

1. Hydrochloric acid buffer may be prepared with a pH in the range of
  - A. 1.2 to 2.2
  - B. 2.2 to 4
  - C. 4.2 to 5.8
  - D. 5.8 to 8.0
  
2. Test for pyrogens involves
  - A. Measurement of rise in body temperature of rabbits following intravenous injection of a sterile solution of the substance being examined.
  - B. Measurement of rise in body temperature of human subjects following intravenous injection of a sterile solution of the substance being examined.
  - C. Measurement of rise in body temperature of rabbit's oral administration of the substance being examined.
  - D. None of the above.
  
3. An infra red spectrophotometer for recording the spectra in the infra-red region consists of an optical system capable of providing the monochromatic light in the region of
  - A. 800 to 200  $\text{cm}^{-1}$
  - B. 4000 to 625  $\text{cm}^{-1}$
  - C. 2000 to 800  $\text{cm}^{-1}$
  - D. 1200 to 200  $\text{cm}^{-1}$
  
4. The units of osmolar concentration are usually expressed as
  - A. Milliosmols of solute per litre of solution
  - B. Milliosmols of solute per millilitre of solution
  - C. Milliosmols of solute per gram of solution
  - D. None of the above
  
5. 'Fine powder' is a powder
  - A. All the particles of which pass through a sieve with a nominal mesh aperture of 1700  $\mu\text{m}$  and not more than 40% by weight pass through a sieve with a nominal mesh aperture of 355  $\mu\text{m}$ .
  - B. All the particles of which pass through a sieve with a nominal mesh aperture of 710  $\mu\text{m}$  and not more than 40% by weight pass through a sieve with a nominal mesh aperture of 250 $\mu\text{m}$ .
  - C. All the particles of which pass through a sieve with a nominal mesh aperture of 125  $\mu\text{m}$  and not more than 40% by weight pass through a sieve with a nominal mesh aperture of 45 $\mu\text{m}$ .
  - D. All the particles of which pass through a sieve with a nominal mesh aperture of 180  $\mu\text{m}$  and not more than 40% by weight pass through a sieve with a nominal mesh aperture of 125 $\mu\text{m}$ .
  
6. Sterilization can be achieved by
  - A. Autoclaving
  - B. Application of dry heat
  - C. Application of radiation
  - D. All of above
  
7. Karl Fischer reagent is used for the determination of
  - A. Salt
  - B. Acids
  - C. Water
  - D. All of the above
  
8. The unit of 'Electric resistance' is
  - A. Gray
  - B. Watt
  - C. Ohm
  - D. Pascal

9. specific optical rotation is obtained at ..... at the wavelength of the D line of sodium  
A.  $10^\circ$                       B.  $20^\circ$                       C.  $30^\circ$                       D.  $60^\circ$
10. Talc is powdered  
A. Magnesium stearate   B. Magnesium silicate   C. Sodium stearate   D. Sodium silicate
11. Resonance structures of a molecule have  
A. Same arrangement of atoms and same number of paired electrons.  
B. Different arrangement of atoms and different number of paired electrons.  
C. Same arrangement of atoms and different number of paired electrons.  
D. Different arrangement of atoms and same number of paired electrons.
12. Which of the following compounds have lowest dipole moment?  
A. Carbon tetrachloride      B. Chloromethane      C. Dichloromethane      D. Chloroform
13. What is the possible number of optical isomers for a compound containing n dissimilar asymmetric carbon atoms?  
A.  $n^2$                       B.  $2^n$                       C.  $n+1$                       D.  $n+2$
14. Homolytic fission of C-C bond leads to the formation of :  
A. Carbanions              B. Carbonium ions      C. Free radicals              D. None of these
15. Which of the following is a Lewis acid?  
A.  $\text{AlCl}_3$                       B.  $\text{CH}_3\text{OH}$                       C.  $\text{NH}_3$                       D.  $\text{CH}_3\text{OCH}_3$
16. Which group forms the strongest H-bonds to water molecules?  
A. Alcohols                      B. Ethers                      C. Phenols                      D. All equally strong
17. Bakelite has the following characteristics:  
A. A polymer made from phenol and formaldehyde  
B. A thermosetting plastic  
C. Can be used as an adhesive  
D. All of the above
18. Naphthalene undergoes reduction with H in the presence of Ni catalyst at high temperature and pressure to give  
A. Phthalic acid              B. Decalin                      C. Benzoic acid              D. Tetralin
19. When aniline is heated with glycerol in the presence of sulphuric acid and nitrobenzene, it gives quinoline. This reaction is called  
A. Fischer synthesis      B. Skraup synthesis      C. Diazotisation              D. Corey-House synthesis

20. Which of the following heterocyclic compounds is not aromatic?  
 A. Pyridine                      B. Pyrrole                      C. Furan                      D. Piperidine
21. What is the hybridization of the orbital occupied by the lone pair of electrons in ammonia?  
 A.  $sp^3$                       B.  $sp^4$                       C.  $sp$                       D.  $sp^2$
22. Which type of alcohol is generated in the reaction between formaldehyde and a Grignard reagent?  
 A. No alcohol is generated                      B. A secondary alcohol  
 C. A primary alcohol                      D. A tertiary alcohol
23. Which of the following characteristics of an eutectic mixture show that it is an intimate mechanical mixture and not a compound:  
 A. The components can be separated mechanically  
 B. A heterogeneous structure can be seen under a microscope  
 C. X-ray reveals the existence of two phases  
 D. All of the above
24. Which of the following properties of gels is termed as "Syneresis"?  
 A. If a xerogel is placed in contact with a liquid that solvates it then an appreciable amount of the liquid is taken up and the volume of the gel increases  
 B. Gels will often contract spontaneously and exude some of the fluid medium  
 C. Colloidal systems usually exhibit slow spontaneous aggregation.  
 D. All of above
25. Mixtures which are formed from materials such as gases or miscible liquids, where irreversible mixing would take place, by diffusion, without the expenditure of work provided time is unlimited:  
 A. Positive mixtures    B. Negative mixtures    C. Neutral mixtures    D. None
26. In the drying curve, the end of the constant rate period is called  
 A. Equilibrium moisture content    B. Critical moisture content    C. Loss on drying    D. None
27. This is the outgrowth of the protoplasm of bacterial cell and responsible for their movement.  
 A. Slime layer                      B. Fimbria                      C. Flagellum                      D. Ribosomes
28. These type of bacteria like a temperature range of 25 to 45°C  
 A. Psychotrophs                      B. Mesophils                      C. Thermophils                      D. All
29. *Escherichia coli* belongs to the family of:

- A. Spirillaceae                      B. Brucellaceae                      C. Micrococcaceae                      D. Bacillaceae
30. The following antibody neutralizes the antigen ' Exotoxin'
- A. Agglutinin                      B. Precipitin                      C. Antitoxin                      D. Bacteriolysin
31. These are potassium, sodium or, occasionally, other metallic salts of derivatives of 6-aminopenicillanic acid:
- A. Tetracyclines                      B. Penicillins                      C. Chloramphenicol                      D. Erythromycin
32. A chemical used to destroy the biological agents that cause disease in man, animals or plants and is commonly applied when destruction takes place in, or on inanimate objects.
- A. Antiseptic                      B. Antagoniser                      C. Sanitiser                      D. Disinfectant
33. When a crude drug is immersed in a bulk of solvent for extraction, the process is called
- A. Maceration                      B. Percolation                      C. Reserve percolation                      D. None
34. For the continuous filtration of slurries containing high proportion of solids, which filter may be suitable
- A. Leaf filter                      B. Plate and frame                      C. Rotary filter                      D. Sieves
35. Which of the following may be added to a powder mass to improve its flow properties?
- A. Lubricant                      B. Glidant                      C. Antiadherent                      D. Binder
36. Size reduction with impact and attrition will be achieved by which type of mill?
- A. Cutter mill                      B. Roller mill                      C. Hammer mill                      D. Ball mill
37. The following operation may improve the solubility and bioavailability of drug:
- A. Size reduction and increase the surface area  
 B. Size reduction and decrease the surface area  
 C. Coagulation and increase the surface area  
 D. Coagulation and decrease the surface area
38.  $t_{1/2} = a/2k$ ; this is the equation for determination of half life for which type of reactions?
- A. Zero order                      B. First order                      C. Second order                      D. All
39. Common cause of chemical instability in pharmaceutical materials may be
- A. Hydrolysis                      B. Oxidation                      C. Reaction between formulation ingredients                      D. All
40. The factors that determine the rate of sedimentation of suspensions :
- A. Diameter of the particles                      B. Density of the particles  
 C. Viscosity of the particles                      D. All

41. These solvents are chemically inert and are not involved in any chemical reaction:  
A. Aprotic                      B. Protogenic                      C. Protophilic                      D. Amphiprotic
42. Nerst equation:  $E = E^{\circ} + (0.0592/n) \log c$ ; what is n in this equation?  
A. Number of ions    B. Valency of ions  
C. Concentration of ions    D. Standard potential of metal
43. NMR spectra is given only by  
A. Nuclei with odd mass number  
B. Nuclei with even mass number  
C. Both A and B  
D. None of above
44. The application of TLC:  
A. Separation of mixtures of drugs  
B. Separation of carbohydrates, vitamins, antibiotics, etc.  
C. Identification of drugs  
D. All of above
45. Sample cells used in UV spectroscopy is made of:  
A. Glass                      B. Nickel                      C. Quartz                      D. Copper
46. When a drug is susceptible to moisture and has good compressibility, which method can be used for tablet preparation?  
A. Granulation with binder solution and compression  
B. Granulation with roller compactor and compression  
C. Mixing and Direct compression  
D. Fluid bed granulation and compression
47. Which type of mills may be employed in the preparation of emulsions?  
A. Ball mill                      B. Fluid energy mill                      C. Colloid mill                      D. Cutter mill
48. A clear solution may be formed with an emulsifier with a HLB value of  
A. 2.1                      B. 5.5                      C. 8.0                      D. 20.0
49. Borosilicate glass is classified as  
A. Type I                      B. Type II                      C. Type III                      D. Type NP
50. Phenytoin is a  
A. Strong acid                      B. Very Weak base                      C. Very weak acid                      D. Strong base

51. In the cell cycle, the phase of DNA synthesis is termed as  
A. M phase                      B. S phase                      C. G<sub>1</sub> phase                      D. G<sub>2</sub> phase
52. Drug affecting autonomic ganglia as stimulants is:  
A. Nicotine                      B. Lobeline                      C. Dimethylphenyl-piperazinium                      D. All
53. Allopurinol, a drug used in gout acts by  
A. Inhibiting uric acid synthesis  
B. Increasing uric acid excretion  
C. Inhibiting leucocyte migration into the joint  
D. Analgesic effects only
54. Clinical use of angiotensin-converting enzyme inhibitors include  
A. Hypertension                      B. Cardiac failure                      C. Progressive renal insufficiency                      D. All
55. Main side effect of buspirone may include  
A. Nausea and dizziness                      B. Sedation                      C. Motor incoordination                      D. Withdrawal effects
56. In the category of opiate drugs, which one is classified as pure agonist  
A. Naloxone                      B. Nalorphine                      C. Methadone                      D. Naltrexone
57. Type of genetic change that can lead to cancer includes:  
A. Activation of proto-oncogenes to oncogenes  
B. Inactivation of tumour suppressor genes  
C. Both A and B  
D. None of above
58. Drug that is mainly excreted unchanged in the urine is:  
A. Gentamycin                      B. Lithium                      C. Digoxin                      D. All
59. Atropine belongs to what group of alkaloids?  
A. Imidazole                      B. Indole                      C. Tropane                      D. Quinoline
60. Volatile oils are:  
A. Colorless when pure and fresh and they acquire various colors on exposure to air  
B. Majority of them are lighter than water  
C. Their volatility results in their aromatic properties  
D. All of above