

NIPER-JEE 2020 Question Paper

Time Allowed :2 Hours	Maximum Marks :200	Total Questions :200
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General Instructions

Read the following instructions very carefully and strictly follow them:

This question paper is divided into three sections:

1. The total duration of the examination is 2 hours. The question paper contains three sections -

Section A: General Aptitude

Section B: Pharmaceutical Sciences

Section C: Chemistry and Allied Subjects

2. The total number of questions is 200, carrying a maximum of 200 marks.
3. The marking scheme is as follows:
 - (i) For each correct response, 1 mark will be awarded.
 - (ii) For each incorrect response, 0.25 mark will be deducted.
4. No marks will be awarded for unanswered questions.
5. Follow the instructions provided during the exam for submitting your answers.

1. Which of the following is a cytokine inhibitor used as anti-inflammatory?

- (A) Nimesulide
 - (B) Abatacept
 - (C) Diclofenac
 - (D) Nabumetone
-

2. Remdesivir interferes with the action of which viral enzyme?

- (A) RNA-dependent RNA polymerase
 - (B) Exoribonuclease
 - (C) DNA-dependent RNA polymerase
 - (D) DNA gyrase
-

3. Captisol is an excipient based on:

- (A) PLA polymer
 - (B) PLGA polymer
 - (C) Cyclodextrin
 - (D) PEG
-

4. 6-Fluoro-3-oxo-3,4-dihydro-2-pyrazine carboxamide is the IUPAC name of which drug?

- (A) Ritonavir
 - (B) Favipiravir
 - (C) Remdesivir
 - (D) Pyrazinamide
-

5. This reaction mechanism is favored by 3° substrates, low temperatures, polar solvents, and low concentrations of very weak bases.

- (A) E1
 - (B) E2
 - (C) SN1
 - (D) SN2
-

6. Who is the recipient of 'World Entrepreneur of The Year award' for 2020?

- (A) Vivekchand Sehgal
 - (B) Siddarth Lal
 - (C) Kiran Mazumdar-Shaw
 - (D) Rahul Bajaj
-

7. In one of the following sulfonamides, pyrimidine ring is absent. Which is it?

- (A) sulfosimidine
 - (B) sulfadimidine
 - (C) sulfadoxine
 - (D) sulfoxazole
-

8. Histamine structure is represented by:

- (A) 3,4-Dihydroxyphenethylamine
 - (B) 2-(1-H-Imidazol-5-yl)ethanamine
 - (C) 2-(1-H-Imidazol-4-yl)ethanamine
 - (D) 2-Amino-3-(1H-imidazol-4-yl) propanoic acid
-

9. P2Y12 is a chemoreceptor for adenosine diphosphate (ADP) that:

- (A) Mediates platelet aggregation
 - (B) Mediates WBC stimulation
 - (C) Binds to clopidogrel reversibly
 - (D) Mediates fibrinolysis
-

10. Neopentane and 2-methyl butane are which type of isomers?

- (A) Positional isomers
 - (B) Chain isomers
 - (C) Isomers
 - (D) Diastereoisomers
-

11. Which activity (the signal transduction pathway) of metformin is responsible for the inhibitory effect on glucose production by liver cells?

- (A) Activation of AMPK
- (B) Inhibition of hormone-sensitive lipase
- (C) Inhibition of mammalian target of rapamycin (mTOR)
- (D)

Allosteric regulation by binding to a crucial section of the DNA that makes proteins needed for glucose

12. Single letter code for pyrrolysine is:

- (A) P
 - (B) J
 - (C) O
 - (D) Y
-

13. Which bacterial enzyme helps the survival of *Helicobacter pylori* in the stomach?

- (A) carbonic anhydrase
 - (B) urease
 - (C) β -lactamase
 - (D) transpeptidase
-

14. Which of the following amino acids cannot provide a substrate for gluconeogenesis?

- (A) Leucine
 - (B) Tryptophan
 - (C) Histidine
 - (D) Isoleucine
-

15. ^1H NMR spectra recorded in CDCl_3 solution typically show a resonance at 7.24 ppm. What is this resonance due to?

- (A) water
 - (B) trace HC
 - (C) Chloroform
 - (D) exchangeable protons
-

16. Favipiravir tested as a COVID-19 treatment is a product of which company?

- (A) Fujifilms
 - (B) AstraZeneca
 - (C) Safoni team
 - (D) Takeda
-

17. The drug of choice for Torsades de pointes treatment is:

- (A) Sotalol

- (B) Ibutilide
 - (C) Disopyramide
 - (D) Magnesium
-

18. ^{13}C chemical shift has a much wider range (~ 300 ppm) than ^1H (~ 10 ppm) because:

- (A) The contribution of the diamagnetic shielding of ^{13}C is much larger than ^1H due to the small ^{13}C energy.
 - (B) The contribution of the paramagnetic shielding of ^{13}C is much larger than ^1H due to the small ^{13}C energy.
 - (C) The electron density of ^1H is usually spherically symmetrical.
 - (D) The reason is unknown.
-

19. Which of the following drugs reduces LDL cholesterol by inhibiting an intestinal transport protein?

- (A) Atorvastatin
 - (B) Cholestyramine
 - (C) Ezetimibe
 - (D) Gemfibrozil
-

20. The least abundant amino acid in human proteins is:

- (A) Leucine
 - (B) Lysine
 - (C) Cysteine
 - (D) Tyrosine
-

21. Arrange in the order of increasing basicity piperidine, pyrrole, pyrimidine, morpholine.

- (A) Piperidine > pyrrole > pyrimidine > morpholine
(B) Pyrrole > piperidine > morpholine > pyrimidine
(C) Pyrimidine > piperidine > morpholine > pyrrole
(D) Piperidine > morpholine > pyrimidine > pyrrole
-

22. Which of the following diseases is NOT associated with coronavirus?

- (A) SARS-CoV-1
(B) MERS
(C) COVID-19
(D) Swine flu
-

23. IUPAC name of carbamazepine is:

- (A) 5H-dibenzo[b,c]azepine-5-carboxamide
(B) 5H-dibenzo[b,f]azepine-5-carboxamide
(C) 5H-dibenzo[b,g]oxepine-5-carboxamide
(D) 5H-dibenzo[d,a]azepine-5-carboxamide
-

24. Which of the following alkaloids is derived from tyrosine?

- (A) Quinine
(B) Morphine
(C) Atropine
(D) Vinca alkaloid
-

25. Carvedilol is a mixture of how many enantiomers?

- (A) 2
(B) 4

(C) 6

(D) 8

26. Why is DSS used instead of TMS as the 1H chemical shift reference for a biological sample?

(A) TMS can denature proteins

(B) The chemical shift of TMS is dependent on temperature

(C) DSS has a higher solubility in aqueous solution

(D) DSS is widely used in protein sample preparation

27. Which international clinical trial is launched by WHO and partners to help find an effective treatment for COVID-19?

(A) Solidarity

(B) Dissidence

(C) Severance

(D) Dissension

28. Lupron implant is an example of:

(A) Erodible implant

(B) Implant pump

(C) Both (A) and (B)

(D) None of these

29. Full form of COVID-19 is:

(A) Co-viral disease-19

(B) Corona virus disorder-19

- (C) Corona Virus disease-19
 - (D) Corona Virus deficiency syndrome-19
-

30. For maximum bioavailability, drug should be targeted at:

- (A) Stomach
 - (B) Small intestine
 - (C) Large intestine
 - (D) Colon
-

31. Which of the following virus is not named on the basis of geographical location?

- (A) MERS and Ebola
 - (B) Zika and West Nile virus
 - (C) Marburg
 - (D) Rubella
-

32. Hand-foot syndrome (palmar-plantar erythrodysesthesia) is NOT caused by:

- (A) 5-fluorouracil
 - (B) Capecitabine
 - (C) Mitomycin
 - (D) Doxorubicin
-

33. Cimetidine acts by blocking:

- (A) Na-H-ATPase
- (B) Na-K ATPase
- (C) H₂ receptor
- (D) H₁ receptor

34. Nerve gases used as warfare agents include:

- (A) SARIN
- (B) TABUN
- (C) SOMAN
- (D) All of the above

35. One-letter symbol of Arginine is:

- (A) K
- (B) A
- (C) R
- (D) D

36. First Indian pharma company:

- (A) Alembic Chemical Works
- (B) Bengal Chemicals and Pharmaceuticals
- (C) Cipla
- (D) Dabur India Ltd

37. For a drug following linear pharmacokinetics, what would be the change in $t_{\max}$ if the oral dose of the drug is doubled?

- (A) $t_{\max}$ remains unchanged
 - (B) $t_{\max}$ doubled
 - (C) $t_{\max}$ decreased to half
 - (D) Cannot be predicted
-

38. Which isomer(s) of xylene will exhibit 3 peaks in the ^{13}C NMR spectrum?

- (A) o-xylene
 - (B) m-xylene
 - (C) p-xylene
 - (D) All of the above
-

39. Which of the following drug transport mechanisms across the cell membrane is bidirectional in nature?

- (A) Passive diffusion
 - (B) Active transport
 - (C) Pinocytosis
 - (D) Facilitated diffusion
-

40. A thermodynamically controlled reaction will yield predominantly the:

- (A) Product whose formation requires the smallest free energy of activation
 - (B) More/most stable product
 - (C) Product that can be formed in the fewest steps
 - (D) Product that is formed at the fastest rate
-

41. Dielectric constant of water at 25°C is:

- (A) 1.0006
 - (B) 2.25
 - (C) 78.2
 - (D) 100
-

42. Medical devices are notified as DRUGS under the Drugs Cosmetics Act. Schedule for Medical devices GMP requirements is specified under:

- (A) Schedule M III
 - (B) Schedule M-II
 - (C) Schedule M-I
 - (D) Schedule M
-

43. Which of the following is NOT true for a patent?

- (A) Monopoly
 - (B) Exclusivity
 - (C) Disclosure
 - (D) Indefinite term
-

44. Margaret Dayhoff developed the first protein sequence database named:

- (A) SWISS PORT
 - (B) Protein sequence databank
 - (C) Protein data bank PDB
 - (D) Atlas of protein sequence and structure
-

45. Haloperidol belongs to:

- (A) Azaspirodecanedione antidepressant
 - (B) Opioid analgesic
 - (C) Butylraphenone antipsychotic
 - (D) Quinoline antipsychotic
-

46. Acute decrease in response to a drug after initial or repeated intake is known as which of the following drug interactions?

- (A) Additive
 - (B) Permissive
 - (C) Synergetic
 - (D) Tachyphylaxis
-

47. Which of the following is an unusual feature of the replication cycle in coronaviruses?

- (A) The RNAs all terminate in a common 3' and produce nested set transcripts
 - (B) They take advantage of recombination with the long RNA genome
 - (C) They are not highly mutable
 - (D) They use capped cellular mRNAs
-

48. Original X company sells its product under the name 'Phido'. Company Y begins to market an identical product under the name 'Fido'. This is a case of:

- (A) Copyright infringement
 - (B) Patent infringement
 - (C) Trademark infringement
 - (D) None of the above
-

49. In Kjeldahl method, sample containing nitrogen is digested with:

- (A) Conc. NaOH
- (B) Fuming HNO₃
- (C) Conc. H₂SO₄
- (D) Strong NH₃ solution

50. Identify the fifth-generation cephalosporin:

- (A) Ceftaroline
- (B) Cefadroxil
- (C) Cefotetan
- (D) Cefipime

51. Who is the CEO of Dr. Reddy's Lab?

- (A) K. Anji Reddy
- (B) Erez Israeli
- (C) Ibrahim Alkazi
- (D) Israel Makov

52. One degree Celsius is how many degrees Kelvin?

- (A) $273.15K$
- (B) $274.15K$
- (C) $33.8K$
- (D) 1

53. Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) is a campaign launched by:

- (A) Prime Minister's Office
 - (B) Department of Health and Family Welfare, Ministry of Health and Family Welfare
 - (C) Department of Health Research, Ministry of Health and Family Welfare
 - (D) Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers
-

54. The plot of $1/V$ versus $1/[S]$ where V is rate of enzymatic reaction and $[S]$ is substrate concentration is known as:

- (A) Michaelis-Menton plot
 - (B) Lineweaver-Burk plot
 - (C) Hanes-Woolf plot
 - (D) Eadie-Hofstee plot
-

55. Camphor contains how many isoprene units?

- (A) One
 - (B) Two
 - (C) Three
 - (D) Four
-

56. A diabetic patient developed cellulitis due to *Staphylococcus aureus*, which was found to be methicillin-resistant on antibiotic sensitivity testing. All the following antibiotics will be appropriate EXCEPT:

- (A) Vancomycin
 - (B) Imipenem
 - (C) Teicoplanin
 - (D) Linezolid
-

57. Which of the proteins in coronavirus is responsible for attachment to host cell?

- (A) Spike
- (B) Membrane
- (C) Envelope
- (D) Nucleocapsid

58. Lindlar's catalyst is:

- (A) Platinum chloride + calcium carbonate + lead acetate
- (B) Palladium chloride + calcium carbonate + lead acetate
- (C) Chromic acid + lead acetate
- (D) Palladium(III) bis(acetylacetonate)

59. Three friends A, B, C invested in a business in the ratio of 4:5:11. The total investment is 1000 rupees. What will be the profit earned by A out of the total profit of Rs 100 earned within 2 days?

- (A) 20
- (B) 25
- (C) 55
- (D) 45

60. Who is the current DCGI?

- (A) VG Somani
- (B) S. Eswara Reddy
- (C) P. B. N. Prasad
- (D) Ravi Kant Sharma

61. What is true about Autophagy?

- (A) Can be considered a cell survival pathway as well as a cell death pathway
- (B) Might be activated when AMP-dependent kinase (AMPK) is inhibited
- (C) Could release branched-chain amino acids from muscle
- (D) Is associated with movement of phosphatidyl serine to the outer leaflet

62. Dr. Reddy's Lab will conduct Phase III studies of _____ vaccine in the country.

- (A) Sputnik V
- (B) Moderna
- (C) Sinovac
- (D) IQVIA

63. Jarsch Herxheimer reaction is due to:

- (A) Borrelia spirochetes
- (B) Plasmodium vivax
- (C) Herpes Virus
- (D) Yersinia pestis

64. Financial status of a company at any given time can be analyzed with:

- (A) Trading account
- (B) Profit and Loss statement
- (C) Balance Sheet
- (D) Cash Book

65. Which heterocyclic rings are present in nicotine?

- (A) Pyrimidine and Pyrrole
 - (B) Pyridine and Pyrrolidine
 - (C) Pyrimidine and Imidazole
 - (D) Piperidine and Pyrrolidine
-

66. As per USP, weight variation limit for a tablet of 250 mg is:

- (A) 10%
 - (B) 7.50%
 - (C) 5%
 - (D) 1.50%
-

67. Methotrexate toxicity can be prevented by:

- (A) Leucovorin
 - (B) Mesna
 - (C) Oncovin
 - (D) $\text{Na}_2\text{S}_2\text{O}_3$
-

68. Cell-mediated immunity is provided by all of the following EXCEPT:

- (A) Macrophages
 - (B) NK-cells
 - (C) T-lymphocytes
 - (D) B-lymphocytes
-

69. MPTP, a prodrug, is converted to MPP^+ by which enzyme?

- (A) MAO A
 - (B) MAO B
 - (C) DAO
 - (D) AChE
-

70. Which of the following phenomena in cell membranes is energetically expensive and does not occur spontaneously?

- (A) The rotation of membrane proteins
 - (B) The rotation of phospholipids
 - (C) The lateral diffusion of phospholipids
 - (D) The flip-flop movement of phospholipids
-

71. My mother is twice as old as my brother. I am five years younger than my brother but three years older than my sister. If my sister is twelve years old, how old is my mother?

- (A) 50
 - (B) 40
 - (C) 30
 - (D) 24
-

72. An essential amino acid is one that:

- (A) is readily available in the body.
 - (B) can be synthesized by the body.
 - (C) is essentially easy to synthesize.
 - (D) cannot be synthesized by the body.
-

73. Which amino acid gives max UV absorption?

- (A) Tryptophan
 - (B) Tyrosine
 - (C) Phenylalanine
 - (D) Proline
-

74. Functional group determination can be done with:

- (A) IR spectroscopy
 - (B) NMR spectroscopy
 - (C) UV spectroscopy
 - (D) Mass spectrometry
-

75. Which of the following is a polysaccharide vaccine?

- (A) Anthrax vaccine
 - (B) Rabies vaccine
 - (C) Hepatitis A
 - (D) Hib vaccine
-

76. A person traveled towards west 5 km, turned left and traveled 3 km, turned right and traveled 9 km. He then traveled North 3 km. How far was 'A' from the starting point now?

- (A) 6
 - (B) 14
 - (C) 15
 - (D) 20
-

77. Who is the chairman of the Fifteenth Finance Commission?

- (A) Shaktikanta Das
 - (B) N.K. Singh
 - (C) Gita Gopinath
 - (D) Viral Acharya
-

78. Synonym of abeyance:

- (A) Reserve
 - (B) Depth
 - (C) Abysmal
 - (D) Abstinence
-

79. Bicuculline acts as:

- (A) Antagonist of GABAA
 - (B) Agonist of GABAA
 - (C) Agonist of nicotinic receptors
 - (D) Agonist of NMDA receptor
-

80. Which of the following is a water-soluble base?

- (A) Soft paraffin
 - (B) Hydroxyethylcellulose
 - (C) Cocoa butter
 - (D) Vaseline
-

81. Remdesivir was originally created and developed in 2009 for hepatitis C infection by:

- (A) Gilead Sciences
 - (B) Takeda
 - (C) Toyama Chemical
 - (D) Novartis
-

82. If the aim of these investigations is to determine the stability of a drug after opening the package, what are the conditions?

- (A) 40°C, 75 RH (0-6 months)
 - (B) Room temp, (0-3 months)
 - (C) Room temp, (0-24 hours)
 - (D) Room temp, (0-4 weeks)
-

83. Benzoic acid to benzoyl chloride conversion is achieved by:

- (A) Cl_2 , $h\nu$
 - (B) SO_2Cl_2
 - (C) PCl_5
 - (D) Cl_2 , H_2O
-

84. Mr. X took a loan for 6 years at the rate of 5% p.a. S.I. If the total interest paid was Rs. 1230, the principal amount was:

- (A) Rs. 4100
 - (B) Rs. 4920
 - (C) Rs. 5000
 - (D) Rs. 5300
-

85. A simple interest on a certain sum for 3 years is Rs. 225 and the compound interest on the same sum for 2 years is Rs. 165. Find the rate percent per annum:

- (A) 20%
 - (B) 2.5%
 - (C) 5%
 - (D) 15%
-

86. A person gets one rupee for each successful target hitting, and one rupee is lost for each missed target. If the total chances taken by the person are 100 and earned rupees are 30, what is the number of successful attempts?

- (A) 70
- (B) 60
- (C) 75
- (D) 65

87. Concentration given in gram equivalent per volume of solution is known as:

- (A) Molality
- (B) Molarity
- (C) Normality
- (D) Mole fraction

88. Which of the following amino acids is not necessary to be taken in the diet?

- (A) Histidine
- (B) Threonine
- (C) Serine
- (D) Lysine

89. Self-assembled closed colloidal structures composed of lipid bilayers are called:

- (A) Dendrimers
- (B) Polymers
- (C) Micelles
- (D) Liposomes

90. Which of the following drug delivery systems comprises a hydrophobic core and a hydrophilic surface?

- (A) Liposomes
 - (B) Micelles
 - (C) Reverse micelles
 - (D) None of the above
-

91. Tamoxifen is classified as:

- (A) Antiprogestin
 - (B) Antiandrogen
 - (C) Antiestrogen
 - (D) Androgen
-

92. Among the butane conformers, which occur at energy minima on a graph of potential energy versus dihedral angle?

- (A) Synperiplanar
 - (B) Antiperiplanar
 - (C) Gauche
 - (D) Eclipsed
-

93. Which of the following antiflatulents is usually added to antacids?

- (A) Alginic acid
 - (B) Sucralfate
 - (C) Simethicone
 - (D) Misoprostol
-

94. The dihydropyridines block which of the following type of calcium channels?

- (A) L-type voltage-gated channels
 - (B) T-type voltage-gated channels
 - (C) N-type voltage-gated channels
 - (D) Ligand-gated calcium channels
-

95. Commonly, which reaction on histones leads to the silencing of genes?

- (A) Phosphorylation
 - (B) Methylation
 - (C) Acetylation
 - (D) Demethylation
-

96. Baby shampoo contains which of the following surfactants as detergent?

- (A) Sodium lauryl sulphate
 - (B) Cationic surfactant
 - (C) Amphoteric imidazole derivatives (Miranda)
 - (D) Alkyl sulfonates
-

97. If an investment of Rs. X is done on simple interest, and the amount doubles in years, what would be the rate of simple interest per annum?

- (A) 10
 - (B) 12.5
 - (C) 20
 - (D) 25
-

98. Find the synonym for 'chimera'.

- (A) Chimney
 - (B) Protest
 - (C) Illusion
 - (D) Panache
-

99. Which of the following rings does ergoline contain?

- (A) Indolo [4,3-f]quinoline
 - (B) Indoloquinazoline
 - (C) β -Carboline
 - (D) Indolonaphthalene
-

100. Which of the following cytokines is associated with pulmonary inflammation related to brain death?

- (A) IL-2
 - (B) IL-6
 - (C) IL-5
 - (D) IL-8
-

101. Who has been appointed as the head of the committee formed by the government to address drug security in the country in the context of the Novel Coronavirus outbreak?

- (A) Vashishtha Narayan Singh
 - (B) Gita Mittal
 - (C) R.K. Mathur
 - (D) Eswara Reddy
-

102. Recently, ranitidine and metformin were in the news due to the presence of which impurity?

- (A) Nitrosodimethylamine
 - (B) Methyl nitrile
 - (C) Diethylene glycol
 - (D) 4-aminobiphenyl
-

103. Fries rearrangement reaction of phenol ester leads to the formation of which type of product?

- (A) Alkene
 - (B) Aldehyde
 - (C) Alcohol
 - (D) Ketone
-

104. In which medium does the Favorskii rearrangement occur?

- (A) Neutral
 - (B) Acidic
 - (C) Basic
 - (D) Amphiprotic
-

105. Glycine and proline are the most abundant amino acids in the structure of:

- (A) Hemoglobin
 - (B) Myoglobin
 - (C) Insulin
 - (D) Collagen
-

106. Which of the following is an opioid-like agonist?

- (A) Phenobarbital
 - (B) Diltiazem
 - (C) Pemoline
 - (D) Propoxyphene
-

107. Which of the following compounds will not absorb UV radiation?

- (A) Chloral hydrate
 - (B) Salicylic acid
 - (C) Acetanilide
 - (D) Chloramphenicol
-

108. Which of the following is not aromatic?

- (A) Thiophene
 - (B) Dioxane
 - (C) Pyrrole
 - (D) Isoxazole
-

109. Alcohol and carboxylic acid in the presence of a dehydrating agent give which compounds?

- (A) Amides
 - (B) Esters
 - (C) -hydroxyketone
 - (D) Anhydride
-

110. Considering the 'fluid mosaic model' of the cell membrane, which one of the following statements is correct regarding flip-flop movement?

- (A) Neither lipids nor proteins can flip-flop
 - (B) Both lipids and proteins can flip-flop
 - (C) While lipids can rarely flip-flop, proteins cannot
 - (D) While proteins can flip-flop, lipids cannot
-

111. How many chiral centers are present in one molecule of camphor?

- (A) 0
 - (B) 1
 - (C) 2
 - (D) 3
-

112. Cilostazol, a drug used in the treatment of intermittent claudication, inhibits which phosphodiesterase enzyme for its clinical effect?

- (A) PDE3
 - (B) PDE4
 - (C) PDE5
 - (D) PDE6
-

113. Which of the following antiplatelet drugs is a reversible inhibitor of ADP receptors?

- (A) Clopidogrel
 - (B) Prasugrel
 - (C) Ticagrelor
 - (D) All of the above
-

114. The most essential fatty acid is:

- (A) Linolenic acid
- (B) Oleic acid

- (C) Arachidonic acid
 - (D) Palmitic acid
-

115. Ticlopidine acts as:

- (A) Antagonist of P2Y₁₂ receptor
 - (B) Agonist of P2Y₁₂ receptor
 - (C) Agonist of GPIIb/IIIa receptor
 - (D) Antagonist of GPIIb/IIIa receptor
-

116. Carbonyl group can be reduced to alkane with the help of which catalyst?

- (A) H₂N-NH₂, KOH, heat
 - (B) Zn/Hg HCl
 - (C) LiAlH₄
 - (D) P, Q, and R
-

117. When the velocity of enzyme activity is plotted against substrate concentration, which of the following is obtained?

- (A) Parabola
 - (B) Hyperbolic Curve
 - (C) Straight line with positive slope
 - (D) Straight line with negative slope
-

118. The active site of chymotrypsin consists of a catalytic triad of which of the following amino acid residues?

- (A) Serine, histidine, and glutamate
- (B) Threonine, histidine, and aspartate
- (C) Serine, histidine, and aspartate
- (D) Methionine, histidine, and aspartate

119. Which of the following types of lipid aggregates has maximum stability?

- (A) Micelles
- (B) Bilayer
- (C) Liposome
- (D) Myelin sheath

120. Which of the following is a choline-containing lipid?

- (A) Phosphatidylserine
- (B) Phosphatidylglycerol
- (C) Phosphatidylethanolamine
- (D) Sphingomyelin

121. Volhard's method of chloride ion determination:

- (A) is back titration with ammonium thiocyanate
- (B) is direct titration with ammonium thiocyanate
- (C) uses dichlorofluorescein as an indicator
- (D) uses potassium chromate

122. Which of the following is an ergot derivative?

- (A) Bergarten
- (B) Bretylium
- (C) Bupropion
- (D) Bromocriptine

123. Pramipexole is:

- (A) Antipsychotic
- (B) Antidepressant

- (C) Anthelmintic
 - (D) Antiparkinsonian
-

124. Single letter symbol for arginine is:

- (A) K
 - (B) D
 - (C) R
 - (D) G
-

125. Penicillin degradation is prevented at which pH?

- (A) 4
 - (B) 5
 - (C) 6
 - (D) 8
-

126. Which of the following titration methods should be protected from light?

- (A) Volhard
 - (B) Adsorption
 - (C) Mohr
 - (D) Gay-Lussac
-

127. If the rate constant for a first-order reaction is k , the time t required for the completion of 99% of the reaction is given by:

- (A) $t = \frac{4.606}{k}$
 - (B) $t = \frac{2.303}{k}$
 - (C) $t = \frac{0.693}{k}$
 - (D) $t = \frac{6.909}{k}$
-

128. Assessment, control, communication, and review of risks to the quality of the drug product across the product life cycle is:

- (A) QbD
 - (B) QRM
 - (C) PAT
 - (D) QTPP
-

129. Which one of the following is a Histamine H1-receptor antagonist?

- (A) 4-(5H-dibenzola,d] cyclohepten-5-ylidene)-1-methyl pyridine hydrochloride
 - (B) 4-(5H-dibenzola,d] cyclohepten-5-ylidene)-1-methyl pyrimidine hydrochloride
 - (C) 4-(5H-dibenzo[a,d] cyclohepten-5-ylidene)-1-methyl piperidine hydrochloride
 - (D) 4-(5H-dibenzoja,d] cycloheptane-5-ylidene)-1-methyl piperidine hydrochloride
-

130. QbD is described in ICH guidelines:

- (A) Q8 Part I
 - (B) Q8 Part II
 - (C) Q9
 - (D) Q10
-

131. Which is the correct long-term stability condition for zone IVb?

- (A) $40^{\circ}\text{C} \pm 2^{\circ}\text{C}/75\% \pm 5\%$
 - (B) $30^{\circ}\text{C} \pm 2^{\circ}\text{C}/65\% \pm 5\%$
 - (C) $30^{\circ}\text{C} \pm 2^{\circ}\text{C}/75\% \pm 5\%$
 - (D) None
-

132. Which technique is used to determine the particle size of a pharmaceutical suspension?

- (A) Dynamic Light Scattering (DLS)

- (B) X-ray Diffraction (XRD)
 - (C) Gas Chromatography (GC)
 - (D) UV-Visible Spectroscopy
-

133. Which gas is used as a carrier in Gas Chromatography?

- (A) Nitrogen
 - (B) Oxygen
 - (C) Carbon Dioxide
 - (D) Sulfur Dioxide
-

134. Nuclei having either the number of protons or neutrons as odd have *spin.*

- (A) Integral spin
 - (B) Half integral spin
 - (C) Zero spin
 - (D) Positive spin
-

135. Only what percentage of the effluent of liquid chromatography must be introduced into the mass spectrometer?

- (A) 1–20%
 - (B) 1–15%
 - (C) 1–5%
 - (D) Below 1%
-

136. In AAS, ionization of analyte atoms in flame/plasma can be suppressed by:

- (A) EDTA or other complexing agents
- (B) Addition of KCl to the matrix
- (C) Addition of oxyanions such as sulfate or phosphate
- (D) Internal standards methods

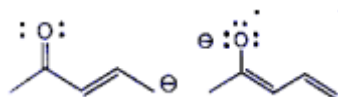
137. Furan is aromatic. What is the value of Hückel's n in it?

- (A) 1
- (B) 2
- (C) 4
- (D) 6

138. Which feature in the ^1H NMR spectrum provides information about the electronic environment of the protons in a compound?

- (A) Splitting
- (B) Chemical shift
- (C) Integral
- (D) Number of signals

139. What is the relationship between the following two structures?



- (A) Tautomers
- (B) Stereoisomers
- (C) Resonance structures
- (D) Constitutional isomers, but not tautomers

140. Systemic clearance (CLs) is related with:

- (A) Only the concentration of substances in plasma
- (B) Only the elimination rate constant
- (C) Volume of distribution, half-life, and elimination rate constant
- (D) Bioavailability and half-life

141. Reversible uncompetitive enzyme inhibition occurs when the inhibitor binds to:

- (A) Enzyme-substrate complex (ES) only
 - (B) Free enzyme at substrate binding site
 - (C) Enzyme at a site different from substrate binding site
 - (D) Enzyme-substrate complex but at a site different from substrate binding site
-

142. The observations of a study on drug hydrolysis were plotted as the logarithm of the amount of drug remaining (Y-axis) against time (X-axis) and found to be linear. What might be the correct inference?

- (A) The reaction is zero-order
 - (B) The slope is $2.303/k$
 - (C) The units of k are $\text{concentration}^{-1}\text{time}^{-1}$
 - (D) The half-life is $t_{1/2} = 0.693/k$
-

143. Attention deficit hyperactivity disorder (ADHD) may be treated with behavior management, educational programs, parental counseling, and medications. Which of the following medications is NOT generally used in the treatment of ADHD in children?

- (A) Methylphenidate
 - (B) Dexamphetamine
 - (C) Imipramine
 - (D) Clonazepam
-

144. Who is the Health Minister of India (Health Family Welfare Department)?

- (A) Smriti Irani
- (B) Dr. Harsh Vardhan
- (C) Shri Sanjeeva Kumar
- (D) Rajesh Tope

145. Phototoxicity is shown by all EXCEPT:

- (A) Doxycycline
- (B) Chlorpromazine
- (C) Thiazide and quinolones
- (D) Rosiglitazone

146. Which of the following is NOT an antifungal agent?

- (A) Amphotericin B
- (B) Ketoconazole
- (C) Ciprofloxacin
- (D) Fluconazole

147. Which of the following vitamins is fat-soluble?

- (A) Vitamin C
- (B) Vitamin B12
- (C) Vitamin D
- (D) Vitamin B6

148. Ketone on reduction gives:

- (A) Primary alcohol
- (B) Secondary alcohol
- (C) Aldehyde
- (D) Carboxylic acid

149. Which functional group is likely to be present in a molecule that has peaks in the infrared spectrum at $1000\text{-}1250\text{ cm}^{-1}$ (strong), but does not have peaks at $3200\text{-}3650\text{ cm}^{-1}$ or $1630\text{-}1820\text{ cm}^{-1}$?

- (A) Alcohol
 - (B) Aldehyde or ketone
 - (C) Ether
 - (D) Ester
-

150. Which is India's first public sector enterprise?

- (A) Air-India
 - (B) Indian Telephone Industries (ITI)
 - (C) Bharat Sanchar Nigam Limited (BSNL)
 - (D) Oil and Natural Gas Corporation
-

151. The term that describes spreading of cancer is:

- (A) Malignancy
 - (B) Invasiveness
 - (C) Metastasis
 - (D) Microstasis
-

152. Which is NOT used in the treatment of asthma?

- (A) Budesonide
 - (B) Isoniazid
 - (C) Cromolyn sodium
 - (D) Zafirlukast
-

153. Aluminium tertiary butoxide in ethanol as solvent is used in:

- (A) Oppenaur oxidation
- (B) Clemmensen reduction
- (C) MPV reduction
- (D) Wolff-Kishner reduction

154. Calcium channel blockers can be divided into three classes based on their chemical structure. Which of the following is NOT a class of calcium channel blockers?

- (A) Aryloxyethanolamine
 - (B) Phenylalkylamines
 - (C) Dihydropyridines
 - (D) Benzothiazepines
-

155. When granules stick to the die, what may be a remedy?

- (A) External lubrication
 - (B) Drying of granules
 - (C) Decrease the dwell time
 - (D) Increase in binder quantity
-

156. New education system envisages the education system of pattern:

- (A) $5 + 5 + 2$
 - (B) $5 + 3 + 3 + 4$
 - (C) $10 + 2 + 3$
 - (D) $10 + 2 + 4$
-

157. Under what reaction conditions does the electrophilic chlorination of aromatic compounds usually occur?

- (A) NaCl, CH₃OH
 - (B) Cl₂AlCl₃
 - (C) Cl₂CCl₄
 - (D) NaCl, EtOH
-

158. Which of the following is the strongest activating group in electrophilic aromatic substitution reactions?

- (A) $-\text{OCH}_3$
 - (B) $-\text{N}(\text{CH}_3)_2$
 - (C) $-\text{CO}_2\text{CH}_3$
 - (D) $-\text{NO}_2$
-

159. Which of the following compounds has the most signals in the noise-decoupled ^{13}C NMR spectrum?

- (A) o-dibromobenzene
 - (B) m-dibromobenzene
 - (C) p-dibromobenzene
 - (D) 1,3,5-tribromobenzene
-

160. Antipsychotic drugs work by blocking post-synaptic dopamine __ receptors, particularly in the mesolimbic-mesocortical pathway.

- (A) D4
 - (B) D5
 - (C) D2
 - (D) D1
-

161. Artificial moon is being developed by which country?

- (A) USA
 - (B) Japan
 - (C) China
 - (D) KSA
-

162. The reduced dose requirement of isoniazid is observed in patients who are:

- (A) Fast acetylator
- (B) Slow acetylator

- (C) G6PD deficient
 - (D) CYP450 induced
-

163. 3,5-Dinitrobenzoic acid will give how many peaks in 1H NMR?

- (A) 4
 - (B) 3
 - (C) 2
 - (D) 1
-

164. Which of the following drugs works as a proteasome inhibitor?

- (A) Nilotinib
 - (B) Infliximab
 - (C) Bortezomib
 - (D) Filgrastim
-

165. All of the following are typical cholinergic effects EXCEPT:

- (A) A decrease in heart rate and contraction of bronchial muscle
 - (B) A decrease in conduction velocity through the AV node
 - (C) An increase in sweat secretion
 - (D) An increase in pupillary diameter
-

166. Agarose is a polysaccharide, composed of:

- (A) D-galactose and agarobiose
 - (B) D-glucuronic acid and sulfated D-glucuronic acid
 - (C) D-glucuronic acid and glucosamine
 - (D) D-galactose and 3,6-anhydro-L-galactopyranose
-

167. Which of the following forces is dictated by entropic effects?

- (A) Atom-atom repulsion based on the Pauli Exclusion principle
 - (B) Electrostatic interactions
 - (C) Hydrophobic interactions
 - (D) Charge-transfer interactions
-

168. Which of the following functional groups is a classical isostere for -CH= ?

- (A) -CH₂
 - (B) -NH-
 - (C) -N-
 - (D) COOH
-

169. As much as 70 percent of all the APIs needed by India to manufacture drugs come from:

- (A) China
 - (B) India
 - (C) Taiwan
 - (D) Belgium
-

170. Alogliptin, saxagliptin, and vildagliptin share a structural feature responsible for reaction with DPP-4. What is that?

- (A) Nitrilo group
 - (B) β -aminoacid group
 - (C) Adamantane ring
 - (D) Pyrrolidine
-

171. The approximate δ value of methyl proton in ^1H NMR is:

- (A) 1.3
- (B) 1.5

(C) 0.9

(D) 2.5

172. 100 proof ethanol means it is:

(A) 100%

(B) 75%

(C) 60%

(D) 50%

173. Select the drug indicated for extended drug resistance tuberculosis (XDR TB).

(A) Linezolid

(B) Moxifloxacin

(C) Tyrocidin

(D) Azithromycin

174. Which of the following quantities is not changed at different magnetic field strength?

(A) Chemical shift (in Hz)

(B) Nuclear spin population in an energy state

(C) J-coupling constant

(D)

Energy difference between two energy states of nuclei with nonzero spin quantum number

175. Choose the WRONG statement about mass spectrometry with ESI.

(A) It is very unlikely for adducts to occur during ESI.

(B) ESI can be used for thermally labile analytes.

(C) Adjusting the pH might enhance the generation of ions.

(D) It has easy compatibility with LC.

176. Which are the host cell membrane receptors that the outer coat protein gp-120 of HIV binds to?

- (A) CD4 and CCR5
- (B) Pepsin and adenylyl cyclase
- (C) IP3 and cytochrome-c
- (D) Bicoid and nanos

177. In LC-MS instrument, interface is applied between:

- (A) LC column and mass separator
- (B) Injection and ion source
- (C) LC column and ion source
- (D) LC column and detector

178. Microwave spectroscopy is generally used to detect:

- (A) Functional groups
- (B) Double bonds
- (C) Isotopes
- (D) Unpaired electrons

179. Which of the following is NOT true?

- (A) Magnets (200 MHz-900 MHz) are made of superconducting wires
- (B) Room temperature shims are in a liquid nitrogen vessel
- (C) Liquid helium and liquid nitrogen are needed to maintain the magnetic field
- (D) The magnet solenoid is in a liquid helium vessel

180. The purpose of shimming is to:

- (A) Stabilize the static magnetic field

- (B) Obtain homogeneity of the static magnetic field
 - (C) Find the lock frequency
 - (D) Obtain homogeneity of the B_1 field
-

181. Tyndall effect is shown by:

- (A) Particles in colloidal solution
 - (B) Particles in very fine suspension
 - (C) Aerosols
 - (D) All of the above
-

182. Who is the founder of Lupin?

- (A) Desh Bandhu Gupta
 - (B) Khwaja Abdul Hamied
 - (C) Dilip Shanghvi
 - (D) Habil Khorakiwala
-

183. Neutropenia is an adverse effect of all of the following EXCEPT:

- (A) Rituximab & Ganciclovir
 - (B) Phenytoin & Clarithromycin
 - (C) Propyl thiouracil & Carbamazepine
 - (D) Clozapine & Colchicine
-

184. The phenomenon of Fermi resonance is observed in:

- (A) UV spectroscopy
 - (B) IR spectroscopy
 - (C) NMR spectroscopy
 - (D) ESR spectroscopy
-

185. Hydroxychloroquine is:

- (A) 4-Amino quinoline
 - (B) 8-Amino quinoline
 - (C) 9-Aminoacridine
 - (D) 8-Hydroxyquinoline
-

186. Gibbs free energy (F) is defined as:

- (A) $F = E - Ts$
 - (B) $F = H - Ts$
 - (C) $F = H + TS$
 - (D) $F = E + TS$
-

187. Apart from TNF-alpha inhibitors, which IL-6 receptor antagonist has been found effective in treating arthritis?

- (A) Anakinra
 - (B) Leflunomide
 - (C) Rituximab
 - (D) Tocilizumab
-

188. The time taken for 5% of a drug to decompose by first-order kinetics is:

- (A) $0.022/k_1$
 - (B) $0.051/k_1$
 - (C) $0.105/k_1$
 - (D) $k_1/0.051$
-

189. Based on their half-lives, which drug would you select for a sustained-release tablet?

- (A) Metformin (6 hr)

- (B) Heroin (2-6 mins)
 - (C) Cocaine (50 mins)
 - (D) Amlodipine (20 hrs)
-

190. A partial theoretical support for the idea that more stable carbocations would be formed faster than less stable ones comes during regioselective addition of HCl to propene is provided by:

- (A) The Hammond postulate
 - (B) Markovnikov's rule
 - (C) Saytzeff's rule
 - (D) The Diels-Alder rule
-

191. Mode of action of nerve gas is:

- (A) Blocking of acetylcholinesterase
 - (B) Blocking of serotonergic action
 - (C) Blocking of cholinergic action
 - (D) Blocking of noradrenergic action
-

192. The heating effect is used in the measurement of the wavelength of:

- (A) X-rays
 - (B) Infrared
 - (C) Ultraviolet rays
 - (D) Visible light
-

193. Which form of electrochemical measurement does NOT involve electrolysis?

- (A) Coulometry
- (B) Voltammetry
- (C) Amperometry

(D) Potentiometry

194. Who is the founder and CEO of Netmeds Marketplace Limited?

- (A) Pradeep Dadha
 - (B) Kalyan Krishnamurthy
 - (C) Byju Raveendran
 - (D) Ananth Narayanan
-

195. Which of the following are incorrectly paired?

- (A) Gluconeogenesis: cortisol
 - (B) Hepatic glycogenesis: insulin
 - (C) Muscle glycogenolysis: epinephrine
 - (D) Kaliuresis: aldosterone
-

196. Probability always lies between:

- (A) 0 and infinite
 - (B) 0 and 1
 - (C) -infinite and + infinite
 - (D) 1 and infinite
-

197. Friedel-Crafts reaction is observed in:

- (A) Nitrobenzene
 - (B) Aniline
 - (C) Both A and B
 - (D) None of the above
-

198. Over-expression of __ in somatic cells leads to cell immortalization.

- (A) p53

- (B) Cadherin
 - (C) Telomerase
 - (D) DNA ligase
-

199. Which of the following peptides is cyclic in nature?

- (A) Glutathione
 - (B) Gramicidin
 - (C) Met-enkephalin
 - (D) Dynorphin
-

200. The term WIPO stands for:

- (A) World Internet Policy Organization
 - (B) Wildlife Investigation and Policing Organization
 - (C) World Institute for Prevention of Organized Crime
 - (D) World Intellectual Property Organization
-