

ROUGH WORK

Test Booklet No.

**Ph.D. Entrance Examination, July, 2023**

**Subject : PHARMACY**

Name of Candidate ..... Answer Sheet No. ....

Roll No. of the Candidate ..... Signature of the Candidate: .....

Date of Examination: ..... Signature of the Invigilator(s)

1. ....

2. ....

**Time : 2 Hours]**

**[Maximum Marks : 100**

**IMPORTANT INSTRUCTIONS**

- (i) The question paper is in the form of Test-Booklet containing **100 (Hundred)** questions. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct.
- (ii) On receipt of the Test-Booklet (Question Paper), the candidate should immediately check it and ensure that it contains all the pages, i.e., **100** questions (50 in Part-A + 50 in Part-B). Discrepancy, if any, should be reported by the candidate to the invigilator immediately after receiving the Test-Booklet.
- (iii) A separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are **100** rows (50 in Part-A + 50 in Part-B) containing four circles each. One row pertains to one question.
- (iv) The candidate should write his/her roll number at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and **NOWHERE ELSE**.
- (v) No second Test-Booklet/Question Paper and Answer-Sheet will be given to a candidate. The candidates are advised to be careful in handling it and writing the answer on the Answer-Sheet.
- (vi) For every correct answer of the question **One (1) mark will be awarded**. For every unattempted question, Zero (0) mark shall be awarded. **There is no Negative Marking**.
- (vii) Marking shall be done only on the basis of answers responded on the Answer-Sheet.
- (viii) To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black pen.
- (ix) For each question only **one** circle should be **darkened** as a mark of the answer adopted by the candidate. If more than one circle for the question are found darkened or with one black circle any other circle carries any mark, the question will be treated as cancelled.
- (x) The candidates should not remove any paper from the Test-Booklet/Question Paper. Attempting to remove any paper shall be liable to be punished for use of unfair means.
- (xi) Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.
- (xii) *Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*
- (xiii) No candidate shall be permitted to leave the examination hall before the expiry of the time.

**DO NOT OPEN THIS QUESTION BOOKLET UNTIL ASKED TO DO SO.**

Pharmacy

[P.T.O.]

**22 / 1**

**PART-A**  
**RESEARCH METHODOLOGY**

- Which of the following does not characterise the diagnostic evaluation in teaching system?
  - A type of pre-evaluation in which teacher assesses learner's strengths and weaknesses prior to beginning of teaching process.
  - It is useful in developing curriculum plan based on learner's capabilities.
  - This kind of evaluation is used to estimate and anticipate a pupil's career.
  - It is the process of determining the root cause of a pupil's problem
- If "X & Y" means X is husband of Y; "X % Y means X is father of Y; "X @ Y is mother of Y; then how is A related to M when A % C & F @ L & M?
  - Father-in-law
  - Grand father-in-law
  - Grand father
  - Grand mother-in-law
- During COVID-19 most classes had moved to online and teachers used interactive slides and presentations to explain concepts. This exemplifies the use of ...
  - Visual aids
  - Audio aids
  - Audio-visual aids
  - All the three

- Select the number from the given options that can replace the question mark (?) in the following series.  
4, 10, 28, ?, 244, 730
  - 82
  - 84
  - 86
  - 80
- Select the letter from the given options that can replace the question mark (?) in the following series.  
I, M, P, T, ?, A
  - Y
  - W
  - V
  - X
- Which of the following is/are the barrier/s in effective communication?
  - Unfamiliar accents
  - Prejudices
  - Fear or stress
  - Lack of relevance

**Options:**

  - 2 and 3
  - 1, 2, and 3
  - 1, 3, and 4
  - 1, 2, 3, and 4

7. .... research strategy is employed for establishing cause-and-effect relationships that allow generalizations to be extended to similar situations.
- (A) Exploratory  
(B) Explanatory  
(C) Applied  
(D) Descriptive
8. If in a coding system DAYCARE is coded as 54 and JOURNEY is coded as 105, then how will FURTHER be coded in the same coding system?
- (A) 99  
(B) 98  
(C) 96  
(D) 93
9. Three of the following four letter-clusters are alike in a certain way and one is different. Pick the odd one.
- (A) EILP  
(B) LPSW  
(C) ORVY  
(D) CGJN
10. Which of the following statements is true in respect of hypothesis testing?
1. Null hypothesis is tested in two-tailed format.  
2. Alternate hypothesis is tested in two-tailed format.  
3. Null hypothesis is tested in one-tailed format.  
4. Alternate hypothesis is tested in one-tailed format.
- Options:**
- (A) 1 only  
(B) 2 only  
(C) 2 and 3 only  
(D) 1 and 4 only
11. "Discussion" chapter of the thesis deals with .....
- (A) Connecting the findings back to the research questions, purpose statement, hypotheses, and earlier researches.  
(B) Presenting the collected data in a clear, organized, and factual manner with evidence of hypothesis testing.  
(C) Statistical analysis and organisation of data, drawing inference and interpretation.  
(D) Analyzing the results, checking their significance, and presenting the description with figures.

12. Three statements are given followed by three conclusions numbered I, II, and III. Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusions logically follow(s) from the statements?
- Statements:**
1. All Sparrows are Birds.  
2. All Birds are Eagles.  
3. Some Birds are Black.
- Conclusions:**
- I. Some Black things are Sparrows.  
II. Some Eagles are not Sparrows.  
III. No Black thing is a Sparrow.
- Options:**
- (A) Only conclusion I follows.  
(B) Only conclusion II follows.  
(C) Only conclusion III follows.  
(D) Either conclusion I or III follows.
13. An agriculture scientist is interested in examining the crop quality of two distinct varieties of wheat seeds (J and K). He decides to sow seed J and K in two plots already prepared and earmarked by each of the fifty-four farmers in a radius of ten kilometers. Irrigation, fertilizer, weeding etc. were almost uniform/controlled across the plots and farms. He is most probably utilizing ..... research.
- (A) Experimental  
(B) Quasi-experimental  
(C) Ex-post facto  
(D) None of these
14. Which of the following sources of data collection usually suffers from a cognitive bias called Halo effect?
- (A) Questionnaire  
(B) Online survey  
(C) Interview  
(D) Laboratory experiment
15. The present examination system .....
1. Does not promote good study habits.  
2. Promotes rote learning.  
3. Is not a good test of one's academic attainment.  
4. Does not encourage students to be regular in the class.
- Options:**
- (A) 1 and 2 only  
(B) 1, 2, and 4 only  
(C) 2, 3, and 4 only  
(D) 1, 2, 3, and 4
16. Analysis procedure for qualitative data which is largely descriptive and which details the way of life of particular individuals, groups or organizations is called .....
- (A) Analytic induction  
(B) Life histories  
(C) Ethnographic accounts  
(D) Narrative analysis

17. Which of the learner's characteristics determines how the learner perceives, remembers, thinks, and organizes the information?
- (A) Personal  
(B) Cognitive  
(C) Academic  
(D) All the three
18. Which of the following statements is truthful?
- Any toxic chemicals present in the soil will get absorbed by the plants, these get passed up through the food chain.
  - Compared to the other types of pollution, the effects of soil pollution are more obscure, but their implications are well noticeable.
- Options:**
- (A) Both 1 and 2  
(B) None of these  
(C) 1 is true, 2 is untrue  
(D) 1 is untrue, 2 is true
19. Select the word-pair in which the words are related in the same way as are the words in the following pair.
- English : Latin
- (A) Telugu : Malayalam  
(B) Gurmukhi : Punjabi  
(C) Sanskrit : Devanagari  
(D) Urdu : Pashto
20. Which of the following does not pertain to quantitative data?
- (A) Content analysis  
(B) Reliability analysis  
(C) Linear model  
(D) Data mining
21. The communication becomes circular when:
- (A) the same message moves top to bottom and bottom to top.  
(B) each person is both a sender and a receiver.  
(C) two different persons receive the same message.  
(D) the message is sent again and again
22. Observe the statement I and II given below and choose your answer from the given options.
- I. Earthquakes of significant magnitude take place in certain zones of India.  
II. The Indian plate thrusts underneath the Eurasian plate at a speed of 5 cm per year, which keeps accumulating in the rocks.
- Options:**
- (A) Statement I and II are the consequences of some unknown factors.  
(B) Statement I and II are unrelated to each other.  
(C) Statement II is the consequence and Statement I is its cause.  
(D) Statement I is the consequence and Statement II is its cause.

23. The dust and soot released from the industrial chimneys that suspends in the air is a kind of .....
- (A) Particulate pollutants  
(B) Fly ash  
(C) Lead & other metals  
(D) Gaseous pollutants
24. What was the budget allocation to education for the financial year 2023-24?
- (A) Rs. 1.32 lakh crore  
(B) Rs. 1.40 lakh crore  
(C) Rs. 1.12 lakh crore  
(D) Rs. 1.50 lakh crore
25. When a chosen symbol, word, or gesture conveys multiple meanings, it is characterized as:
- (A) Sender barrier  
(B) Personal barrier  
(C) Technical barrier  
(D) Semantic barrier
26. Asking "Do you understand" on the part of a teacher contributes to ..... classroom communication.
- (A) effectiveness of  
(B) confusion in  
(C) blurring of real message in  
(D) personal bias in
27. Select the characteristics of good teaching amongst the following:
- Can easily impress the students.
  - Commitment to encourage independence and motivation.
  - Giving fair and objective feedback on students' performance.
  - Ability to improvise and adapt to new demands.
- Options:**
- (A) 2 and 3 only  
(B) 1, 3, and 4 only  
(C) 2, 3, and 4 only  
(D) All the four
28. A researcher has got grouped frequencies across different range of scale values of a variable. Which type of graph can best represent the observed trend of results?
- (A) Scatter plot  
(B) Histogram  
(C) Pie graph  
(D) Line graph
29. A ..... is an organized gathering in which various professionals present and discuss their research work or deliberate on their area of expertise.
- (A) Conference  
(B) Seminar  
(C) Symposium  
(D) Workshop



30. Which among the following are essential defining attributes of ICT?

1. Relevant information may be converted into or delivered through digital forms.
2. Can be deployed for enhancing access to and reach of resources, as well as management of educational system.
3. Includes interactive digital content, internet, and other satellite communication devices.
4. Can be used as a major vehicle for all round socioeconomic development of the country.

**Options:**

- (A) 2 and 3 only
- (B) 1 and 2 only
- (C) 1, 2, and 3 only
- (D) 1, 2, 3, and 4

31. The Kothari commission report was focused on:

- (A) Earn while learn scheme.
- (B) Diversification of education.
- (C) Education and national development.
- (D) Promotion of basic education rural areas.

32. Which of the following does not characterize communication?

- (A) Message sent is the message received.
- (B) Encompasses sharing and distributive justice.
- (C) Communication maintains and animates life.
- (D) It is a social interaction through messages.

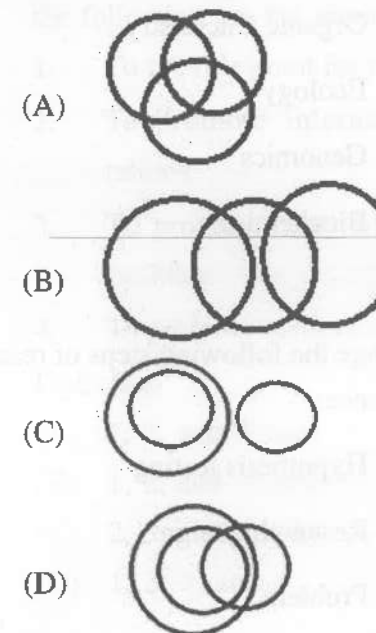
33. The increase in temperature in aquatic system has profound effect on organisms as well as on water quality. Which of the following are its consequences?

1. Bacteria multiply rapidly.
2. Decrease in biological oxygen demand.
3. Reduction in dissolved oxygen.
4. Leads to direct fish mortality.

**Options:**

- (A) 1 and 3 only
- (B) 3 and 4 only
- (C) 1, 3, and 4 only
- (D) All the four

34. Select the Venn diagram that best illustrates the relationship between the following classes: Men, Boxers, students



35. Which of the following is/are surely the disadvantages of ICT?

1. Potential risk of getting addicted to electronic and social media.
2. Extended use of ICT devices leads to serious health hazards.
3. Periodicals available on internet are very costly propositions.
4. Computer and automated devices are leading cause of unemployment.

**Options:**

- (A) 2 and 4 only
- (B) 1, 3 and 4 only
- (C) 2, 3, and 4 only
- (D) 1, 2, and 4 only

36. Identify the correct sequence of the following in the communication process.

- (A) Encoding → Message → Receiver → Decoding → Channel
- (B) Message → Encoding → Channel → Receiver → Decoding
- (C) Encoding → Channel → Message → Receiver → Decoding
- (D) Encoding → Channel → Receiver → Message → Decoding

37. The University that telecasts its own interactive educational programs is .....

- (A) IG National Open University
- (B) Dr. B.R. Ambedkar Open University
- (C) University of Pune
- (D) Annamalai University

38. Should third gender persons be encouraged to get admission in educational institution at par with common people.

**Arguments:**

- I. Yes, it is their fundamental right, right to equality.
- II. No, it will impair the congenial atmosphere in education institutions.

**Options:**

- (A) Both the arguments are forceful.
- (B) Either argument I or II is forceful.
- (C) Neither argument I nor II is forceful.
- (D) Only argument I is forceful.

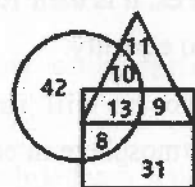
39. What is the full form of computer terminology ADSL?

- (A) Additional data subscription link.
- (B) Asymmetric digital subscriber line.
- (C) Advanced digital system line.
- (D) Access demand subscriber link.

40. Distance education was firstly launched in .....

- (A) School of Correspondence Courses and Continuing Education, University of Delhi.
- (B) Dr. B.R. Ambedkar Open University.
- (C) Indira Gandhi National Open University.
- (D) Directorate of Distance Education, Annamalai University.

41. If triangle represents motorists, circle represents horse riders, and rectangle represents foot ballers, then what's the number of motorists who are foot ballers but not horse riders.



- (A) 8
- (B) 13
- (C) 9
- (D) 10

42. Three of the following four terms are alike in a certain way and one is different. Pick the number that is different from the rest.

- (A) Organic Chemistry
- (B) Ecology
- (C) Genomics
- (D) Biochemistry

43. Arrange the following steps of research in a sequence:

- 1. Hypothesis testing
- 2. Research design
- 3. Problem
- 4. Data collection

Options:

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

44. For most of the parametric statistical analyses the data must qualify .....

- (A) at least interval level measurement
- (B) at least ordinal level measurement
- (C) at least ratio level measurement
- (D) A or B

45. The Indian Council of Social Science Research is committed to promote research in social science in the country. Which of the following are the areas at its focus?

- 1. To provide grant for research projects.
- 2. To promote international collaborations.
- 3. To provide grant-in-aid for teaching facilities.
- 4. To promote surveys and publications.

Options:

- (A) 1, 2, and 4 only
- (B) 1, 2, and 3 only
- (C) 2, 3, and 4 only
- (D) 1, 2, 3, and 4

**Direction (Q. Nos. 46-50) :** Read the following passage and answer the question Nos. 46 to 50:

Plenty of vaccines were developed for controlling Coronavirus Disease 2019 (COVID-19) responsible for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic. A study compared the efficacy of these vaccines in preventing symptomatic and severe disease in the adult population and to prevent symptomatic COVID-19 among the elderly. Leading medical databases were searched until August 30, 2021. Only published phase 3 randomized controlled trials (RCTs) evaluated efficacy of the vaccine to prevent symptomatic and severe COVID-19 in adults were included. Two reviewers independently evaluated the literature search results and independently extracted summary data and

the risk of bias was evaluated using the Cochrane RBA Tool. The primary outcomes were the efficacy of the vaccine against symptomatic COVID-19 in adults. A total of 200,000 adult participants from eight phase-3 RCTs were included in NMA, of whom 52% received the intervention (active COVID-19 vaccine). While each of nine vaccines was tested in the unique clinical trial as compared to control, based on indirect comparison, BNT162b2 and mRNA-1273 vaccines were ranked with the highest probability of efficacy against symptomatic COVID-19 (P-scores 0.952 and 0.843, respectively), followed by Gam-COVID-Vac (P-score 0.782), NVX-CoV23730 (P-score 0.700), CoronaVac (P-score 0.570), BN02 (P-score 0.428), WIV04 (P-score 0.327), and Ad26.COV2.S (P-score 0.198). No statistically significant difference was seen in the ability of the vaccines to prevent symptomatic disease in the elderly population. No vaccine was statistically significantly associated with a decreased risk for severe COVID-19 than other vaccines, although mRNA-1273 and Gam-COVID-Vac have the highest P-scores (0.899 and 0.816, respectively), indicating greater protection against severe disease than other vaccines.

46. According to the study fourth most effective vaccine against symptomatic COVID-19 was

- (A) CoronaVac
- (B) mRNA-1273
- (C) NVX-CoV23730
- (D) Gam-COVID-Vac

47. Which of the following statements is surely incorrect?

- (A) In the case of elderly population all the vaccines were almost equally effective in preventing symptomatic disease.
- (B) The study presents evidence that BNT162b2 is the safest vaccine against symptomatic COVID-19.
- (C) Gam-COVID-Vac proved to be second most effective in protection against severe disease.
- (D) Findings of the study may be useful in choosing most effective vaccine for COVID-19.

48. Most probable reason behind independent evaluation of the literature search results by two reviewers is:

- 1. Reducing subjectivity and bias
- 2. Ensuring reliability of findings
- 3. Meeting ethical standard
- 4. Improving validity of findings

Options:

- (A) 1 only
- (B) 1 and 3
- (C) 2 and 4
- (D) 1, 2, and 4

49. The conclusion, "No vaccine was statistically significantly associated with a decreased risk for severe COVID-19 than other vaccines" implies:

- (A) There exists no difference in the efficacy of tried vaccines for severe COVID-19.
- (B) None of the vaccines was found effective in decreasing risk for severe COVID-19.
- (C) Results need to be statistically significant in order to arrive at meaningful inference.
- (D) Some of the vaccines might be statistically associated with a decreased risk for symptomatic COVID-19 than other vaccines.

50. How many of phase-3 adult participants did not receive vaccination dose?

- (A) 104000
- (B) 100400
- (C) 96000
- (D) Can not be ascertained

## PART-B PHARMACY

51. At constant temperature the product of pressure and volume of a given amount of a gas is constant this is .....

- (A) Gay-Lussac law
- (B) Charles' law
- (C) Boyle's law
- (D) None of these

52. When water is added to quick lime the reaction is

- (A) Explosive
- (B) Endothermic
- (C) Exothermic
- (D) Photochemical

53. When the rate of the reaction is equal to the rate constant, the order of the reaction is

- (A) Zero order
- (B) First order
- (C) Second order
- (D) Third order

54. Stokes' law cannot be used, if Reynolds number is more than:

- (A) 0.2
- (B) 1.8
- (C) 9.0
- (D) 18.0

55. Which of the following is incorrect for electrophilic substitution?

- (A)  $-\text{NO}_2$  is deactivating and m-directing
- (B)  $-\text{Cl}$  is activating and o, p-directing
- (C)  $-\text{OH}$  is activating and o, p-directing
- (D)  $-\text{CH}_3$  is activating and o, p-directing

56. All of the following are TNF  $\alpha$  inhibitor EXCEPT

- (A) Etanercept
- (B) Infliximab
- (C) Adalimumab
- (D) Basiliximab

57. All are true for Metoclopramide EXCEPT

- (A) 5HT 1 receptor antagonist
- (B) D 2 receptor antagonist
- (C) 5HT 3 receptor antagonist
- (D) 5HT 4 receptor agonist

58. Higher incidence of myocardial infarction and increased mortality has been noted with the use of the following anti-hypertensive drug  
 (A) Nifedipine  
 (B) Verapamil  
 (C) Diltiazem  
 (D) Lisinopril
59. Which of the following is used to prepare Benzoyl chloride from benzoic acid?  
 (A)  $\text{Cl}_2$ ,  $\text{H}_2\text{O}$   
 (B)  $\text{SOCl}_2$   
 (C)  $\text{SO}_2$ ,  $\text{Cl}_2$   
 (D)  $\text{Cl}_2$ , hv
60. Phenolphthalein is obtained by heating phenol with conc.  $\text{H}_2\text{SO}_4$  and which of the following reactant?  
 (A) Benzyl alcohol  
 (B) Benzene  
 (C) Benzoic acid  
 (D) Phthalic anhydride
61. What is the concentration of pure water  
 (A) 55.51 M  
 (B) 25.51 M  
 (C) 55 M  
 (D) 25 M
62. Testosterone can be commercially synthesized from-  
 (A) Mexogenin  
 (B) Sarsapogenin  
 (C) Halotestin  
 (D) Ouabagenin
63. An ideal suspension is one whose sedimentation volume is  
 (A) Zero  
 (B) More than one  
 (C) Equal to one  
 (D) Less than one
64. Which of the following is drug is used for the management of Huntington's disease  
 (A) Benserazide  
 (B) Donepezil  
 (C) Tetraabenazine  
 (D) Entacapone
65. Which of the following is an anionic surfactant  
 (A) Sodium lauryl sulfate  
 (B) Benzalkonium chloride  
 (C) Cetylpyridinium chloride  
 (D) Polyethoxylated tallow amine

66. Initial step in the synthesis of Mefloquine is  
 (A) Reaction of o-trifluoro methylaniline with Ethyl-4,4,4-trifluoro acetoacetate  
 (B) Reaction of 4-chloro-N-(6-hydroxy)-(1,1-biphenyl)3-yl-acetamide with trifluoroacetyl methyl pyridinium bromide  
 (C) Reaction of o-trifluoro methylaniline with 1-trifluoroacetyl methyl pyridinium bromide  
 (D) Reaction of m-chloroaniline with Ethyl oxaloacetate
67. Antioxidant that is commonly used in lipstick preparation  
 (A) Butylated hydroxyanisole  
 (B) Ascorbic acid  
 (C) Tocopherols  
 (D) Sodium metabisulfite
68. As per I.P., powder is graded as "Fine Powder" if it passes through sieve  
 (A) 22  
 (B) 44  
 (C) 85  
 (D) 120
69. Biologically L-asparaginase enzyme is obtained from  
 (A) Escherichia coli  
 (B) Clostridium histolyticum  
 (C) Saccharomyces cerevisiae  
 (D) Bacillus subtilis
70. Poise is a unit of  
 (A) Force  
 (B) Viscosity  
 (C) Surface tension  
 (D) Solubility
71. 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 a parasympathomimetic
72. Beta-endorphin is  
 (A) Synthesised in the pituitary  
 (B) A respiratory stimulant  
 (C) Synthesised from pro-dynorphin  
 (D) Metabolised to form met-enkephalin



73. 5-Hydroxytryptamine  
 (A) Decrease peristalsis  
 (B) Increase gastric acid secretion  
 (C) Release from platelets causes coronary spasm and variant angina  
 (D) Metabolized by MAO-B enzyme
74. 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
75. IUPAC name of cortisone is  
 (A) 11,17,21-trihydroxypregn-4-ene-3,20-dione  
 (B) 11 $\beta$ , 17,21-trihydroxypregn-1,4-diene-3,20-dione  
 (C) 17 $\alpha$ , 21-dihydroxy-4-pregnene-3,11,20-trione  
 (D) 17,21-dihydroxypregn-1,4-diene-3,11,20-trione
76. Commercial citric acid is produced by the microbial culture of  
 (A) *Circinella umbellata*  
 (B) *Calonectria decora*  
 (C) *Aspergillus niger*  
 (D) *Rhizopus nigricans*
77. Polyploidy means  
 (A) Addition of one chromosome  
 (B) Possession of three or more sets of chromosome  
 (C) Submicroscopic changes in DNA material  
 (D) Gross structural changes
78. Which one of the following is  $\beta$ 1 selective adrenergic blocker  
 (A) Tamsulosin  
 (B) Yohimbine  
 (C) Clonidine  
 (D) Phenylephrine
79. 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
80. Specific antidote in paracetamol poisoning is  
 (A) N-acetyl-p-benzoquinonemine  
 (B) N-acetylcysteine  
 (C) Diacetyl-monoxime (DAM)  
 (D) Flumazenil

81. A drug (200 mg dose) administered in tablet form and as intravenous injection (50 mg dose) showed AUC of 100 and 200 microgram hr/mL, respectively. The absolute availability of the drug through oral administration is:  
 (A) 125%  
 (B) 250%  
 (C) 12.5%  
 (D) 1.25%
82. Barbiturates with substitution at the following position possess acceptable hypnotic activity.  
 (A) 1,3-Disubstitution  
 (B) 5,5-Disubstitution  
 (C) 1,5-Disubstitution  
 (D) 3,3-Disubstitution
83. Paracytic stomata are quite often found in the members of the family  
 (A) Solanaceae  
 (B) Scrophulariaceae  
 (C) Rubiaceae  
 (D) Ranunculaceae
84. What quantities of 95 % v/v and 45 % v/v alcohol are to be mixed to make 800 ml of 65 % v/v alcohol?  
 (A) 480 ml of 95% and 320 ml of 45% alcohol  
 (B) 320 ml of 95 % and 480 ml of 45 % alcohol  
 (C) 440 ml of 95 % and 360 ml of 45 % alcohol  
 (D) 360 ml of 95 % and 440 ml of 45 % alcohol
85. Purity of water can be assessed by determining one of its following properties  
 (A) pH  
 (B) Refractivity  
 (C) Conductivity  
 (D) Viscosity
86. Coulter counter is used in the determination of  
 (A) Particle surface area  
 (B) Particle size  
 (C) Particle volume  
 (D) All of the above

87. In the mixing of thymol and menthol, which of the following types of incompatibilities occurs?

- (A) Chemical
- (B) Therapeutic
- (C) Physical
- (D) Tolerance

88. Which of the following is a liquid alkaloid?

- (A) Berberine
- (B) Morphine
- (C) Ajmalicine
- (D) Arecoline

89. A given Gram-positive bacterium is differentiated from Gram-negative bacteria by Gram staining. This is because its cell wall contains

- (A) Lysozyme
- (B) Teichoic acid
- (C) Membrane proteins
- (D) Lipid A

90. Phase I clinical studies of a drug under development is generally carried out on

- (A) At least 10,000 people from different ethnic communities and a wide range of age groups
- (B) A group of 500-1000 patients
- (C) A small group of 20-100 healthy male and female volunteers
- (D) Reliable in-vitro cell-lines derived from patients

91. Digitalis toxicity is enhanced by co-administration of

- (A) Potassium
- (B) Quinidine
- (C) Diuretics
- (D) Antacids

92. A compound will be sensitive to IR radiation only when one of the following properties undergo transition on

- (A) Dipole moment
- (B) Dielectric constant
- (C) Polarizability
- (D) Refractivity

93. X-ray crystallographic analysis of an optically active compound determines its

- (A) Optical rotatory dispersive power
- (B) Relative configuration
- (C) Absolute configuration
- (D) Optical purity

94. The applicability of Noyes-Whitney equation is to describe

- (A) First order kinetics
- (B) Zero order kinetics
- (C) Mixed order kinetics
- (D) Dissolution rate

95. Bloom strength is used to check the quality of

- (A) Lactose
- (B) Ampoules
- (C) Hardness of tablets
- (D) Gelatin

96. Rabies vaccine (living) is prepared using

- (A) Sheep blood
- (B) Mice lymph
- (C) Horse plasma
- (D) Fertile eggs

97. In IR spectrum, the functional group region ranges between

- (A)  $4000\text{ cm}^{-1}$  to  $900\text{ cm}^{-1}$
- (B)  $4000\text{ cm}^{-1}$  to  $1400\text{ cm}^{-1}$
- (C)  $1400\text{ cm}^{-1}$  to  $900\text{ cm}^{-1}$
- (D)  $4000\text{ cm}^{-1}$  to  $660\text{ cm}^{-1}$

98. The equation  $E = E_0 + \frac{RT}{nF} \ln a_{M^{3+}}$  is used to measure

- (A) Conductance
- (B) Potential difference
- (C) Resistance
- (D) Current

99. In which of the following techniques the sample is kept below triple point?

- (A) Lyophilization
- (B) Spray drying
- (C) Spray congealing
- (D) Centrifugation

100. Which of the following is a real limitation to Beer's law

- (A) Fluorescence
- (B) Analyte Dissociation
- (C) Polychromatic radiation is used as source
- (D) Analyte at high concentrations