



J. C. Bose University of Science and Technology, YMCA, Faridabad
(formerly YMCA University of Science and Technology)
A State Govt. University established wide State Legislative Act. No. 21 of 2009
SECTOR-6, FARIDABAD, HARYANA-121006

Question Booklet

No.

Q - 298

Written Test for the post of Lab Assistant (Advt No.01/2023)

Applicant ID

Answer Sheet No.A-.....

Name of Applicant:

Signature of the Candidate

Date of Examination: ...12.06.2023.....

Signature of the Invigilator(s)

1.

2.

Time: 2:00 hrs

Maximum Marks: 95

IMPORTANT INSTRUCTIONS

- The question paper is in the form of Test-Booklet containing 95 questions. Each question carries four answers marked (A), (B), (C) and (D), out of which only one is correct.
- On receipt of the Test-Booklet (Question Paper), the applicant must immediately check it and ensure that it contains all the pages, i.e., 95 questions. Discrepancy, if any, should be reported to the invigilator immediately after receiving the Test-Booklet.
- The separate Answer-Sheet is provided with the Test-Booklet/Question Paper. On this sheet there are separate rows containing four circles each. One row pertains to one question.
- The candidate should write his/her details at the places provided on the cover page of the Test-Booklet/Question Paper and on the Answer-Sheet and NOWHERE ELSE.
- No second Test-Booklet/Question Paper and Answer-Sheet will be provided. The candidates are advised to be careful in handling it and marking the answer on the Answer-Sheet.
- For every correct answer of the question **One (1) mark will be awarded**. For every un-attempted question, Zero (0) mark shall be awarded. **There is NO Negative Marking**.
- Marking shall be done only on the basis of answers responded on the Answer-Sheet.
- To mark the answer on the Answer-Sheet, candidate should **darken** the appropriate circle in the row of each question with Blue or Black ink pen.
- 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.
- The candidate should not remove any paper from the Test-Booklet. Attempting to remove any paper shall be liable to be punished for use of unfair means.
- Rough work may be done on the blank space provided in the Test-Booklet/Question Paper only.
- Mobile phones (even in Switch-off mode) and such other communication/programmable devices are not allowed inside the examination hall.*
- No candidate shall be permitted to leave the examination hall before the expiry of the time.

Written Test for the Post of Laboratory Assistant

MCQs

Full Marks: 95

Time: 2 h

Part-1

1. What is the theme of the interior of the Loksabha hall in the new parliament building of India?
 - a) Lotus
 - b) Rose
 - c) Peacock
 - d) Banyan tree
2. She said to me, "Why are you working so hard?" Change to reported speech.
 - a) She asked me why I was working so hard
 - b) She asked me why did I work so hard
 - c) She asked me why had I worked so hard
 - d) She asked me why had I been working so hard
3. Sheela plays the guitar. Ruchi plays the guitar _____ than Sheela.
 - a) good
 - b) better
 - c) best
 - d) nice
4. She has done all the work. Change to passive voice.
 - a) The work was done by her
 - b) She had done her work
 - c) The work has been done by her
 - d) All the work has been done by her
5. He came across a road _____ a diversion. Fill in the missing word.
 - a) with
 - b) and
 - c) on
 - d) for
6. The man talked to me _____ English.
 - a) with
 - b) in

- c) through
- d) by

7. The teacher said, 'The sun rises from the East to West.' Change to reported speech.

- a) The teacher said that the sun rises from the East to West
- b) The teacher said that the sun rose from the East to West
- c) The teacher said the sun had risen from the East to West
- d) The teacher said the sun had been rising from the East to West

8. He was given an award by the President. Change to active voice.

- a) The president gives him an award
- b) He got an award by the president
- c) The president gave him an award
- d) The president handed him an award

9. She was called ____ the principal's office.

- a) at
- b) to
- c) in
- d) with

10. May ____ 31 days.

- a) have
- b) has
- c) got
- d) with

11. Which one of the following is the tallest statue in the world?

- a) Statue of Unity
- b) Statue of Liberty
- c) Statue of Buddha
- d) Statue of Peace

12. Who discovered the sea route from the Europe to India in 1498?

- a) Vasco-Da-Gama
- b) Robert Clive
- c) East India Company
- d) Napoleon Bonaparte

13. Who partitioned Bengal in 1905?

- a) then viceroy Curzon
- b) then viceroy Lytton
- c) then viceroy Ripon
- d) then viceroy Robert Clive

14. When did the Chauri Chaura incident took place?

- a) 1922
- b) 1947
- c) 1931
- d) 1906

15. Who started the Dandi March in 1930?

- a) Mahatma Gandhi
- b) Jawaharlal Nehru
- c) Sarojini Naidu
- d) Subhash Chandra Bose

16. ____ law deals with something considered an offence.

- a) Criminal
- b) Civil
- c) Procedural
- d) Government

17. Every citizen has the right to get ____ in Courts.

- a) justice
- b) law
- c) protection
- d) judgement

18. Who fights a case for the government in the court?

- a) Public prosecutors
- b) Judges of the court
- c) Defense lawyer
- d) Police

19. The President nominates ____ members to the Rajya Sabha.

- a) 14
- b) 21
- c) 23
- d) 12

20. Who established the Bose Institute, India?

- a) C. V. Raman
- b) Jagadish Chandra Bose
- c) Satyendra Nath Bose
- d) None of the above

21. In rainy days, we often observe Rainbows caused by sunlight always appear in the section of the sky directly opposite the sun. Which of the following statement is incorrect?

- a) White light has seven colors
- b) A rainbow is caused by reflection, refraction and dispersion of light
- c) In general, a rainbow doesn't form in the noon
- d) A rainbow always forms in the evening

22. Arrange the following colors according to their increasing order of wavelengths.

- a) Violet < blue < green < red
- b) Violet > green > blue > red
- c) Violet < green < blue < red
- d) Violet > blue > green > red

23. Neeraj Chopra won the gold medal in Javelin throw in Japan summer Olympics, 2021. What was the distance of his throw for the best effort?

- a) 90.21 meters
- b) 86.85 meters
- c) 98.87 meters
- d) 87.58 meters

24. Who was the captain of Indian Hockey team who won a bronze medal in Japan summer Olympics, 2021?

- a) Manpreet Singh
- b) Manpreet Badal
- c) Dilpreet Singh
- d) Mandeep Singh

25. Who is the first person belonging to the tribal community to become the president of India?

- a) Pratibha Patil
- b) Droupadi Murmu
- c) Gyani Jail Singh
- d) Ram Nath Kovind

26. Who appoints the Chief Justice of India?
- a) The prime minister of India
 - b) The president of India
 - c) The speaker of Lok Sabha
 - d) The attorney general of India
27. Which one of the following is not one of the names of three main gates of New Parliament Building of India?
- a) Gyan Dwar
 - b) Shanti Dwar
 - c) Shakti Dwar
 - d) Karma Dwar
28. What was the name of the sport that Mirabai Chanu won a Silver medal in Japan summer Olympics, 2021?
- a) Javelin throw
 - b) Weightlifting
 - c) Boxing
 - d) Wrestling
29. What happened on 05 August 2019?
- a) Election was held in Jammu & Kashmir
 - b) Article 370 of the Indian constitution was abrogated
 - c) Jammu & Kashmir was given a special status
 - d) Article 370 of the Indian constitution was introduced
30. Which one is not the constituent of greenhouse gases?
- a) carbon dioxide
 - b) methane
 - c) nitrous oxide
 - d) nitrogen
31. What is virgin vegetation?
- a) Vegetation grown by Indians
 - b) The vegetation which has grown naturally without human aid
 - c) Vegetation which have come from outside India
 - d) Vegetation grown artificially

32. What is 'propaganda'?

- a) A public meeting organized by political parties
- b) Specific type of message directly aimed at influencing the opinion of people
- c) Public screening of movies
- d) Community prayers of a particular religion

33. When the old parliament building of India was inaugurated?

- a) 18 January 1927
- b) 14 August 1947
- c) 28 May 1920
- d) None of the above

34. What is the scientific name of the national flower of India?

- a) Nelumbo nucifera
- b) Rosa
- c) Zinnia
- d) Tagetes

35. Who invented the motion picture camera?

- a) Robert Boyle,
- b) Thomas Alva Edison,
- c) Sir Isaac Newton,
- d) Nikola Tesla.

Part-II

36. A laboratory note book should be ----. Fill in the blank.

- a) Permanently bound and pages are numbered
- b) Permanently bound without page numbers
- c) Loosely bound and pages are numbered
- d) All of the above

37. Which of the following statement is incorrect?

- a) A researcher should write down all experimental details on the laboratory note book
- b) A researcher should not use any PPE kit while performing experiments
- c) A researcher should wear lab coat while entering the laboratory
- d) A researcher should not operate any equipment he/she doesn't know.

38. In the event of a fire accident of highly flammable liquid in a laboratory, which of the following statement is incorrect?

- a) Spray water to douse the fire
- b) Use extinguisher foam and sand to douse the fire
- c) Use extinguisher dry powder to douse the fire
- d) Use sand in the absence of any other fire extinguisher to douse the fire

39. What is the molarity of a solution containing 40 g of NaOH in 500 mL solution.

- a) 2.0 M
- b) 0.2 M
- c) 4.0 M
- d) None of the above

40. How sodium is stored?

- a) Must be stored in water in a closed container
- b) Must be stored in air
- c) Must be stored in Kerosene in a closed container
- d) Must be stored in petrol in an open container

41. 'For an ideal mixture of volatile liquids, the partial vapour pressure of each component of the mixture is equal to the vapor pressure of the pure component multiplied by its mole fraction in the mixture' –this statement is known as?

- a) Raoult's law
- b) Boyle's law
- c) Dalton's law
- d) None of the above

42. Which one of the following statements is correct?

- a) The solutions which obey Raoult's law over the entire range of concentration are known as ideal solutions
- b) The solutions which don't obey Raoult's law over the entire range of concentration are known as ideal solutions
- c) The solutions which obey Henry's law over the entire range of concentration are known as ideal solutions
- d) None of the above

43. If precautions are not taken, Scuba divers face a medical condition known as 'bends' due to the release of dissolved gases in the blood when they come out from deep water causing blocking of capillaries. Which law signifies this condition?

- a) Raoult's law
- b) Boyle's law
- c) Dalton's law
- d) Henry's law

44. What is the IUPAC name of tert-Butyl alcohol?

- a) 2-Methylpropan-2-ol
- b) 2-Methylpropan-1-ol
- c) Butan-2-ol
- d) Butan-2-ol

45. What is the common name of Benzene-1,4-diol?

- a) Hydroquinone or quinol
- b) Catechol
- c) Resorcinol
- d) None of the above

46. Which one of the following has covalent bonds?

- a) NaCl
- b) CH_3Cl
- c) KCl
- d) MgCl_2

47. Which one of the following is a Grignard reagent?

- a) $\text{CH}_3\text{CH}_2\text{MgBr}$
- b) MgCl_2
- c) NaOH
- d) $\text{Mg}(\text{OH})\text{Br}$

48. Name the reaction by which two aryl groups are joined together on reacting aryl halides with sodium in dry ether (For example, when two units of Chlorobenzene are reacted with sodium in dry ether to form Diphenyl).

- a) Grignard reaction
- b) Fittig reaction
- c) Wurtz-Fittig reaction
- d) None of the above

49. Which one of the following compounds is also known as Carboic Acid?
- Ethanol
 - Phenol
 - Benzoic acid
 - Chlorobenzene
50. Which one is the correct order according to the increasing boiling point of the organic compounds?
- Ethanol < Methanol < Butan-1-ol < Propan-1-ol
 - Methanol < Ethanol < Propan-1-ol < Butan-1-ol
 - Methanol > Propan-1-ol > Butan-1-ol > Ethanol
 - Ethanol > Methanol > Butan-1-ol > Propan-1-ol
51. Which one is the correct order of the organic compounds according to the decreasing solubility in water?
- Ethanol, Propan-1-ol, Pentan-1-ol, Butan-1-ol
 - Ethanol, Propan-1-ol, Butan-1-ol, Pentan-1-ol
 - Pentan-1-ol, Propan-1-ol, Butan-1-ol, Ethanol
 - Ethanol, Pentan-1-ol, Butan-1-ol, Propan-1-ol
52. Which one is the correct order according to the decreasing acidity of the organic compounds?
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} > (\text{CH}_3)_2\text{CHOH} > (\text{CH}_3)_3\text{COH}$
 - $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} > (\text{CH}_3)_3\text{COH} > (\text{CH}_3)_2\text{CHOH}$
 - $(\text{CH}_3)_3\text{COH} > (\text{CH}_3)_2\text{CHOH} > \text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$
 - All have the equal acidity
53. Which one is the correct order according to the increasing acidity of the organic compounds?
- Ethanol < Phenol < m-Nitrophenol < p-Nitrophenol
 - Ethanol < m-Nitrophenol < p-Nitrophenol < Phenol
 - Phenol < Ethanol < m-Nitrophenol < p-Nitrophenol
 - m-Nitrophenol < p-Nitrophenol < Phenol < Ethanol
54. Which one of the following statements is incorrect?
- Ferromagnetic substances are those which gets strongly magnetised when placed in an external magnetic field
 - Paramagnetic material possess a permanent magnetic dipole moment of their own
 - Diamagnetism is present in all the substances

d) All of the above statements are wrong.

55. Which one of the following is Hooke's law?

- a) $\text{Stress} \propto \text{Strain}$
- b) $\text{Stress} \propto 1/\text{Strain}$
- c) $\text{Force} = \text{mass} \times \text{Acceleration}$
- d) None of the above

56. Surface tension of liquids generally ... with temperatures. Fill in the blank.

- a) Decreases
- b) Increases,
- c) Doesn't change,
- d) first decreases then increases

57. What is the temperature at the ice point of water in Fahrenheit scale?

- a) 0°F
- b) 32°F
- c) 37°F
- d) 98°F

58. Which one of the following is Boyle's law?

- a) $PV = \text{Constant}$
- b) $P \propto V$
- c) $V/T = \text{Constant}$
- d) $V \propto T$

59. Which one of the following is Charles' law?

- a) $PV = \text{Constant}$
- b) $P \propto V$
- c) $V/T = \text{Constant}$
- d) $V \propto T$

60. Which one of the following is the area (A) of a circle where r = radius?

- a) $A = 4\pi r$
- b) $A = \pi r^2$
- c) $A = \pi r^3$
- d) $A = 2\pi r$

61. The change from solid state to vapour state without passing through the liquid state is called?

- a) Sublimation
- b) First order transformation
- c) Fusion
- d) Saponification

62. Which one amongst Air, Water, Silver, Glass has the lowest thermal conductivity?

- a) Air
- b) Water
- c) Silver
- d) Glass

63. 'Two systems in thermal equilibrium with a third system separately are in thermal equilibrium with each other' - this statement is known as?

- a) First law of thermodynamics
- b) Zeroth law of thermodynamics
- c) 2nd law of thermodynamics
- d) Third law of thermodynamics

64. What is an isochoric process?

- a) A process in which the pressure of the system is kept fixed throughout
- b) A process in which the temperature of the system is kept fixed throughout
- c) A process in which the volume of the system is kept fixed throughout
- d) A process when the entire system is insulated from the surroundings

65. 'No process is possible whose sole result is the absorption of heat from a reservoir and the complete conversion of the heat into work' - this statement is known as?

- a) Kelvin-Planck statement
- b) Clausius statement
- c) Planck statement
- d) Kelvin statement

66. What is a Carnot engine?

- a) A diesel engine at high temperature
- b) An irreversible heat engine operating between two temperatures
- c) A reversible heat engine operating between two temperatures
- d) A petrol engine at high temperature

67. Suppose, a wire of 0.01 m long has a mass of 0.01 kg. If the wire is under a tension of 4 N, what will be the speed of transverse waves on the wire?

- a) 4 ms⁻¹

- b) 8 ms^{-1}
- c) 2 ms^{-1}
- d) None of the above

68. Which one is the correct order according to the increasing speed of sound in media?

- a) Rubber < Air < Water < Steel
- b) Rubber < Water < Air < Steel
- c) Rubber < Steel < Air < Water
- d) Steel < Air < Water < Rubber

69. A pipe, 0.5 m long, is open at both ends. Which harmonic mode of the pipe resonates a 660 Hz source when the speed of sound in air is 330 m s^{-1} ?

- a) Fundamental
- b) 2nd
- c) 3rd
- d) 6th

70. Two sitar strings A and B playing the note 'Dha' are slightly out of tune and produce beats of frequency 7 Hz. The tension of the string B is slightly increased and the beat frequency is found to decrease to 4 Hz. What is the original frequency of B if the frequency of A is 428 Hz?

- a) 11 Hz
- b) 424 Hz
- c) 3 Hz
- d) 421 Hz

71. What is the SI unit of magnetic flux density?

- a) hertz (Hz)
- b) tesla (T)
- c) pascal (Pa)
- d) ampere (A)

72. What is the SI unit of inductive reactance?

- a) hertz (Hz)
- b) tesla (T)
- c) ohm (Ω)
- d) ampere (A)

73. A light bulb is rated at 440 W for a 220 V supply. Find the rms current that will flow through the bulb.

- a) 0.4 A

- b) 0.2 A
- c) 4.0 A
- d) 2.0 A

74. How many varieties of mangoes are found in India?

- a) 10
- b) 100
- c) 1000
- d) None of the above

75. Which one of the following is not a vertebrate?

- a) Reptiles
- b) Molluscs
- c) Fishes
- d) Amphibians

76. Which one of the following is not an extinct species?

- a) Quagga,
- b) Asiatic Cheetah
- c) Steller's Sea Cow
- d) Thylacine

77. Which one of the following is not a major cause for biodiversity losses?

- a) Habitat loss and fragmentation
- b) Food habit change of human
- c) Over-exploitation
- d) Alien species invasions

78. Which one of the following is a Tertiary Consumer?

- a) Cow
- b) Human
- c) Bird
- d) Phytoplankton

79. Which one of the following has the largest population in a food chain?

- a) Producers
- b) Primary consumers
- c) Secondary consumers
- d) Decomposers

80. Primary consumers are _____. Fill in the blank.

- a) Herbivores
- b) Producers
- c) Carnivores
- d) None of the above

81. What is the percentage of photo-synthetically active radiation (PAR) in the incident solar radiation?

- a) 100%
- b) 50%
- c) 1-5%
- d) 2-10%

82. What is the name of the branch of ornamental horticulture concerned with growing and marketing flowers and ornamental plants as well as with flower arrangement floriculture?

- a) Floriculture
- b) Agronomy
- c) Agricultural Engineering
- d) Home science

83. Fill in the missing word(s) - 'Humans are ----'.

- a) oviparous
- b) viviparous
- c) ovoviviparous
- d) None of the above

84. Genes which code for a pair of contrasting traits are known as?

- a) zygotes
- b) gametes
- c) alleles
- d) None of the above

85. Who had proposed the chromosomal theory of the inheritance?

- a) Sutton and Boveri
- b) de Vries
- c) von Tschermak
- d) Mendel

86. What is the full form of MSDS related to hazard information of chemicals?

- a) Material Safety Data Sheet
- b) Master Sheet of Degraded Substances
- c) Master Sheet of Data Science
- d) Material Safety Data Science

87. Which one of the following is not a standard practice for storing hazardous chemicals?

- a) Hazardous materials are always stored below eye level
- b) Hazardous materials should not be stored on floors
- c) Hazardous materials are stored in rated storages separately according to their class
- d) Hazardous materials should be always stored in open containers

88. Which one of the following container must not be used for storing Hydrofluoric acid (HF)?

- a) Container made of glass
- b) Container made of Polyethylene
- c) Container made of Fluorocarbon
- d) Container made of Lead

89. Which one of the following is not a criteria of a genetic material?

- a) It should be able to generate its replica (replication)
- b) It should be chemically and structurally stable
- c) It should provide the scope for slow changes (mutation)
- d) It should store energy

90. Which of the following disease is caused by a virus?

- a) Malaria
- b) Dengue
- c) Typhoid
- d) Tuberculosis

91. Which one of the following is a vector measure?

- a) 5 seconds
- b) 10 Newton
- c) 30 km/hr
- d) 100 cm³

92. Find $|\vec{a} - \vec{b}|$, if two vectors \vec{a} and \vec{b} are such that $|\vec{a}| = 2$, $|\vec{b}| = 3$ and $\vec{a} \cdot \vec{b} = 4$

- a) $\sqrt{5}$
- b) $\sqrt{7}$

- c) $\sqrt{3}$
- d) $\sqrt{2}$



93. What is the meaning of the symbol which is often labeled on the containers of laboratory chemicals?

- a) Flammable chemicals
- b) Corrosive chemicals
- c) Toxic chemicals
- d) Explosive chemicals



94. What is the meaning of the symbol, which is often labeled on the containers of laboratory chemicals?

- a) Flammable chemicals
- b) Irritant chemicals
- c) Toxic chemicals
- d) Explosive chemicals

95. What is the standard first aid procedure in the laboratory if sulfuric acid falls on hands due to an accident?

- a) Wash with running water, neutralize with weak bases like sodium bi-carbonate, and visit a doctor
- b) Wash with water, neutralize with strong bases like sodium hydroxide and visit a doctor
- c) Wash with water, treat with another weak acid and visit a doctor
- d) Wash with water, treat with another strong acid and visit a doctor