



PUNJAB TECHNICAL UNIVERSITY JALANDHAR

Max. Marks: 90

Time: 90 Mins.

Entrance Test for Enrollment in Ph.D. Programme

Important Instructions

- Fill all the information in various columns, in capital letters, with blue/black ball point pen.
- Use of calculators is not allowed. Use Blue/Black ball point pen for attempting the questions.
- All questions are compulsory. No negative marking for wrong answers.
- To attempt a question, make a tick mark (✓) at the right option/answer.
- Each question has only one right answer.
- Questions attempted with two or more options/answers will not be evaluated.

Stream (Engg./Arch./Pharm./Mgmt./App.Sci./Life Sci.)

Pharmaceutical Sciences

Discipline

Pharmacy

Name

Father's Name

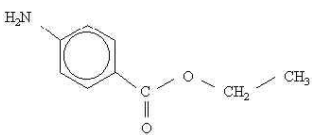
Roll No.

Date: **15-01-2011**

Signature of Candidate

Signature of Invigilator

- Q.1 Hepatitis A and E are spread by:
- a) Skin contact
 - b) Exhaled infected breath
 - c) Blood transfusion and sexual intercourse
 - d) Infected food and water
- Q.2 The correct equivalent for -10°C is:
- a) -10°F
 - b) -18°F
 - c) 22°F
 - d) 14°F
- Q.3 Acetylcholine action at the nicotinic receptor in motoneuron – Renshaw cell synapse is:
- a) Excitatory, causing decreased K^{+} conductance
 - b) Excitatory, causing increased K^{+} conductance
 - c) Inhibitory, causing decreased K^{+} conductance
 - d) All of the above
- Q.4 HLB value of potassium chloride is:
- a) 4
 - b) 40
 - c) 12
 - d) None of the above
- Q.5 Among the following preparations, which one would be the most irritating to the eye?
- a) Purified water
 - b) 0.9% NaCl solution
 - c) 0.7% NaCl solution
 - d) 1.0% NaCl solution
- Q.6 The antimicrobial action of cephalosporins can best be explained on the basis of:
- a) Competitive antagonism of purine precursors
 - b) Inhibition of cell wall synthesis
 - c) Inhibition of protein synthesis
 - d) Inhibition of DNA synthesis
- Q.7 Antidotes of d-tubocurarine and atropine, respectively are:
- a) Hyoscyamine and physostigmine
 - b) Physostigmine and hyoscyamine
 - c) Quinidine and reserpine
 - d) Nicotine and neostigmine
- Q.8 The term, "sodium chloride equivalent", used to estimate the amount of additives needed to render a solution isotonic, may be defined as:
- a) Amt of NaCl equivalent to 1 g of a chemical
 - b) NaCl milliequivalents needed for isotonicity
 - c) Amt of a chemical equivalent to 1 g of NaCl
 - d) % of NaCl needed to make solution isotonic
- Q.9 Biological half-life of a drug is calculated by:
- a) $0.693 \times \text{Cl}/V_d$
 - b) $0.693 \times V_d/\text{Cl}$
 - c) $0.693 \times \text{K}/\ln 2$
 - d) $0.693 \times \ln 2/\text{K}$
- Q.10 A microorganism which can enter the body only through an injury is:
- a) *Salmonella typhi*
 - b) *Staphylococcus aureus*
 - c) *Clostridium tetani*
 - d) *Streptococcus ptrogenes*

- Q.11 Which one of the following is not a calcium channel blocker:
- Nifedipine
 - Ramipril
 - Bepridil
 - Diltiazem
- Q.12 Analysis of variance (ANOVA) is a statistical technique that can be used to find:
- Equality of means among group variables
 - Substitution for random assignment
 - Control of sequencing effects
 - Equality of variances among group variances
- Q.13 Which is NOT true for the substance with the following chemical structure:
- 
- CCOC(=O)c1ccc(N)cc1
- Insoluble in water
 - Insoluble in mineral acids
 - Used as a topical local anesthetic
 - Readily hydrolyzed in boiling water
- Q.14 Which of the following test can be employed to evaluate anxiety in experimental animals?
- Morris water maze test
 - Elevated plus maze paradigm
 - Rota rod test
 - Tail flick test
- Q.15 One thousand pictograms are equal to:
- One femptogram
 - One attogram
 - One nanogram
 - One microgram
- Q.16 A new drug is absorbed by transporters (i.e., carriers). Which dosage regimen will ensure maximum bioavailable fraction:
- 0.25 g TID
 - 0.75 g OD
 - 0.375 g BID
 - All of the above
- Q.17 Insulin can't be absorbed orally, as it is:
- A macromolecule
 - Poorly permeable
 - Susceptible to gastric proteolytic enzymes
 - All of the above
- Q.18 Gastroretentive systems are:
- Hydrodynamically balanced systems
 - High density systems
 - Bioadhesive systems
 - Any of the above
- Q.19 Maximum number of compartments permitted in the non-compartmental, mamillary and physiological compartmental modeling are:
- 0, 3 and 10
 - 0, 2 and 0
 - 0, 2 and 20
 - 0, 2 and 1
- Q.20 Which of the following statements is not true regarding nonparametric statistical tests:
- Used on small samples
 - Can be applied to ordinal data
 - Most popular choice is Student's t-test
 - Can be used if data is non-normal
- Q.21 If a drug has a half life of 7 h, after how much time can the drug be assumed to have eliminated (> 99%) from the body:
- 7 h
 - 49 h
 - 70 h
 - 14 h
- Q.22 Hepatic first-pass effect can not be avoided:
- By administering the drug sublingually
 - By administering the drug intramuscularly
 - By administering the drug per-orally
 - By administering the drug subcutaneously
- Q.23 Ibuprofen has a pKa of 5.5. If the pH of the patient's urine is 7.5, what is the ratio of the dissociated to undissociated drug:
- 1 : 100
 - 2 : 1
 - 1 : 2
 - 100 : 1
- Q.24 Loading dose of a drug is majorly based on:
- Time taken for complete elimination
 - % of drug bound to plasma protein
 - % of drug excreted unchanged in urine
 - V_d & the desired plasma drug concentration
- Q.25 During competitive type of antagonism, the equilibrium constant (K_m) and total number of binding sites (V_{max}) get changed as:
- K_m is unchanged and V_{max} is reduced
 - K_m is increased and V_{max} is unchanged
 - K_m is increased and V_{max} is reduced
 - None of the above
- Q.26 Characteristics of active transport of drugs include all of the following except:
- Selectivity by a specific carrier
 - Energy dependence
 - Possibility to occur against conc. gradient
 - Non-saturability

- Q.27 The order of loss of sensory function when a local anaesthetic is used is:
- Temperature, pain, touch & deep pressure
 - Touch, pain, deep pressure & temperature
 - Pain, touch, deep pressure & temperature
 - Pain, temperature, touch & deep pressure
- Q.28 During application of various significance tests, what is inferred by the term “ $p < 0.05$ ”:
- Probability of success in results is 5% or less
 - Probability to reject null hypothesis is $< 5\%$
 - Probability to accept null hypothesis is $< 5\%$
 - Probability of failure in results is 5% or less
- Q.29 Atherosclerosis and high blood pressure are related to each other on the basis of:
- Charles’s law
 - Boyle’s law
 - Hagen-Poiseuille equation
 - Newton’s law of flow
- Q.30 Quinolones should not be administered with:
- Dairy products
 - Antacids
 - Vitamin-Mineral combinations
 - All of the above
- Q.31 Volume of distribution for a drug is:
- Sum of intracellular & extracellular volumes
 - Total blood volume
 - Ratio of drug dose to plasma drug levels
 - Ratio of body weight to body density
- Q.32 Clinically available anticancer drugs have one of the following underlying mechanism of action:
- Improving body defense mechanism
 - Receptor site blockade of cancer cell
 - Inhibition of cell wall synthesis
 - Cell growth inhibition
- Q.33 The absorption of which of the following NSAIDs is not affected when antacids are administered concurrently:
- Fenoprofen
 - Sulindac
 - Piroxicam
 - None of the above
- Q.34 Which of the following is not bactericidal in its action:
- Penicillins
 - Tetracyclines
 - Cephalosporins
 - Isoniazid
- Q.35 The characteristic yellow color of arachis oil is due to the presence of:
- Sterols
 - Carotenoids
 - Flavonoids
 - Squalene
- Q.36 The molecular weight of a drug is 602. Approximately how many molecules would be present in 1 mg of the drug:
- 10^{18}
 - 10^{20}
 - 10^{17}
 - 10^{23}
- Q.37 The renal excretion of a weakly acidic drug of pK_a 3 will be more rapid in alkaline urine than in acidic urine because:
- All drugs are excreted rapidly in basic urine
 - Drug will be unionized; not easily reabsorbed
 - Drug will be ionized; not easily reabsorbed
 - Active transport functions better in basic urine
- Q.38 Which of the following statements is not true about warfarin:
- Has higher molecular weight than heparin
 - Acts within 24 hours of administration
 - Is metabolized chiefly by liver
 - NSAIDs cause hemorrhage with warfarin
- Q.39 Official Indian drug regulatory agency is:
- PCI, India
 - DCGI, India
 - AICTE, India
 - FDA, India
- Q.40 Level A IVIVC is established between:
- MDT and MRT
 - $T_{50\%}$ and C_{max}
 - Percent dissolved and percent absorbed
 - $T_{60\%}$ and AUC
- Q.41 “*Ganja*” as per the Narcotic Drugs and Psychotropic Substances Act means a constituent obtained from *Cannabis sativa*, consisting of its:
- Flowering and fruiting tops
 - Roots
 - Leaves, seeds, flowering tops & fruiting tops
 - All parts of the plant
- Q.42 Good and bad lipoproteins, respectively, are:
- LDL and cholesterol
 - LDL and VLDL
 - HDL and VLDL
 - VLDL and cholesterol

- Q.43 Punarnava consists of the whole herb of *Boerhaavia diffusa* and it is used in:
- Gonorrhoea
 - Cardiac diseases
 - Liver diseases
 - Cold and cough
- Q.44 In severe alcohol intoxication, the blood ethanol levels exceed:
- 150 ng/dL
 - 300 ng/dL
 - 250 ng/dL
 - 400 ng/dL
- Q.45 DNA fingerprinting does not help in:
- Solving paternity disputes
 - Curing genetic diseases
 - Identifying criminals in sexual crimes
 - Authenticating plant breeding programmes
- Q.46 Cetyl trimethyl ammonium bromide (Cetrimide, Savlon) is not administered orally, as it is:
- Poorly permeable
 - Poorly soluble
 - Corrosive
 - Highly toxic
- Q.47 A drug used to "kill" viruses is:
- Idoxuridine
 - Acyclovir
 - AZT
 - None
- Q.48 Radioactive iodine is used in treatment of:
- Hypothyroidism
 - Hyperthyroidism
 - Iodinemia
 - Goitre
- Q.49 In chronic alcoholics and chain smokers, the drug dose has to be invariably:
- Increased
 - Decreased
 - Unchanged
 - Stopped
- Q.50 Which of the following solvents is not used in NMR spectroscopy:
- CCl_4
 - CHCl_3
 - CS_2
 - CF_3COOH
- Q.51 Most of the skin diseases are treated using:
- Ocimum sanctum*
 - Terminalia chebula*
 - Azadirachta indica*
 - Saraca indica*
- Q.52 Which of the following correlations is the strongest:
- 0.9997
 - 0.0001
 - +0.9031
 - +0.5000
- Q.53 Usually, the volatile oils are the mixture of:
- Mono and sesquiterpenes
 - Sesquiterpenes and diterpenes
 - Mono and diterpenes
 - Monoterpenes & aliphatic compounds
- Q.54 Which of the following factors is also known as the lipid solubility of an anaesthetic agent:
- Blood : gas partition coefficient
 - Minimum alveolar concentration
 - Oil : gas partition coefficient
 - Oil : blood partition coefficient
- Q.55 Balsams are resinous substances which contain large proportions of:
- Resins and volatile oils
 - Glycosides and resin
 - Gum, resin and volatile oil
 - Benzoic acid, cinnamic acid & their esters
- Q.56 The antidote for cyanide poisoning is:
- Dimercaprol
 - Hydroxocobalamin
 - EDTA
 - No antidote
- Q.57 Chemically, ibuprofen is:
- 2-(4-Isobutylphenyl) propionic acid
 - Phthalazin-1-yl hydrazine
 - 3, 20-Dioxo-4-pregnen-17 α -yl benzoate
 - 2,2-Dihydroxy-hexachloro diphenyl methane
- Q.58 Sarson oil and other vegetables contaminated with argemone can cause:
- Glaucoma
 - Dropsy
 - Paralysis
 - Liver cirrhosis

- Q.59 Indicate the correct order of increasing eluent power of the following solvents:
- Chloroform, benzene, ethyl acetate, ether
 - Ether, chloroform, ethyl acetate, benzene
 - Benzene, ether, chloroform, ethyl acetate
 - Ethyl acetate, ether, benzene, chloroform
- Q.60 The antiarrhythmic drug, quinidine, is a:
- (+) Stereoisomer of quinine
 - Racemic mixture of quinine
 - (-) Stereoisomer of quinine
 - None of the above
- Q.61 Infected blood products may produce serum hepatitis due to presence of:
- Hepatitis A virus
 - Hepatitis C virus
 - Hepatitis B virus
 - None of the above
- Q.62 Which of the following is not an ethical guideline for conducting research with human participants?
- Getting informed consent of the participant
 - Keeping participants' identity anonymous
 - Telling them to continue till study completes
 - Telling "you are free to withdraw any time"
- Q.63 Alkyl substitution in an alkene causes the following spectroscopic effect:
- Hypochromic
 - Bathochromic
 - Hyperchromic
 - Hypsochromic
- Q.64 In a double beam spectrophotometer, the primary source of light is divided into two beams of:
- Standard intensity
 - Equal intensity
 - Standard and sample intensity
 - Visible light intensity
- Q.65 A fatty acid which is not synthesized in human body and has to be supplied in diet is:
- Palmitic acid
 - Linoleic acid
 - Oleic acid
 - Stearic acid
- Q.66 Pyrolysis gas chromatography is useful for the analysis of:
- Halogenated compounds
 - High molecular weight compounds
 - Amino acids
 - Low molecular weights compounds
- Q.67 All of the following drugs can be assayed by complexometric titration except:
- Alumina gel
 - Calcium lactate
 - Magnesium sulphate
 - Acetyl salicylic acid
- Q.68 In reversed phase HPLC, the mobile and stationary phase, respectively, are:
- Polar and nonpolar
 - Both are nonpolar
 - Nonpolar and polar
 - Both are polar
- Q.69 Which of the following statements is incorrect regarding the data "4, 6, 9, 4, 2":
- Mean of the data is 5
 - Mode of the data is 4
 - Median of the data is 9
 - Range of the data is 7
- Q.70 Rancidity of fats is due to:
- Oxidation
 - Hydrolysis
 - Saponification
 - Neutralization
- Q.71 All of the following diuretics inhibit carbonic anhydrase, except:
- Acetazolamide
 - Furosemide
 - Bumetanide
 - Ethacrynic acid
- Q.72 Substances which are weakly acidic or basic yield sharp end point if titrated with:
- Strong acid
 - Weak base
 - Strong base
 - Non-aqueous solvent
- Q.73 The functional group which contributes to the instability of aspirin is:
- Alcohol
 - Ester
 - Ketone
 - Carboxylic acid
- Q.74 The main use of *Piper nigrum* is as:
- Aromatic stimulant
 - Antipyretic
 - Antiperiodic
 - Antidiarrhoeal

- Q.75 Approximately how many mL of sulphuric acid (specific gravity 1.3) are required to prepare 1 L of 0.1 N acid?
- 7
 - 50
 - 70
 - 5
- Q.76 Viagra contains anti-impotency drug:
- Viagrinil hydrochloride
 - Nitric oxide
 - Sildenafil citrate
 - Stimulate nitrate
- Q.77 In the gel permeation chromatography, molecules are separated on the basis of:
- Chemical nature
 - Adsorptive properties
 - Size and shape
 - Partition coefficient
- Q.78 If the chloroform extract of a drug on addition of ammonia gets changed to red color, it indicates the presence of:
- Cardiac glycosides
 - Amygdalin
 - Senosides
 - Saponins
- Q.79 Approximately, what percentage of score falls within one (± 1) standard deviation of the mean in a normal distribution?
- 34%
 - 99%
 - 95%
 - 68%
- Q.80 The propellant used for topical aerosols is:
- Propane
 - Trichloromonofluoro methane
 - Nitrous oxide
 - Dichloro difluoro methane
- Q.81 A fluid which requires a definite initial stress to start flowing is termed as:
- Dialatant
 - Pseudoplastic
 - Plastic
 - Thixotropic
- Q.82 Which species, having an erythrocytic cycle of 48 h, is the common cause of malaria, the exo-erythrocytic form of which may remain for years, thus leading to relapses:
- Plasmodium falciparum*
 - Plasmodium ovale*
 - Plasmodium vivax*
 - Plasmodium malariae*
- Q.83 An example of synthetic antimicrobial is:
- Benzyl penicillin
 - Cloxacillin sodium
 - Amphomycin
 - Ciprofloxacin
- Q.84 A drug is being metabolized by zero-order kinetics. This indicates that a constant:
- Drug amount is catabolized every hour
 - Drug amount is present in body at any time
 - Drug fraction is catabolized every hour
 - Time is needed to catabolize half of the drug
- Q.85 Grant of a patent, under "The Patents Act of India, 1970" may be opposed by any person from the date of advertisement of acceptance within a period of:
- 4 months
 - 3 years
 - 10 months
 - 2 years
- Q.86 Oral rehydration mixture contains glucose and sodium, because both of them are:
- Needed to maintain the plasma osmolality
 - Help in G.I. absorption of each other
 - Are prominent energy sources for the body
 - Are required for activation of Na-K ATPase
- Q.87 A research scholar needs to prepare 40% v/v alcohol. In what proportion, he should mix 95% alcohol and water to obtain the desired concentration of alcohol:
- 8 : 11
 - 10 : 9
 - 11 : 8
 - 9 : 10
- Q.88 If a drug has been prepared, packed and stored under insanitary conditions, where it may have been rendered injurious to health, it may be termed as:
- Toxic drug
 - Misbranded drug
 - Adulterated drug
 - Spurious drug
- Q.89 The average pH of urine is close to:
- 5.0
 - 8.0
 - 6.0
 - 7.0
- Q.90 Though rich in nutrients, milk is deficient in:
- Vitamin A
 - Vitamin B₂
 - Vitamin C
 - Vitamin D