



# ਪੰਜਾਬ ਟੈਕਨੀਕਲ ਯੂਨੀਵਰਸਿਟੀ ਜਲੰਧਰ

## 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.
- All questions are compulsory. No negative marking for wrong answers.
- 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 / Branch

PHARMACY

Name

Father's Name

Roll No.

Date: 19-11-2011

Signature of Candidate

Signature of Invigilator

Q. 1 At the isoelectric point an amino acid is

- (a) Soluble
- (b) Insoluble
- (c) Decomposed
- (d) None of the above

Q. 2 Zwitter ion is formed by

- (a) Benzoic acid
- (b) Aniline
- (c) Acetanilide
- (d) Lysine

Q. 3 Which of the following is a protein?

- (a) Natural silk
- (b) Nylon
- (c) Polyester
- (d) Rayon

Q. 4 Which of the following is an aromatic heterocyclic compound?

- (a) Dioxane
- (b) Pyrrolidine
- (c) Thiophene
- (d) Piperidine

Q. 5 Power alcohol is a mixture of

- (a) Ethyl alcohol
- (b) Ethyl and methyl alcohol
- (c) Petrol and Ethyl alcohol
- (d) Petrol and methyl alcohol

Q. 6 Linoleic acid has how many double bonds?

- (a) One
- (b) Two
- (c) Three
- (d) None of the above

Q. 7  $\text{NF}_3$  has dipole moment

- (a) Higher than  $\text{NH}_3$
- (b) Lower than  $\text{NH}_3$
- (c) Equal to  $\text{NH}_3$
- (d) None of the above

Q. 8 Which of the following is not a symmetry element

- (a) Rotational axis of symmetry
- (b) Plane of symmetry
- (c) Alternating axis of symmetry
- (d) Homotropic ligands

Q. 9 Nitrenes are

- (a) Positively charged
- (b) Negatively charged
- (c) Neutral
- (d) None

Q. 10 Eugenol is present in

- (a) Tulsi
- (b) Fennel
- (c) Cardamom
- (d) Coriander

- Q. 11 Which isomer of thalidomide is responsible for teratogenicity?
- (a) *R*
  - (b) *S*
  - (c) Racemic
  - (d) *Meso*
- Q. 12 Listerine mouthwash is a
- (a) Microemulsion
  - (b) Suspension
  - (c) Multiple emulsion
  - (d) Dispersion
- Q. 13 Merrifield resin is
- (a) Polystyrene
  - (b) Polyethylene
  - (c) Polyacrylonitrile
  - (d) Polypropylene
- Q. 14 An important chemical method to resolve racemic mixtures makes use of formation of
- (a) Diastereomers
  - (b) Racemates
  - (c) Enantiomers
  - (d) *Meso* compounds
- Q. 15 The major route of elimination of the volatile general anaesthetics is via
- (a) Kidneys
  - (b) Skin
  - (c) Lungs
  - (d) Liver
- Q. 16 The ideal general anaesthetic agent has
- (a) High blood solubility
  - (b) A rapid recovery period
  - (c) Long duration of action
  - (d) All of the above
- Q. 17 Which of the following belongs to long acting barbiturate?
- (a) Pentobarbital
  - (b) Thiopental
  - (c) Phenobarbital
  - (d) Hexabital
- Q. 18 Which one of the following is a drug of choice for grand-mal epilepsy?
- (a) Diazepam
  - (b) Carbamazepine
  - (c) Phenytoin
  - (d) Lamotrigine
- Q. 19 The antihistaminic that is also an antiemetic is
- (a) Cetrizine
  - (b) Pyrilamine
  - (c) Promethazine
  - (d) Loratidine
- Q. 20 Which one of the following is not a prodrug?
- (a) Clofibrate
  - (b) Lovastatin
  - (c) Simvastatin
  - (d) Ciprofibrate
- Q. 21 The drug that reduces the the absorption of cholesterol from the GIT is
- (a) Colestipol
  - (b) Niacin
  - (c) Ezetimibe
  - (d) Gemfibrosil
- Q. 22 The mechanism of action of antidiabetic rosiglitazone is
- (a) Insulin releasing agent
  - (b) PPAR $\gamma$  agonist
  - (c) Increases cellular uptake of glucose
  - (d) Reduces release of insulin
- Q. 23 Anticoagulants interfere with
- (a) Prothrombin
  - (b) Vitamin K
  - (c) Factor V
  - (d) Factor XII
- Q. 24 Which one of the following is the commonly used bulking agent in the formulation of freeze dried low dose drug products?
- (a) Sodium chloride
  - (b) Mannitol
  - (c) Starch
  - (d) HPMC

- Q. 25 The vitamin essential in tissue culture medium is
- (a) Pyridoxine
  - (b) Thiamine
  - (c) Nicotinic acid
  - (d) Inositol
- Q. 26 Triterpenoids are active constituents of
- (a) Jalborandi
  - (b) Rhubarb
  - (c) Stramonium
  - (d) Brahmi
- Q. 27 Alkaloids are not precipitated by
- (a) Mayer's reagent
  - (b) Dragendroff reagent
  - (c) Picric acid
  - (d) Millon's reagent
- Q. 28 Colchicine is biologically derived from one of the following
- (a) Tyrosine and phenylalanine
  - (b) Tryptophan and phenylalanine
  - (c) Omithine and tryptophan
  - (d) Omithine and phenylalanine
- Q. 29 Total ash value in case of crude drug signifies
- (a) Organic content of the drug
  - (b) Mineral matter in the drug
  - (c) Volatile content in the drug
  - (d) Woody matter present in the drug
- Q. 30 Guggul lipid are obtained from
- (a) *Commiphora molmol*
  - (b) *Boswellia serrate*
  - (c) *Commiphora wighatii*
  - (d) *Commiphora abyssinica*
- Q. 31 Which of the following alkaloid is derived from tyrosin?
- (a) Quinine
  - (b) Morphine
  - (c) Atropine
  - (d) Ephedrine
- Q. 32 Indole-3-acetic acid belongs to
- (a) Auxins
  - (b) Gibrellins
  - (c) Cytokinins
  - (d) Growth inhibitors
- Q. 33 Siam benzoin BP contains
- (a) Acetic acid
  - (b) Benzoic acid
  - (c) Phenylacetic acid
  - (d) Cinnamic acid
- Q. 34 Which one of the following is the test for tannins?
- (a) Phenazone test
  - (b) Bromine test
  - (c) Sodium picrate
  - (d) Benedict test
- Q. 35 Dapsone is used primarily for the management of
- (a) Tuberculosis
  - (b) Leprosy
  - (c) Malaria
  - (d) Urinary tract infection
- Q. 36 Fluoroquinolones are indicated for all of the following except
- (a) Urinary tract infection
  - (b) Tuberculosis
  - (c) Bone infection
  - (d) Bronchial asthma
- Q. 37 One of the following statement on the amino function in penicillin is False
- (a) The C-6 amine moiety is necessary for antibacterial activity
  - (b) Sulfonation improves antibacterial activity
  - (c) Acylation of the amine functionality improves activity
  - (d) Carboxamido derivetisation are well tolerated
- Q. 38 The macrolide antibiotics do not have
- (a) A large lactone ring
  - (b) A glycosidically linked amino sugar
  - (c) A spiroketal group
  - (d) A ketone group
- Q. 39 Rifampin acts by following mechanism of
- (a) Inhibits mycolic acid synthesis
  - (b) Inhibits folic acid synthesis
  - (c) Inhibits DNA-dependent RNA polymerase
  - (d) Makes the tuberculosis organism susceptible to reactive oxygen

- Q. 40 Non steroidal anti-androgen useful as anticancer agents is  
(a) Tamoxifen  
(b) Flutamide  
(c) Etoposide  
(d) Aminoglutethimide
- Q. 41 Which one of the following device is used to increase the efficiency of drug delivery via aerosols?  
(a) Tube spacers  
(b) Metered valves  
(c) Actuator  
(d) Pressure valve
- Q. 42 What is chemotaxis?  
(a) Toxicity of chemicals  
(b) Taxonomy of chemicals  
(c) Inhibition of inflammation  
(d) Movement of leucocytes in inflammation
- Q. 43 Which of the following equation describes the rate of dissolution from tablet?  
(a) Fick's law  
(b) Henderson Hasselbalch equation  
(c) Noyes Whitney equation  
(d) Michelis Menton equation
- Q. 44 Which one of the following is an Ex-Officio member of the State Pharmacy Council?  
(a) Chief Pharmacist of government hospital  
(b) Chief Administrative Medical officer of the state  
(c) Registered Pharmacist  
(d) Assistant drug controller
- Q. 45 Shellac is used in the coating of tablets for  
(a) Polishing  
(b) Seal coating  
(c) Film former  
(d) Sub-coating
- Q. 46 The finger print region corresponds to which wavelength range  
(a) 2.5 to 8.0  $\mu\text{M}$   
(b) 8.0 to 15  $\mu\text{M}$   
(c) 0.2 to 0.35  $\mu\text{M}$   
(d) 0.4 to 0.8  $\mu\text{M}$
- Q. 47 Nernst equation is used to determine  
(a) Potential  
(b) Migration current  
(c) Diffusion current  
(d) Conductance
- Q. 48 Which one of the following is used as titrant for Paracetamol IP?  
(a) Perchloric acid  
(b) EDTA  
(c) Ceric ammonium sulphate  
(d) Tetra butyl ammonium hydroxide
- Q. 49 Which of the following is used as a detector in Gas chromatograph?  
(a) Golay pneumatic detector  
(b) Flame ionization detector  
(c) Refractive index detector  
(d) Phodiode array detector
- Q. 50 The pH of lachrymal fluid is  
(a) 8.0  
(b) 6.0  
(c) 7.4  
(d) 9.0
- Q. 51 Which of the following is used as a source of radiation in NMR spectrophotometer?  
(a) Klystron oscillator  
(b) Globar source  
(c) Radio frequency oscillator  
(d) Deuterium lamp
- Q. 52 Imipramine is used therapeutically for  
(a) Insomnia  
(b) Epilepsy  
(c) Bed wetting in childrens  
(d) Mania
- Q. 53 Antifoaming agents have HLB value in the range of  
(a) 0-3  
(b) 4-6  
(c) 6-8  
(d) 8-10
- Q. 54 Biological half life is  
(a) Ratio of the median lethal dose to the median effective dose  
(b) Dosage used in the treatment  
(c) Elimination of the drug to 50 % of its original concentration  
(d) Time taken for a drug to be absorbed

Q. 55 Helminthiasis is caused by which of the following organism?

- (a) Plasmodium falsiperum
- (b) Taenia solium
- (c) Hepatitis-A-Virus
- (d) Toxoplasma gondii

Q. 56 Which of the following is a selective serotonin reuptake inhibitor?

- (a) Desipramine
- (b) Fluoxetine
- (c) Amantidine
- (d) Vadarabine

Q. 57 Which of the following is used to increase elasticity of soft gel capsule's shell?

- (a) Sorbitol
- (b) Povidone
- (c) PEG
- (d) HPMC

Q. 58 *Staphylococcus aureus* is used for the IP assay of

- (a) Doxycycline
- (b) Bleomycin
- (c) Kanamycin
- (d) Carbenicillin

Q. 59 The phenomenon of increasing the solubility of weak electrolytes and non polar molecules by the addition of a water miscible solvent in which the drug has good solubility is called as

- (a) Complexation
- (b) Cosolvency
- (c) Solubilization
- (d) Hydrotrophy

Q. 60 An IR sensitive compound undergoes change in one of the following properties

- (a) Refractivity
- (b) Polarizability
- (c) Dipole moment
- (d) Dielectric constant

Q. 61 Which one of the following is a selective  $\beta_2$  stimulant?

- (a) Caffeine
- (b) Salbutamol
- (c) Propranolol
- (d) Betahistine

Q. 62 Which one is the commonly used antioxidant for oil system?

- (a) Butylated hydroxyl toluene
- (b) Ascorbic acid
- (c) Sodium metabisulfite
- (d) Thioglycol

Q. 63 Particle size by the gravity sedimentation method can be determined using which of the following apparatus?

- (a) Pyknometer
- (b) Ostwald viscometer
- (c) Anderson apparatus
- (d) Friabilator

Q. 64 The stationary phase used in gel permeation chromatography is

- (a) Alumina
- (b) Charcoal
- (c) Squalene
- (d) Styrene divinyl benzyl co-polymer

Q. 65 The non-ionic surfactant used as a penetration enhancer in the preparation of mucoadhesives is

- (a) Oleic acid
- (b) Tween-80
- (c) Glycerol
- (d) Propylene glycol

Q. 66 Which of the following is a new drug delivery process which is composed of phospholipids that spontaneously form a multilamellar concentric vesicles with layers of aqueous media separating the lipid layer?

- (a) Prodrugs
- (b) Liposomes
- (c) Osmotic pumps
- (d) Nanoparticles

Q. 67 DNA amplification by the polymerase chain reaction uses

- (a) Thermal aquaticus DNA polymerase
- (b) DNA topoisomerase
- (c) RNA polymerase
- (d) DNA helicase

Q. 68 The measure of cohesive strength of the cross linking that occurs between gelatin molecules and is proportional to the molecular weight of gelatin is called

- (a) Bloom strength
- (b) Viscosity
- (c) Surface tension
- (d) Partition coefficient

Q. 69 If the Carr's index of a powder is 10% then the type of powder flow is

- (a) Poor
- (b) Excellent
- (c) Very poor
- (d) Good

Q. 70 Inadequate spreading of the coating solution during tablet coating before drying causes

- (a) Orange peel effect
- (b) Sticking
- (c) Blistering
- (d) Picking

Q. 71 The ratio of void volume to the bulk volume of the packing of the powder is called as

- (a) Porosity
- (b) True density
- (c) Granular density
- (d) Bulk density

Q. 72 Bradykinin is

- (a) A steroidal hormone
- (b) Serotonin derivative
- (c) A nonapeptide
- (d) A lipoprotein

Q. 73 Which of the following undergo Department of Transport (DoT) test

- (a) Strip packing
- (b) Injection
- (c) Glass container
- (d) Aerosol

Q. 74 In WHO guidelines for herbal drugs contaminants includes

- (a) Purines and pyrimidines bases
- (b) Amino acids
- (c) Pentoses
- (d) Pesticide residues, arsenic heavy metals, microbial loads.

Q. 75 Which of the following technique is used to formulate depot formulations?

- (a) Encapsulation
- (b) Solubilization
- (c) Parental suspension
- (d) Microemulsions

Q. 76 Hybridoma technology is used for producing

- (a) Callus culture
- (b) Organ culture
- (c) Monoclonal antibodies
- (d) Attenuated microorganisms

Q. 77 Macrogols are used in the preparation of ointments as

- (a) A water soluble base
- (b) Hydrocarbon base
- (c) Absorption base
- (d) Oleogenous base

Q. 78 Increasing in the extent of conjugation of a double bonded system results in

- (a) Hyperchromic shift
- (b) Hypochromic shift
- (c) Hypsochromic shift
- (d) Bathochromic shift

Q. 79 Draves test is used to measure the efficiency of

- (a) Detergents
- (b) Wetting agents
- (c) Suspending agents
- (d) Adsorbents

Q. 80 When ammonium chloride is gradually and slowly incorporated into an emulsion stabilized with ammonium oleate

- (a) Emulsion will crack immediately
- (b) It will invert from o/w to w/o type
- (c) It will invert from w/o to o/w type
- (d) There will be no impact on its physical stability

Q. 81 Levelling effect is observed in

- (a) Complexometric titration
- (b) Gravimetric analysis
- (c) Non-aqueous titration
- (d) Redox titration

Q. 82 The official dissolution test apparatus contains cylindrical vessel and the lower edge of the blade is positioned from inside bottom of the vessel at

- (a) 18 to 22 mm
- (b) 23 to 27 mm
- (c) 20 to 24 mm
- (d) 25 to 29 mm

Q. 83 Grade A HEPA filters are used for

- (a) Aseptic preparation and filling
- (b) Background room used for preliminary activities
- (c) Filtering liquid preparations
- (d) Handling of components after washing

Q. 84 Which of the following is true for competitive enzyme inhibitors?

- (a) Have affinity only for the [E-S] complex and not for the free [E]
- (b) Binding of the inhibitors and that of the natural substrate are mutually exclusive
- (c) Ultimately binds covalently to the enzyme
- (d) Binds with the same affinity to [E] and [E-S]

Q. 85 The quantity of drug required to make a 2% w/w solution in 240 ml of alcohol(density= 0.816g/ml) is

- (a) 1.632g
- (b) 2.40g
- (c) 4.0g
- (d) 4.80g

Q. 86 Which of the following drug increases the plasma concentration of digoxin by pharmacokinetic mechanism is?

- (a) Lidocaine
- (b) Captopril
- (c) Quinidine
- (d) Hydrochlorthiazide

Q. 87 Which of the following is a plasminogen activator?

- (a) Tranexamic acid
- (b) Streptokinase
- (c) Aminocaproic acid
- (d) None of the above

Q. 88 Humectants added in cosmetic preparations generally acts by

- (a) Hydrogen bonding
- (b) Covalent bonding
- (c) Complex formation
- (d) Action of London forces

Q. 89 The following incompatibility occurs in a mixture of menthol and thymol

- (a) Chemical incompatibility
- (b) Therapeutic incompatibility
- (c) Physical incompatibility
- (d) Tolerance incompatibility

Q. 90 Bloom strength is used to check the quality of

- (a) Lactose
- (b) Ampoules
- (c) Hardness of tablets
- (d) Gelatin