National Forensic Sciences University
Knowledge | Wisdom | Fulfilment
An Institution of National Importance
(Ministry of Home Affairs, Government of India)

Answer Key
April 6, 2025

SSA - NSTS / FN - Examination

1. Look at this series: 7, 10, 8, 11, 9, 12, ... What number should come next?

A 7
✓ B 10
C 12
D 13

2. Which word does NOT belong with the others?

A cornea
B retina
C pupil
✓ D vision

3. Pen is to poet as needle is to.

A thread
B button
C sewing
✓ D tailor

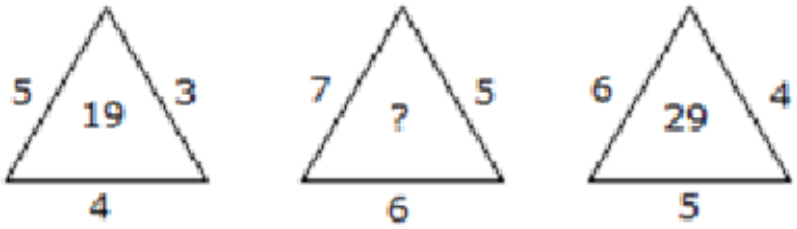
4. JAK, KBL, LCM, MDN, ____

A OEP
✓ B NEO
C MEN
D PFQ

5. School (Essential Part)

✓ A student
B report card
C test
D learning

6.



Which one will replace the question mark?

- A 25
- B 37
- ✓ C 41
- D 47

7. Ayesha's father was 38 years of age when she was born while her mother was 36 years old when her brother four years younger to her was born. What is the difference between the ages of her parents?

- A 2 years
- B 4 years
- ✓ C 6 years
- D 8 years

8. The average weight of 8 person's increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?

- A 76 kg
- B 76.5 kg
- ✓ C 85 kg
- D 95 kg

9. 0.002 x 0.5 =?

- A 0.0001
- ✓ B 0.001
- C 0.01
- D 0.1

10. Insert the missing number. 1, 4, 9, 16, 25, 36, 49, (....)

A 54

B 56

✓ C 64

D 81

11. Find the correctly spelt word

✓ A Foreign

B Foreine

C Fariegn

D Forein

12. The following questions choose the word which is the exact OPPOSITE of the given word.“STATIONARY”

A Active

✓ B Mobile

C Rapid

D Busy

13. The following question choose the word which best expresses the meaning of the given word.“VENT”

✓ A Opening

B Stodge

C End

D Past tense of go

14. Pick out the most effective word(s) from the given words to fill in the blank to make the sentence meaningfully complete.“The grapes are now ..... enough to be picked.”

A ready

B mature

✓ C ripe

D advanced

15. In question given below out of four alternatives, choose the one which can be substituted for the given word/sentence. “The study of human history and culture”

A Anthropology

✓ B Archaeology

C History

D Ethnology

16. Which of the following is a non-metal that remains liquid at room temperature?

A Phosphorous

✓ B Bromine

C Chlorine

D Helium

17. Chlorophyll is a naturally occurring chelate compound in which central metal is....

A copper

✓ B magnesium

C iron

D calcium

18. The site of protein synthesis is.....

✓ A Ribosome

B Nucleus

C Endoplasmic reticulum

D Chromosome

19. 'Bar' is the unit of

A temperature

B heat

✓ C atmospheric pressure

D current

20. Isotopes are separated by

A crystallisation

B sublimation

✓ C distillation

D filtration

21. Nuclear fission is caused by the impact of

✓ A neutron

B proton

C deuteron

D electron

22. Pulses are a good source of

A carbohydrates

B fats

✓ C proteins

D vitamins

23. Optic fibres are mainly used for which of the following?

A Musical instruments

B Food industry

C Weaving

✓ D Communication

24. Organic Substances which, in very small amounts, control growth and development called....

A vitamins

✓ B hormones

C enzymes

D None of the above

25. Metals are good conductors of electricity because

✓ A they contain free electrons

B the atoms are lightly packed

C they have high melting point

D All of the above

26. Which of the following does not come under the basic chemistry of major food components?

A Lactose

B Riboflavin

✓ C Lactase

D Starch

27. Which of the following are epimers?

A D-Glucose and D-Gulose

B D-Mannose and D-Ribose

C D-Idose and D-Galactose

✓ D D-Galactose and D-glucose

28. Tyrosine is comes under which class of amino acids?

A Amino Acid containing Hydroxyl (-OH) group

B Aromatic Amino Acids

C Sulfur containing Amino acids

✓ D A&B

29. The Biuret color reaction is used for the identification of which of the following compounds?

✓ A Two peptide Linkages

B Carbohydrates

C Vitamins

D Fatty Acids

30. What is the full form of “CPPP”?

A Cyclophosphoperhydrophenanthrene

✓ B Cyclopentanoperhydrophenanthrene

C CyclophosphoPerhydroPhenapthelene

D Chloropentanoperhydrophosphrose

31. What is the IUPAC Name of Water?

A Hydroxyl oxide

✓ B Oxidane

C Oxifine

D None of the mentioned

32. What is the suggested diet for patients with Phenylketonuria (PKU)?

A Foods containing low levels of minerals

✓ B Foods containing low levels of protein

C Foods containing high levels of protein

D Both Foods containing low levels of minerals & Foods containing high levels of protein

33. Which Vitamin is used as an antioxidant?

A Vitamin K

B Vitamin B6

C Ergocalciferol

✓ D Tocopherol

34. What is the biologically active form of Vitamin D?

A Calcitriol

B Calciol

C 1,25 DHCC

✓ D Both Calcitriol & 1,25 DHCC

35. Which of the Following Minerals are used for the Wound healing?

A Iron

✓ B Zink

C Copper

D Iodine

36. What are the current FSSAI regulations for food packaging?

✓ A Food Safety and Standards (Packaging) regulations, 2018

B Food Safety and Standards (Packaging) regulations, 2012

C Food Safety and Standards (Packaging) regulations, 2021

D Food Safety and Standards (Packaging) regulations, 2019

37. What is the Conversation factor for calculating the Protein content in milk as per FSS labeling and display regulations 2019 ?

A 6.25

✓ B 6.38

C 5.25

D 5.38

38. What is the minimum quantity required for testing nutritional supplements as per the Food Safety and Standards (Laboratory and Sampling Analysis) Regulations, 2011?

A 10 gm

B 100 gm

C 250 gm

✓ D 500 gm

39. Which of the following articles of food are mandatory to get Bureau of Indian Standards (BIS) certification?

A Milk powder

B Hexane food grade

C Packaged drinking water

✓ D All of the mentioned

40. What are the FSSAI regulations for antibiotics usge in article of Food?

A Food Safety and Standard (Contaminants, Toxins and residues) Regulations, 2019

B Food Safety and Standard (Prohibition and restriction of sales) Regulations, 2011

✓ C Food Safety and Standard (Contaminants, Toxins and residues) Regulations, 2011

D Food Safety and Standard (Prohibition and restriction of sales) Regulations, 2016

41. When was the World Anti-Doping Agency (WADA) established?

✓ A 1999

B 1995

C 2000

D 1992

42. What is the name of National organization for Anti-doping in India?

A NDTL

✓ B NADA

C NFSU

D CDSCO

43. Which Organizations Provides the Anti-Doping Education for International Athlete?

A National federation (NF)

B International federation (IF)

C National anti-doping Organization Athlete County

✓ D All of the mentioned

44. At what concentration level is pseudoephedrine prohibited in urine?

A Greater than 75 milligram per milliliter

B Greater than 75 milligram per liter

✓ C Greater than 150 milligram per milliliter

D Greater than 150 milligram per liter

45. Which of the following category of drugs prohibited by World anti-doping agency only in Competition.

A Diuretics and Masking agents

✓ B Stimulants

C Anabolic agents

D Beta-2 Antagonist

46. In which route of administration are glucocorticoids not prohibited by the World Anti-Doping Agency?

A Oral rout

B Intravenous route

✓ C Inhaled

D Intra muscular

47. Which of the following drug is exception from the list of Cannabinoids by World anti-doping agency?

✓ **A** Cannabidiol

B Tetrahydro Cannabinols

C Marijuana

D None of the mentioned

48. Which organization regulated the Doping regulations across all sports and countries?

A UNESCO

✓ **B** WADC

C USADA

D WHO

49. What is the Full form of MRPL as per the WADA technical document TD2022MRPL?

A Minimum reporting performance levels

B Maximum reporting performance levels

✓ **C** Minimum required performance levels

D Maximum reporting performance levels

50. Which of the following possible Viral vectores used in Gene doping?

A Adenoviruses

B Herpesviruses

C Adeno associated viruses

✓ **D** All of the mentioned

51. Which enzyme system is primarily responsible for the metabolism of most doping substances in the liver?

✓ **A** Cytochrome P450 (CYP) enzymes

B Amylase enzymes

C ATP synthase

D Acetylcholinesterase

52. How do anabolic steroids primarily enhance athletic performance?

- A By increasing red blood cell production
- ✓ B By enhancing protein synthesis and muscle growth
- C By blocking pain signals to the brain
- D By improving oxygen transport in the blood

53. What is the primary route of excretion for most doping substances?

- A Lungs
- B Liver
- ✓ C Kidneys
- D Skin

54. Beta-blockers are prohibited in certain sports because they primarily affect which physiological function?

- A Increase in muscle mass
- ✓ B Reduction of anxiety and heart rate
- C Enhancement of oxygen-carrying capacity
- D Increase in endurance

55. Which of the following healthcare professionals is primarily responsible for managing sports-related injuries on the field?

- A Pharmacist
- ✓ B Sports Physician
- C Psychologist
- D Nutritionist

56. In which of the following sports are beta-blockers specifically prohibited due to their performance effects?

- A Weightlifting, Swimming, Athletics
- B Cycling, Wrestling, Tennis
- ✓ C Archery, Shooting, Billiards
- D Basketball, Football, Hockey

57. High pKb value of a molecule indicates that it is a...

A Strong Acid

B Weak acid

C Strong base

✓ D Weak base

58. In which titration Phenolphthalein indicator used?

✓ A Acid-base titration

B Redox

C Complexometry

D Potentiometric

59. The formula for molarity is...

A moles/kg

✓ B moles/l

C gm/kg

D gm/l

60. For masking of metal ions which masking agent is used?

✓ A EDTA

B potassium cynide

C Triethanol amine

D 2,3-bis(sulfanyl)propan-1-ol

61. Salting out means...

A Increase in concentraion of salt in solution increase in solubility of solute

✓ B Increase in concentraion of salt in solution decrease in solubility of solute

C No effect of salt concentration on solubility of solute

D None of the mentioned is correct

62. What is the oxidation state of oxygen in peroxide?

A -3

B -2

✓ C -1

D -0.5

63. Which is an inert gas from following options?

A Oxygen

B Nitrogen

C Hydrogen

✓ D Argon

64. In heat reflux extraction, what is the sequence of solvents as per polarity?

A Hexane,MeOH, EA, Water

✓ B Hexane, EA,MeOH, Water

C Water, Hexane, MeOH, EA

D EA, Water, MeOH, Hexane

65. Which of the following factors influences the efficiency of solid phase extraction?

A pH of sample solution

B Type of sorbent

✓ C Both of them

D None of the mentioned

66. What is the defination of buffer capacity?

A the ability of a solution to resist changes in pH upon the addition of an acid or base

B the number of moles of acid or base needed to change the pH of one liter of solution by one unit

✓ C Both of the mentioned

D None of the mentioned

67. Which metal has been used in Grignard reagent?

A Calcium

✓ B Magnesium

C iron

D Sodium

68. In gravimetric analysis, from following option what parameter changes which temperature?

A volume

B Density

✓ C Mass

D All of them

69. Which reagent is used for detection oof amino acids?

A Fehling's reagent

B Millon's reagent

C Tollens' reagent

✓ D Ninhydrin reagent

70. What is the UV range?

✓ A 200-400 nm

B 200-800 nm

C 400-800 nm

D 100-400nm

71. Which of the following is a quantitative analytical technique?

A HPLC

B UV

C NMR

✓ D All of the mentioned

72. Which of the following analytical techniques cannot be used for solvent content determination

A LOD

B TGA

C GC

✓ D ICP-MS

73. Frequency and Wavelength of an electromagnetic radiation are...

A directly proportional to each other

✓ B inversely proportional to each other

C not related to each other

D none of the mentioned

74. Which of the following chromatographic techniques uses the higher length of stationary phase?

- A HPLC
- B UPLC
- ✓ C GC
- D TLC

75. In GC-MS which detector is used for detecting halogenated compounds?

- A FID
- ✓ B ECD
- C Quadrapole
- D UV-Visible

76. Which type of compunds are analysed by ESI source

- ✓ A Polar
- B Non polar
- C None of the mentioned
- D Both of the mentioned

77. Which ionization techninque is mostly used in LCMS

- A APCI
- ✓ B ESI
- C APPI
- D EI

78. Why CO2 is IR active?

- A because it has linear structure
- ✓ B because it has asymmetric stretching and bending
- C because it does not change the dipole moment
- D because it has non-polar bond

79. Which functional group gives doublet in IR region?

- A OH
- B NH
- ✓ C NH2
- D COOH

80. What is hypsochromic shift in UV-visible spectroscopy?

- A Shift of absorbance to longer wavelength
- ✓ B Shift of absorbance to shorter wavelength
- C increase in absorption intensity
- D decrease in absorption intensity

81. Which of the following sentence is correct for normal phase chromatography?

- ✓ A Stationary phase is polar and mobile phase is non polar
- B Stationary phase is non-polar and mobile phase is polar
- C Stationary phase is polar and mobile phase is polar
- D Stationary phase is non-polar and mobile phase is non-polar

82. How many pumps are present in quaternary HPLC

- ✓ A 1
- B 2
- C 3
- D 4

83. For which ion separation is the quaternary ammonium stationary phase used in ion chromatography?

- A Nitrate
- B Sulfate
- C Chloride
- ✓ D All the the mentioned

84. What does Rf value represent in HPTLC

A Rate factor

✓ B Retention factor

C Relative front

D Retention time

85. What is the principle for separation in HPLC

A Adsorption

B Partition

✓ C Both of the mentioned

D None of the mentioned

86. What does a p-value of 0.03 indicate in a hypothesis test?

A There is a 3% probability that the null hypothesis is true

✓ B . The result is not statistically significant

C There is a 3% chance of observing the data if the null hypothesis is true

D The alternative hypothesis is false

87. A researcher wants to test if a new drug is more effective than the standard drug. He has 2 groups of patients.Which test should he use?

A Paired t-test

B Chi-square test

✓ C Independent t-test

D ANOVA

88. You perform a one-way ANOVA and get the following output:• Between-group sum of squares (SSB) = 120 • Within-group sum of squares (SSW) = 180 • df between (k – 1) = 2 • df within (N – k) = 12 What is the F-statistic?

A 1

B 2

✓ C 4

D 10

89. What is the main purpose of Principal Component Analysis (PCA) in data analysis?

- A To normalize the data
- B To increase the dimensionality of the dataset
- ✓ C To reduce the number of variables while retaining maximum variance
- D To perform linear regression on multiple variables

90. The marks (out of 10) scored by 9 students in a lab test are: 4, 5, 6, 6, 7, 8, 9, 10, 10. Chose that correct option:

- A Mean = 7, Median = 7, Mode = 10
- ✓ B Mean = 7.2, Median = 7, Mode = 6 and 10
- C Mean = 7.2, Median = 7, Mode = 6
- D Mean = 7, Median = 6, Mode = 6

91. What is the difference between a reference material (RM) and a CRM?

- ✓ A A CRM is a RM that has been certified by a metrologically valid procedure.
- B A RM is a CRM that has been certified by a metrologically valid procedure.
- C c) There is no difference, they are the same thing.
- D d) A CRM is a RM that has been certified by a manufacturer.

92. Which of the following is NOT a characteristic of a good CRM

- A High purity
- B Traceability
- ✓ C Low cost
- D Homogeneity

93. What is the difference between accuracy and precision in measurement?

- A Accuracy refers to the closeness of measurements to each other, while precision refers to the closeness of measurements to the true value.
- ✓ B b) Precision refers to the closeness of measurements to each other, while accuracy refers to the closeness of measurements to the true value.
- C accuracy and precision are the same thing.
- D accuracy is the degree of error in a measurement, while precision is the range of possible values.

94. Which of the following parameter is not a part of method validation

✓ **A** Calibration

B Linearity

C LOQ

D Linearity

95. What is the purpose of determining the Limit of Detection (LOD) during method validation?

✓ **A** To determine the lowest concentration that can be reliably measured

B To determine the highest concentration that can be reliably measured

C To determine the range of concentrations over which the method is linear

D To determine the precision of the method

96. What is the most important reason for laboratory proficiency testing

A To compare the results between laboratories

B To ensure that the equipment is functioning

C To ensure the cost cutting for analysis

✓ **D** To ensure accurate test results by the laboratory

97. What is Test Uncertainity ratio

A Ratio of test to measurement time

B Ratio of test results to specifications

✓ **C** Ratio of tolerance to measurement uncertainty

D Ratio of errors in test

98. What is Calibration Tolerance

✓ **A** The acceptable range of deviation from a specified value

B The average measurement error

C The smallest detectable change

D The maximum measurable value

99. Which of the following cannot be considered a reason for implementing a quality system that conforms to ISO standards?

✓ **A** Improvement in safe work practices

B Efficient, accurate and reliable test results

C Reduction in customer complaints

D Decreased inspection efforts

100. Which of the following represents India in ISO

A BCCI

B SIDBI

✓ **C** BIS

D FSSAI