



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.

Discipline / Branch

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Name

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Father's Name

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Roll No.

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1. The quantitative values used for the identification of leaf drugs remain constant throughout the age of the plant except

- (A) Stomatal number
- (B) Veinlet termination number
- (C) Veinislet number
- (D) Stomatal index

2. Mixing of semisolids is carried out using

- (A) Double cone mixer
- (B) Rotating cube mixer
- (C) Planetary mixer
- (D) Fluidized bed mixer

3. Which of the following statement is incorrect for histamine

- (A) Contract bronchial smooth muscle
- (B) Stimulate sensory nerve endings in the skin
- (C) Relax gastrointestinal smooth muscle

(D) Stimulate gastric acid secretion

4. Citrus flavonoids are rich in

- (A) Aesculetin
- (B) Fraxin
- (C) Hesperidin
- (D)Scopoletin

5. The alkaloid which inhibits the cholinesterase undergoes hydrolysis in solution to give methyl carbamic acid and eseroline is:

- (A) Scopolamine
- (B) Pyridostigmine
- (C) Neostigmine
- (D) Physostigmine

6. Insulin stimulate lipogenesis by increasing the activity of

- (A) Acetyl-CoA carboxylase

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- (B) Lactate dehydrogenase
(C) Glycogen phosphorylase
(D) Galactose-1-phosphate-uridyl transferase
7. Silica gel used in most of the adsorbent columns contains -OH groups. So it is
(A) Basic
(B) Neutral
(C) Acidic
(D) Both acidic and basic
8. Diversity in antibody molecules is brought about by
(A) Post-translational modifications
(B) Gene rearrangements
(C) Usage of special genetic codes
(D) Multiple mutations in the polypeptide
9. The Chairman of the Drugs Technical Advisory Board is
(A) The Drugs Controller of India
(B) The Director, Central Drugs Laboratory, Kolkata
(C) The President, Pharmacy Council of India
(D) The Director General of Health Services
10. The raw materials used for the synthesis of Sulfalen are
(A) 4-acetamido benzene sulfonyl chloride and 2-amino-4-methyl pyrimidine
(B) 4-acetamido benzene sulfonyl chloride and 5-amino-2-ethyl-1,3,4 thiadiazole
(C) 4-acetamido benzene sulfonyl chloride and 5-amino-3,4-dimethyl isoxazole
(D) 4-acetamido benzene sulfonyl chloride and 3-amino-2-methoxy pyrazine
11. The distinguishing features in IR spectra between propionaldehyde and acetone is
(A) Weak-CH stretching and out of plane bending in propionaldehyde
(B) Keto group in acetone
(C) Two methyl groups in acetone
(D) - CH₂ group in pionaldehyde
12. Commercial citric acid is produced by the microbial culture of
(A) *Circinella umbellata*
(B) *Calonectria decora*
(C) *Aspergillus niger*
(D) *Rhizopus nigricans*
13. Salbutamol does not
(A) Function as selective β_2 agonist
(B) Dilates the bronchi
(C) Relax the pregnant uterus
(D) Selectively stimulates cardiac β_1 receptors
14. In the Drugs & Cosmetics Act and rules, the Schedule relating to clinical trials of new drug is
(a) Schedule M
(b) Schedule X
(c) Schedule J
(d) Schedule Y
15. A co-solvent used in the preparation of parenteral products is:
(A) Benzyl alcohol
(B) Methyl alcohol
(C) Dimethyl acetamide
(D) Phenol
16. Nitrazepam can be synthesized from
(A) 2-Bromo-5-amino benzophenone
(B) 2-Nitro-2-chloro acetophenone
(C) 2-Amino-5-nitro cyclohexanone
(D) 2-Amino-5-nitro benzophenone
17. Beta lactam ring in case of clavulanic acid is fused with
(A) Oxazolidine system
(B) Thiazolidine system
(C) Thiadiazole system
(D) Oxathiolane system
18. Ephedra sinica and Ephedra equisetina can be distinguished by type of
(A) Branching
(B) Stomata

- (C) Scaly leaves
- (D) Alkaloids

19. Removal of a single electron from a molecule results in the formation of

- (A) Fragment ion
- (B) Metastable ion
- (C) Molecular ion
- (D) Rearrangement ion

20. Leu-enkephalin is

- (A) A structural analogue of morphine
- (B) Peptide transmitter that causes hyperalgesia
- (C) Synthesized from the precursor proopiomelanocortin
- (D) A structural analogue of pethidine

21. Derivatisation techniques in HPLC are intended to enhance

- (A) Molecular weight
- (B) Detectability
- (C) Reversibility
- (D) Reproducibility

22. DNA amplification by the polymerase chain reaction uses

- (A) *Thermus aquaticus* DNA polymerase
- (B) DNA topoisomerase
- (C) RNA polymerase
- (D) DNA helicase

23. 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

24. A water insoluble resin that is used as coating material in microencapsulation process is

- (A) Polyvinyl alcohol

- (B) Silicone
- (C) Hydroxy ethyl cellulose
- (D) Polyvinylpyrrolidone

25. One of the following is used as a pH dependent controlled release excipient

- (A) Ethyl cellulose
- (B) Glyceryl monostearate
- (C) Povidone
- (D) Hydroxy propyl methyl cellulose phthalate

26. Meconic acid is a chemical marker for the genus

- (A) Piper
- (B) Pilocarpus
- (C) Prunus
- (D) Papaver

27. The absorption maximum for polar compounds is usually shifted with change in polarity of the solvents due to

- (A) Hydrogen bonding
- (B) Chemical reaction
- (C) Ionization of the compounds
- (D) Change in the chromophore

28. Prazosin act as antihypertensive via

- (A) Blockade of calcium channels.
- (B) Inhibition of angiotensin converting enzyme.
- (C) Antagonism of alpha 1-adrenoceptors
- (D) Inhibition of transmitter release from noradrenergic nerve terminals

29. In cholesterol biosynthesis which intermediate is formed between 5-pyrophosphomevalonic acid and 3, 3-dimethylallyl pyrophosphate

- (A) Farnesyl pyrophosphate
- (B) Isopentenyl pyrophosphate
- (C) Geranyl pyrophosphate
- (D) Squalene

30. Nitrous oxide is used in anesthetic

- (A) Rapidly induces stage III anaesthesia

- (B) Is extremely soluble in blood
 (C) Is a potent analgesic
 (D) Relaxes skeletal muscle
31. An amphoteric surfactant used in pharmaceutical disperse system is:
 (A) Bile salts
 (B) Lecithin
 (C) Sorbitan monolaurate
 (D) Sorbitan monostearate
32. The break down of fibrin is catalyzed by
 (A) Plasmin
 (B) Renin
 (C) Urokinase
 (D) Ptylin
33. IUPAC name of cortisone is
 (A) 11,17,21-trihydroxypregn-4-ene- 3,20-dione
 (B) 11 β , 17,21-trihydroxypregn-1,4-diene 3,20-dione
 (C) 17 α , 21-dihydroxy-4-pregnene-3,11,20-trione
 (D) 17,21-dihydroxypregn-1,4-diene-3,11,20-trione
34. Which of the following statement is in correct regarding bromocriptine
 (A) An ergot derivative
 (B) A dopamine agonist
 (C) A prolactin antagonist
 (D) Orally absorbed
35. Meperidine can be synthesized by the initial reaction of benzylcyanide with
 (A) N,N-(bis-2-chloroethyl)-N-methylamine
 (B) Ethylbis-(β -chloroethyl)N-benzylamine
 (C) Ethylbis-(β -chloroethyl)carbamate
 (D) All of above
36. Barbituates produce:
 (A) Respiratory depression in high doses
 (B) Physical and psychological dependence
 (C) Hangover effects with used as hypnotics
 (D) All of the above
37. Gentamicin is obtained from
 (a) *Micromonospora purpurea*
 (b) *Streptomyces griseus*
 (c) *Bacillus subtilis*
 (d) *Streptomyces spheroids*
38. Which of the following statements about aspirin is incorrect
 (A) Causes sweating by a direct action on autonomic postganglionic nerves
 (B) Acts in fever to reset the hypothalamic thermostat
 (C) Not antagonise the hyperthermia of exercise
 (D) Cause renal papillary necrosis when administered in large doses over several years
39. A metabolite of spironolactone is
 (A) Aldosterone
 (B) Canrenone
 (C) Corticosterone
 (D) Pregnenolone
40. X-ray spectral lines Ka doublet arises from transition of electrons from
 (A) M shell to K shell
 (B) L shell to K shell
 (C) L shell to M shell
 (D) M shell to L shell
41. Choose the correct chemical name for Prazosin
 (A) 2-[4-(2-furanyl)carbonyl-1-piperazinyl]-6,7-dimethoxy-4-quinazolinamine
 (B) 6,7-dimethoxy-2-[4-(tetrahydrofuran-2-ylcarbonyl)piperazin-1-yl]quinazolin-4-amine
 (C) 2-{4-[(2,3-dihydro-1,4-benzodioxin-2-yl)carbonyl]piperazin-1-yl}-6,7-dimethoxyquinazolin-4-amine
 (D) [4-(4-amino-6,7-dimethoxyquinazolin-2-yl)piperazin-1-yl]-(oxolan-2-yl)methanone

42. The metabolic function of Riboflavin involves the following

- (A) FMN and FAD
- (B) NADP and NADPH
- (C) AMP and ATP
- (D) Retine and Retinine

43. Lactose intolerance is because of the lack of

- (A) Acid phosphatase
- (B) Lactate dehydrogenase
- (C) Galactose-1-phosphate-uridyl transferase
- (D) Amylase

44. A 5HT_{1D} receptor agonist useful in migraine is

- (A) Sumatriptan
- (B) Ketanserin
- (C) Ergotamine
- (D) Methysergide

45. The analyte is used in the form of a solution in flame photometry because it should undergo

- (A) Evaporation
- (B) Condensation
- (C) Nebulisation
- (D) Precipitation

46. The mechanism of antiparasitic action of Mebendazole and thiabendazole involves

- (A) Stimulation of acetylcholine receptors at neuromuscular junctions
- (B) Inhibition of dihydropolate red uctase
- (C) Interference with microtubule synthesis and assembly
- (D) Block thiamine transport

47. Which of the following is hydrazine MAO-inhibitor

- (A) Cyclopropyl amine
- (B) Meclobemide
- (C) Selegiline
- (D) Phenelzine

48. Chlorpromazine do not causes

- (A) Constipation
- (B) Hypersalivation
- (C) Parkinsonian syndrome
- (D) Urinary retention

49. Indian Melissa oil is obtained from

- (A) *Cymbopogon citrates*
- (B) *Pinus roxburghii*
- (C) *Carom carvi*
- (D) *Anethum graveolens*

50. Rabies Antiserum I.P. is a

- (A) A freeze dried preparation containing antitoxic globulin
- (B) A preparation containing specific globulin or its derivatives obtained by purification of hyperimmune serum or plasma of healthy horses
- (C) A sterile preparation containing antitoxic globulin
- (D) A sterile preparation containing antitoxic globulins obtained by purification of hyperimmune serum of horses

51. In nuclear magnetic resonance (NMR), the chemical shift is expressed in one of the following units

- (A) Amperes
- (B) Tesla
- (C) cm
- (D) parts per million

52. 5-Hydroxytryptamine

- (A) Produces platelet aggregation
- (B) Is largely metabolised by methylation and hydroxylation
- (C) Is synthesised in blood platelets from the amino acid precursor tryptophan
- (D) Is stored in the cytoplasm of chromaffin cells

53. Insufficient spreading of the coating solution before drying in causes of tablet coating process causes
(A) Cracking
(B) Hazing
(C) Blistering effect
(D) Picking effect Orange peel effect
54. One of the following antianxiety agent is an azaspirodecanedione derivative.
(A) Lorazepam
(B) Cycloheptadiene
(C) Meprobamate
(D) Buspirone
55. Choose the correct trichomes of *Digitalis purpurea*.
(A) Numerous covering trichomes and a few glandular trichomes
(B) Few covering trichomes
(C) Few glandular trichomes and few covering trichomes
(D) Few glandular trichomes
56. Effect of acetylcholine on the heart is
(A) Decreased force of contraction
(B) Slowed rate of conduction through the AV node
(C) Slowed rate of firing of the SA node
(D) All of above
57. A powder having Carr's consolidation index of $> 30\%$ then the type of powder flow is
(A) Fair passable
(B) Good
(C) Excellent
(D) Poor
58. Beta-endorphin is
(A) Synthesised in the pituitary
(B) A respiratory stimulant
(C) Synthesised from pro-dynorphin
(D) Metabolised to form met-enkephalin
59. The plant hormone which shows specific effect on the cell division is:
(A) Auxins
(B) Abscisic Acid
(C) Cytokin
(D) Ethylene
60. One of the following condition is maintained in programmed temperature gas chromatography
(A) Temperature of the whole column is raised during analysis
(B) Temperature at the sample injection system is raised
(C) Temperature at the detector is gradually raised
(D) Temperature at the recorder alone is raised
61. Plasmodial resistance of chloroquine is due to
(A) Induction of inactivating enzymes
(B) Change in receptor structure
(C) Increase in the activity of DNA repair mechanism
(D) Decreased carrier mediated drug transport
62. The unit of measurement for conductance is
(A) Ohms
(B) Amperes
(C) Mhos
(D) Milli volts
63. In case of Flocculated suspension the flow type is
(A) Plastic
(B) Pseudoplastic
(C) Newtonian
(D) Dilatant
64. Which of the following statements about atropine is correct
(A) It is a sympathomimetic
(B) It is a sympatholytic

- (C) It is a parasympatholytic
- (D) It is parasympathomimetic

65. Citalopram

- (A) Is a selective serotonin reuptake inhibitor
- (B) Inhibit the reuptake of noradrenaline
- (C) Is a beta adrenoreceptor blocker
- (D) Is a beta adrenoreceptor agonist

66. Poise is a unit of

- (A) Force
- (B) Viscosity
- (C) Surface tension
- (D) Solubility

67. The shells of soft gelatin capsules may be made elastic or plastic like, by the addition of

- (A) Sorbitol
- (B) Povidone
- (C) PEG
- (D) HPMC

68. Which one of the following is reducing type antioxidant

- (A) Sodium metabisulfite
- (B) Butyl hydroxytoluene
- (C) Tocopherols
- (D) All of above

69. Conjugation reactions in the body results in a drug becoming

- (A) More lipophilic
- (B) Less polar
- (C) More polar and less toxic
- (D) More lipophilic, less polar and more toxic

70. Which one of the following substance will decrease the surface tension of the water

- (A) Sucrose
- (B) Ethanol
- (C) Sodium chloride
- (D) Lecithin

71. Indomethacin inhibits the synthesis of:

- (A) Prostacyclin
- (B) Substance P
- (C) Arachidonic acid
- (D) Leukotriene A₄

72. The rate of drug bioavailability is most rapid when the drug is formulated as a

- (A) Controlled released product
- (B) Hard gelatin capsule
- (C) Tablet
- (D) Solution

73. The loading dose of a drug is usually based on

- (A) Total body clearance of the drug
- (B) Percentage of drug bound to plasma proteins
- (C) Fraction of drug excreted unchanged in urine
- (D) Apparent volume of distribution and desired drug concentration in plasma

74. Biologically L-asparaginase enzyme is obtained from

- (A) *Escherichia coli*
- (B) *Clostridium histolyticum*
- (C) *Saccharomyces cerevisiae*
- (D) *Bacillus subtilis*

75. The following are all antagonists of serotonin except

- (A) Quetiapine
- (B) Clozapine
- (C) Cyproheptadine
- (D) Ebastine

76. As per I.P., powder is graded as Fine Powder if it passes through sieve

- (A) 22
- (B) 44
- (C) 85
- (D) 120

77. Browne's tubes are the most commonly used chemical indicator for
(A) Ethylene oxide sterilization
(B) Radiation sterilization
(C) Heat process sterilization
(D) Filtration sterilization
78. Staphylococcus aureus is used for the I.P. assay of
(A) Doxycycline
(B) Bleomycin
(C) Kanamycin
(D) Carbenicillin
79. Which of the following causes arterial and bronchial constriction and platelet aggregation
(A) Prostaglandin D2
(B) Prostaglandin E2
(C) Thromboxane A2
(D) Prostaglandin E1
80. Which of the following is not selective α_1 receptor agonist
(A) Xylometazoline
(B) Eformoterol
(C) Methoxamine
(D) Phenylephrine
81. Antioxidant that is commonly used in lipstick preparation
(A) Butylated hydroxyanisole
(B) Ascorbic acid
(C) Tocopherols
(D) Sodium metabisulfite
82. In the glucuronidation reaction of oxazepam, the functional group responsible is:
(A) -OH
(B) -COOH
(C) -SH
(D) -NH₂
83. Demeclocycline differs from Chlortetracycline only by
(A) Absence of -CH₃ group on carbon 6
(B) Presence of -OH group on carbon 6
(C) Absence of -N/ group on carbon 4
(D) Absence of -OH group on carbon 3
84. Boric acid is added in the preparation of a shampoo containing beta naphthol because it
(A) Increases the stability of the shampoo
(B) Increases the solubility of beta naphthol
(C) Act as antimicrobial
(D) Act as foaming agent
85. Starting material for the synthesis of pentoxifylline is
(A) Ethyl acetoacetate
(B) Ethyl mandelate
(C) Cyanoacetic acid
(D) Cyanoacetamide
86. Characteristic bands observed in the IR spectra of alcohols result from
(A) -OH and C-O stretching
(B) -OH stretching
(C) C-O stretching only
(D) C-H bending only
87. The radio frequency radiation is associated with
(A) Light consisting of one colour only
(B) Nuclear magnetic Resonance
(C) Mass Spectrometry
(D) E.S.R.
88. Which one of the following statements is incorrect
(A) Isoniazide may cause peripheral neuropathy
(B) Colchicine is used for the treatment of gouty arthritis
(C) Electroconvulsive therapy may be used in the treatment of depression
(D) Chlorpromazine can induce vomiting

89. The intravenous injection of carbachol in an atropinized dog may produce a rise in blood pressure because carbachol

- (A) Potentiates the pressor effects of noradrenaline
- (B) Has some direct sympathomimetic actions
- (C) Has nicotinic actions
- (D) Delays the uptake of noradrenaline

90. The pyroelectric detector converts electromagnetic radiation into

- (A) Electrical signal
- (B) Fluorescence
- (C) Electrons
- (D) Visible light