (a) methazolamide
- (b) acetazolamide
- (c) dichlorophenamide
- (d) benzolamide

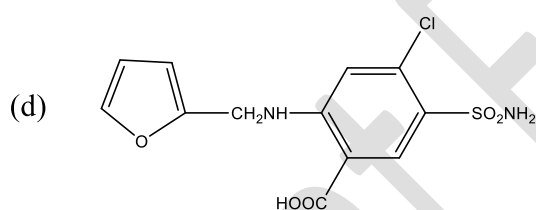
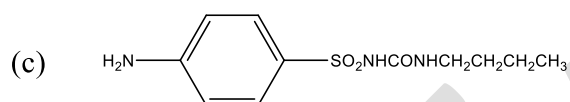
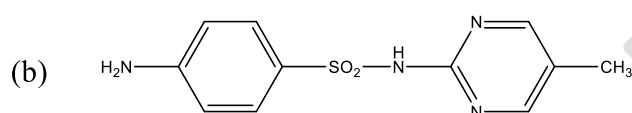
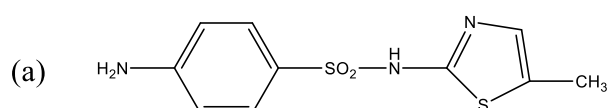
1.30. Testosterone is rapidly converted to one of the following metabolic products in many tissues, which is the active androgen:

- (a) 5 β -dihydro testosterone
- (b) 5-OH- testosterone
- (c) 5 α -dihydro testosterone
- (d) 5 α , 6 β -OH testosterone

1.31. Which of the following is an alkylating agent:

- (a) cyclophosphamide
- (b) methotrexate
- (c) allopurinol
- (d) rifampicin

1.32. Listed below are structures of sulphonamides. One of them used as an antidiabetic drug



1.33. Four of the intermediates are listed below. Choose the correct one for synthesis of Bupivacaine:

- (a) α -picolinic acid chloride with 2,6-diethyl aniline
- (b) β -picolinic acid chloride with 2,6-diethyl aniline
- (c) α -picolinic acid chloride with aniline hydrochloride
- (d) β -picolinic acid chloride with 2,6-dimethyl aniline

1.34. Which of the following immunizing agents is administered orally:

- (a) Tetanus toxoid
- (b) Rabies vaccine

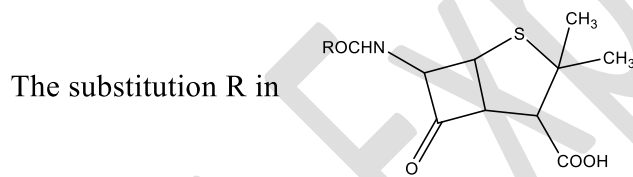
2.4. The following glycosides of *Digitalis purpurea* give on hydrolysis the genins and sugars listed in A to D. Match them:

- | | |
|---|---|
| (1) <i>Digitalis purpurea</i> Glycoside A | (A) 1,3,5-tri-O-acetyl-11 α -19-hexahydroxy cardenolide + Glucose + Digitoxose |
| (2) <i>Digitalis purpurea</i> Glycoside B | (B) 3 β ,14 β -dihydroxy cardenolide + Glucose + Digitoxose |
| | (C) 3 β ,14 β , 16 β -trihydroxy cardenolide + Glucose + Digitoxose |
| | (D) 3 β ,12 β , 14 β -trihydroxy cardenolide + Glucose + Digitoxose |

2.5. Listed are some of the important antibiotics A to D. Match them:

- | | |
|------------------|--------------------------------------|
| (1) Bacitracin | (A) From several amino acids |
| (2) Erythromycin | (B) From single amino acid |
| | (C) From acetate or propionate units |
| | (D) From sugars |

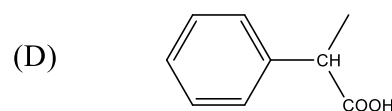
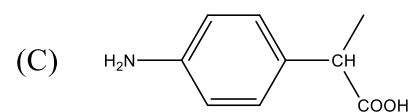
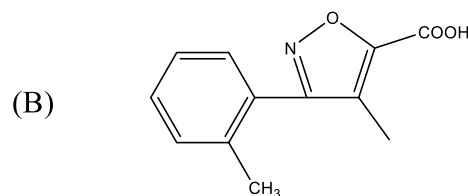
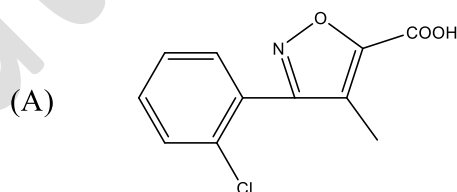
2.6



is listed in A to D for the following antibiotics. Match them

(1) CLOXACILLIN

(2) CARBENICILLIN



2.7. Some of the vitamins listed below are associated with co-enzymes given in A to D. Match them.

- | | |
|-------------------|----------------|
| (1) Nicotini acid | (A) Coenzyme A |
| (2) Riboflavin | (B) Coenzyme I |
| | (C) TPP |
| | (D) FAD |

2.8. Listed are some tablet additives. Match them with their correct uses given in A to D.

- | | |
|-------------|---------------|
| (1) Acacia | (A) Binder |
| (2) Lactose | (B) Glidant |
| | (C) Diluent |
| | (D) Lubricant |

2.9. The compounds listed are assayed by methods given in A to D. Match them.

- | | |
|---------------------------------|---------------------------|
| (1) Pyridoxine hydrochloride IP | (A) Colorimetry |
| (2) Ranitidine hydrochloride | (B) HPLC |
| | (C) Flourimetry |
| | (D) Non-aqueous titration |

2.10. The following techniques are associated with support materials used in the column which are given in A to D. Match them.

- | | |
|-----------------------------------|---|
| (1) Size exclusion chromatography | (A) Octadecyl silane chemically bonded to porous silica |
| (2) HPLC | (B) Cellulose acetate |
| | (C) Diatomaceous support |
| | (D) Agarose F.C. |

2.11. For the following potentiometric titrations indicator electrode used is given in A to D. Match them.

- | | |
|-------------------|-------------------------------|
| (1) Acid base | (A) Silver electrode |
| (2) Complexometry | (B) Glass electrode |
| | (C) Platinum electrode |
| | (D) Mercury-mercury electrode |

2.12. Following ring systems are present in the alkaloids listed in A to D. Match them.

- | | |
|------------------|-----------------|
| (1) Imidazoline | (A) PELLETERINE |
| (2) Isoquinoline | (B) NICOTINE |
| | (C) PAPAVERINE |
| | (D) Pilocarpine |

2.13. Following constituents are present in drugs listed in A to D. Match them.

- | | |
|----------------|-------------------------------|
| (1) D-Linalol | (A) Opium |
| (2) Panaxadiol | (B) <i>Coriandrum sativum</i> |
| | (C) Ginseng |
| | (D) Brahmi |

2.14. Systematic names of biologically active purines are given in A to D. Match them

- | | |
|-------------|-------------------------------------|
| (1) Adenine | (A) 2-IMINO-6-HYDROXY PURINE |
| (2) Guanine | (B) 6-AMINOPURINE |
| | (C) 1,3,7-DIMETHYL-6-HYDROXY PURINE |
| | (D) 6-HYDROXYPURINE |

2.15. The drugs mentioned below are synthesized from intermediates listed in A to D. Match them.

- | | |
|-----------------|---|
| (1) Meprobamate | (A) 2-CHLORO-5-AMINO BENZOPHENONE and glycine |
| (2) Diazepam | (B) 2-AMINO-5-CHLORO BENZOPHENONE and ethyl glycinate |
| | (C) 2-ETHYL BENZALDEHYDE and Formaldehyde |
| | (D) 2-METHYL VALERALDEHYDE and Formaldehyde |

2.16. Match the drugs with their mechanism of action

- | | |
|--|-----------------|
| (1) Interferes with rennin-angiotensin system | (A) Hydralazine |
| (2) Directly dilates arteriolar smooth muscles
and thus decreases peripheral resistance | (B) Methyldopa |
| | (C) Enalapril |
| | (D) Clonidine |

2.17. Given below A to D are application forms for specific purposes listed as per D and C act. Match them

- | | |
|--|-------------------|
| (1) Manufacture of cosmetics | (A) Form no. 31 |
| (2) Retail sale of schedule C and C1 drugs | (B) Form no. 20 C |
| | (C) Form No. 20 |
| | (D) Form no. 21 E |

2.18. Match the following solubility limits:

- | | |
|-----------------------|----------------------|
| (1) Very soluble | (A) less than 1 |
| (2) Sparingly soluble | (B) from 1 to 10 |
| | (C) from 30 to 100 |
| | (D) from 100 to 1000 |

2.19. Match the pH range of following physiological fluid:

- | | |
|-----------|------------|
| (1) Blood | (A) pH 7.4 |
| (2) Skin | (B) pH 6.4 |
| | (C) pH 5.5 |
| | (D) pH 6.8 |

2.20. Match the following microscopical characters of the drugs:

- | | |
|---|--------------------------------------|
| (1) Rubiaceous type stomata (paracytic) | (A) <i>Atropa belladonna</i> leaves |
| (2) Ranunculaceous type stomata | (B) <i>Cassia acutifolia</i> leaves |
| | (C) <i>Cassia auriculata</i> leaves |
| | (D) <i>Digitalis purpurea</i> leaves |

ANSWER KEY FOR GATE 1998

1.1. (C)	1.2. (C)	1.3. (A)	1.4. (B)	1.5. (A)	1.6. (A)
1.7. (B)	1.8. (A)	1.9. (A)	1.10. (D)	1.11. (D)	1.12. (A)
1.13. (C)	1.14. (C)	1.15. (C)	1.16. (B)	1.17. (D)	1.18. (B)
1.19. (A)	1.20. (A)	1.21. (D)	1.22. (C)	1.23. (B)	1.24. (C)
1.25. (C)	1.26. (D)	1.27. (A)	1.28. (A)	1.29. (D)	1.30. (B)
1.31. (A)	1.32. (C)	1.33. (D)	1.34. (C)	1.35. (D)	

2.

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

Grat Explore