

Test Booklet
Series

A

Written Test Paper, 2021

Paper No.

28

**LAB TECHNICIAN
(CHEMISTRY)**

Test Booklet No.

Name of Applicant Answer Sheet No.

Application No. : SVSU/2020/Estt/NT/ Signature of Applicant :

Date of Examination: **26 / 12 / 2021**

Signature of the Invigilator(s)

1.

Time of Examination :

2.

Duration : 2 Hours]

[Maximum Marks : 100

IMPORTANT INSTRUCTIONS

- (i) The question paper is in the form of Test-Booklet containing **100 (Hundred)** questions. All questions are compulsory. 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 (70 in Part-A + 30 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 (70 in Part-A + 30 in Part-B) containing four circles each. One row pertains to one question.
- (iv) The candidate should write his/her Application 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.

[P.T.O.

28 / 1

PART-A

1. Which of the following is the correct expression for the Schrödinger wave function?
 - (A) $i\hbar \frac{d\psi}{dt} = -i\hbar 2m \frac{\partial \psi}{\partial x} + U\psi$
 - (B) $i\hbar \frac{d\psi}{dt} = -i\hbar 2m \frac{\partial^2 \psi}{\partial x^2} + U\psi$
 - (C) $i\hbar \frac{d\psi}{dt} = -i\hbar \frac{\partial \psi}{\partial x} + U\psi$
 - (D) $i\hbar \frac{d\psi}{dt} = -i\hbar \frac{\partial^2 \psi}{\partial x^2} + U\psi$

2. Any wave function can be written as a linear combination of
 - (A) Eigen Vectors
 - (B) Eigen Values
 - (C) Eigen Functions
 - (D) Operators

3. Which statement is false? A sigma molecular orbital
 - (A) may result from overlap of p atomic orbitals perpendicular to the molecular axis (side-on).
 - (B) may result from overlap of p atomic orbitals along the molecular axis (head-on).
 - (C) may result from overlap of two s atomic orbitals.
 - (D) may result from overlap of one s and one p atomic orbitals.

4. The radius of the Bohr orbit depends on which of the following?
 - (A) $1/n$
 - (B) n
 - (C) $1/h^2$
 - (D) n^2

5. Which of the following is true regarding the Bohr model of atoms?
 - (A) Assumes that the angular momentum of electrons is quantized
 - (B) Uses Faraday's laws
 - (C) Predicts continuous emission spectra for atoms
 - (D) Predicts the same emission spectra for all types of atoms.

6. If the sign of the wave function is unchanged when the orbital is reflected about its centre, the orbital is
 - (A) Gerade
 - (B) Ungerade
 - (C) Gerade as well as Ungerade
 - (D) None of the mentioned

7. Choose the incorrect statement from the following options.
 - (A) In bonding molecular orbital, electron density is low in the region between the nuclei of bonded atoms
 - (B) The energy of antibonding molecular orbital is higher than that of atomic orbitals from which it is formed
 - (C) Every electron in bonding molecular orbital contributes toward stability of the molecule
 - (D) Antibonding takes place when lobes of atomic orbitals have different signs

8. Consider the coordination compound, $K_2[Cu(CN)_4]$. A coordinate covalent bond exists between
- K^+ and CN^-
 - Cu^{2+} and CN^-
 - K^+ and $[Cu(CN)_4]^{2-}$
 - C and N in CN^-
9. A molecule that cannot be super imposed on its mirror image is said to exhibit which of the following?
- geometrical isomerism
 - optical isomerism
 - linkage isomerism
 - reactive isomerism
10. (Crystal Field Theory) Consider the complex ion $[Mn(OH_2)_6]^{2+}$ with 5 unpaired electrons. Which response includes all the following statements that are true, and no false statements?
- It is diamagnetic.
 - It is low spin complex.
 - The metal ion is a d^5 ion.
 - The ligands are weak field ligands.
 - It is octahedral.
- I, II
 - III, IV, V
 - I, IV
 - II, V
11. Which of the following is an application of molecular spectroscopy?
- Structural investigation
 - Basis of understanding of colors
 - Study of energetically excited reaction products
 - All of the mentioned
12. Select the correct statement from the following option.
- Spectroscopic methods require less time and more amount of sample than classical methods
 - Spectroscopic methods require more time and more amount of sample than classical methods
 - Spectroscopic methods require less time and less amount of sample than classical methods
 - Spectroscopic methods require more time and less amount of sample than classical methods
13. The transition zone for Raman spectra is _____
- Between vibrational and rotational levels
 - Between electronic levels
 - Between magnetic levels of nuclei
 - Between magnetic levels of unpaired electron

14. The criteria for electronic spin resonance is
- (A) Periodic change in polarisability
 - (B) Spin quantum number of nuclei > 0
 - (C) Presence of unpaired electron in a molecule
 - (D) Presence of chromophore in a molecule.
15. If the absorption of electromagnetic radiation by matter results in the emission of radiation of the same or longer wavelengths for a short time, the phenomenon is termed as which of the following?
- (A) Luminescence
 - (B) Fluorescence
 - (C) Phosphorescence
 - (D) Spontaneous emission.
16. The measurement of intensity of fluorescent X-rays provide a simple and _____ way of _____ analysis.
- (A) Destructive, quantitative
 - (B) Non-destructive, quantitative
 - (C) Destructive, qualitative
 - (D) Non-destructive, qualitative
17. The spectra caused in the infrared region by the transition in vibrational levels in different modes of vibrations are called
- (A) rotational spectra
 - (B) electronic spectra
 - (C) vibrational spectra
 - (D) None of these
18. If the XY grid is selected in MRI then the slice selection is in which plane?
- (A) X plane
 - (B) Y plane
 - (C) Z plane
 - (D) XY plane
19. Which of the following organic compound with molecular formula $C_3H_6C_{12}$ (dichloro propane) exhibits only one signal in the 1H NMR spectrum?
- (A) 2,2-dichloropropane
 - (B) 1,2-dichloropropane
 - (C) 1,3-dichloropropane
 - (D) 1,1-dichloropropane
20. Surface is usually more than _____ atomic layer deep and is a region of _____ atomic potentials.
- (A) One, uniform
 - (B) One, non-uniform
 - (C) Two, uniform
 - (D) Two, non-uniform
21. Bragg equation is
- (A) $n\lambda = 2$
 - (B) $n = 2d$
 - (C) $n\lambda = 2d$
 - (D) $n\lambda = 2f$

22. What changes are observed in a diffraction pattern if the whole apparatus is immersed in water?

- (A) The Wavelength of light increases
- (B) Width of central maximum increases
- (C) Width of central maximum decreases
- (D) Frequency of light decreases

23. The Atoms of solid Ar are held together by

- (A) Vander Waals forces
- (B) Hydrogen bonds
- (C) Ionic bonds
- (D) Hydrophobic forces

24. Particles in an ionic crystal are held together by

- (A) Nuclear forces
- (B) Electrons
- (C) Covalent bonds
- (D) Electrostatic forces

25. Metallic bonds do not have

- (A) Highly directed bonds
- (B) Mobile valence electrons
- (C) Delocalised electrons
- (D) Overlapping valence orbitals

26. The equation $pV = RT$ is used for ideal gases. The right equation for real gases is van der Waals equation. What is the correct formula for the van der Waals equation?

Where

(a/v^2) = force of cohesion

b = coefficient related to volume of molecules

(A) $(p + (a/v^2)) (v + b) = RT$

(B) $(p - (a/v^2)) (v - b) = RT$

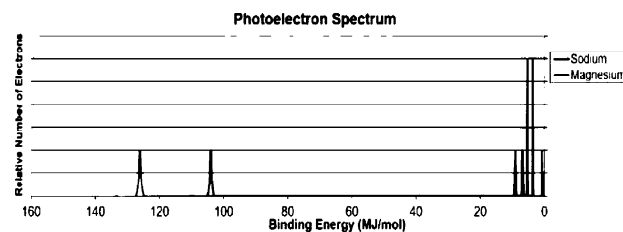
(C) $(p + (a/v^2)) (v - b) = RT$

(D) $(p - (a/v^2)) (v + b) = RT$

27. What is reduced property of a substance?

- (A) critical property of a substance minus existing property of the same substance
- (B) existing property of a substance minus critical property of the same substance
- (C) ratio of critical property to existing property of the same substance
- (D) ratio of existing property to critical property of the same substance

28. Using the PES spectra above, what answer explains the differences in the position and intensity of the 3s peaks between Na and Mg?



- (A) Mg is larger in size making the electrons in the 3s orbital farther from the nucleus and thus easier to remove
- (B) Na experiences a greater shielding effect from the 2s and 1s electrons making the 3s electrons easier to remove.

- (C) Mg experiences a larger effective nuclear charge and has more electrons in the 3s orbital.
- (D) Na experiences a larger effective nuclear charge on the 3s electrons and are thus harder to remove.
29. According to the Periodic Law of elements, the variation in properties of elements is related to their.
- (A) nuclear masses
- (B) atomic numbers
- (C) nuclear neutron-proton number ratios
- (D) atomic masses
30. Beryllium and aluminum exhibit many properties which are similar. But the two elements differ in
- (A) exhibiting maximum covalency in compound
- (B) exhibiting amphoteric nature in their oxides
- (C) forming covalent halides
- (D) forming polymeric hydrides
31. Which is the correct order of second ionization potential of C, N, O and F in the following?
- (A) $O > F > N > C$
- (B) $O > N > F > C$
- (C) $C > N > O > F$
- (D) $F > O > N > C$
32. The lanthanide contraction is responsible for the fact that
- (A) Zr and Y have about the same radius
- (B) Zr and Nb have similar oxidation state
- (C) Zr and Hf have about the same radius
- (D) Zr and Zn have the same oxidation
33. Which one of the following alkaline earth metal sulphates has its hydrations enthalpy greater than its lattice enthalpy?
- (A) CaSO_4
- (B) BeSO_4
- (C) BaSO_4
- (D) SrSO_4
34. Which of the following represents the correct order of increasing first ionisation enthalpy for Ca, Ba, S, Se and Ar?
- (A) $\text{Ca} < \text{S} < \text{Ba} < \text{Se} < \text{Ar}$
- (B) $\text{S} < \text{Se} < \text{Ca} < \text{Ba} < \text{Ar}$
- (C) $\text{Ba} < \text{Ca} < \text{Se} < \text{S} < \text{Ar}$
- (D) $\text{Ca} < \text{Ba} < \text{S} < \text{Se} < \text{Ar}$
35. Identify the compound that exhibits tautomerism:-
- (A) 2-Pentanone
- (B) Phenol
- (C) 2-Butene
- (D) Lactic acid

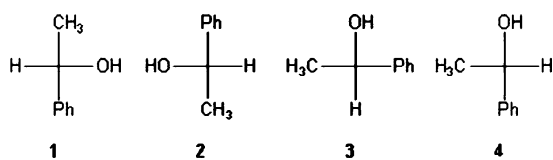
36. The alkene that exhibits geometrical isomerism is:-

- (A) 2-butene
- (B) 2-methyl-2-butene
- (C) Propene
- (D) 2-methylpropene

37. Which of the following compounds is not chiral?

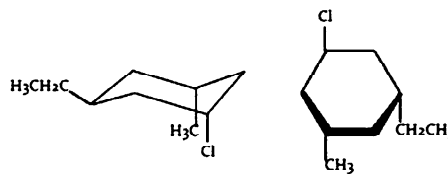
- (A) 1-chloropentane
- (B) 3-chloro-2-methyl pentane
- (C) 1-chloro-2-methyl pentane
- (D) 2-chloropentane

38. Which of the following Fischer projections is different from the other three?



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

39. What is the stereo chemical relationship between the following two molecules?



- (A) Geometrical isomers
- (B) Enantiomers
- (C) Diastereomers
- (D) Identical

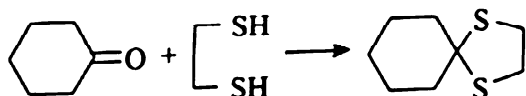
40. Which of the following statements most accurately describes the stereochemistry between the various cyclohexanes?

- (A) Cis-1,2-dichlorocyclohexane and trans-1,2-dichlorocyclohexane rotate plane-polarized light in opposite directions, and together in equal proportions form a racemic mixture
- (B) The diaxial and diequatorial forms of trans-1,3-dichlorocyclohexane can be separated by their differing physical properties
- (C) Only cis-1,4-dichlorocyclohexane is achiral due to a plane of symmetry, and cis-1,4-dichlorocyclohexane is diastereomeric to trans-1,4-dichlorocyclohexane
- (D) The conformational isomers of trans-1,2-dichlorocyclohexane are enantiomers, which are not interconvertible, but resolvable

41. Alcohol on refluxing with Cr_2O_7 gives

- (A) Ester
- (B) Aldehyde
- (C) Sugar
- (D) Carboxylic acid

42. Which is the suitable catalyst for bringing out the transformation given below?



- (A) $\text{BF}_3 \cdot \text{Et}_2\text{O}$
- (B) NaOEt
- (C) tungsten lamp
- (D) dibenzoyl peroxide

43. How acetophenone can be converted to phenol by reaction?

- (A) m-CPBA followed by base catalysed hydrolysis
- (B) Conc. HNO_3
- (C) Iodine and NaOH
- (D) Singlet oxygen followed by base catalysed hydrolysis product

44. How can we prepare $\text{RR}'\text{R}''\text{OH}$ by the action of excess of a suitable Grignard reagent on which of the following reactants?

- (A) nitrile or an aldehyde
- (B) ester or an alcohol
- (C) aldehyde or a ketone
- (D) ketone or an ester

45. Which among the following is the most deactivating meta-directing group in aromatic substitution reaction?

- (A) $-\text{COOH}$
- (B) $-\text{SO}_3\text{H}$
- (C) $-\text{NO}_2$
- (D) $-\text{CN}$

46. Find the compound which under goes nucleophilic substitution reaction exclusively by an $\text{S}_{\text{N}}1$ mechanism

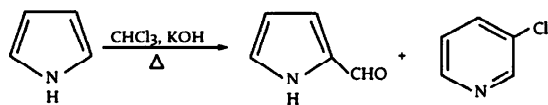
- (A) Benzyl chloride
- (B) Chlorobenzene
- (C) Ethyl chloride
- (D) Isopropyl chloride

47. Correct sequence for True and False for the given statements related with the SAR of drug chloroquine

- Nitrogen of the amine attached with the chloroquine entity is responsible for the acidic nature of the drug.
- There is no major role of having the secondary alkyl group attached with the carbon next to the amino group near the chloroquine entity.
- Tertiary amine at the terminal is not so important for the activity of the drug.
- Small electron withdrawing group at 7th position of the quinoline ring is important for the inhibition of hemozoin formation.

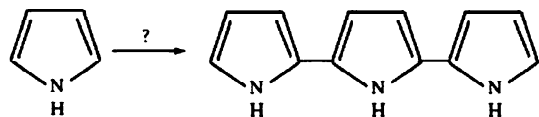
- (A) FFTF
- (B) FTFT
- (C) FTTF
- (D) TFFT

48. What is the name of the following reaction?



- (A) Gattermann reaction
- (B) Riemer tiemann reaction
- (C) Friedal craft reaction
- (D) Blanc's chloromethylation

49. What will be the reagent used for the completion of the following reaction?



- (A) Concentrated acid
- (B) Dilute acid
- (C) Concentrated base
- (D) Dilute base

50. $\text{SnCl}_2 + 2\text{FeCl}_2 \rightarrow \text{SnCl}_4 + 2\text{FeCl}_2$. Which of the following element undergoes oxidation in the reaction given?

- (A) iron
- (B) tin
- (C) chlorine
- (D) ferrous

51. What is the correct electron configuration for the molecular ion, B_2^+ ?

- (A) $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \sigma 2p^2$
- (B) $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \pi 2p_y^2$
- (C) $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \sigma 2p^1 \pi 2p_y^1$
- (D) None of the above.

52. Draw the molecular orbital diagram for the molecular ion, N_2^+ . The number of electrons in the $\sigma 2p$ molecular orbital is:

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

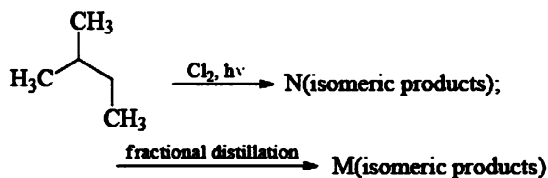
53. Which statement regarding stable heteronuclear diatomic molecules is false?

- (A) All have bond orders greater than zero.
- (B) The antibonding molecular orbitals have more of the character of the more electropositive element than of the more electronegative element.
- (C) Their molecular orbital diagrams are more symmetrical than those of homonuclear diatomic molecules.
- (D) The bonding molecular orbitals have more of the character of the more electronegative element than of the less electronegative element.

54. Which one of the following statements is false?
- (A) Valence bond theory and molecular orbital theory can be described as two different views of the same thing.
- (B) When one considers the molecular orbitals resulting from the overlap of any two specific atomic orbitals, the bonding orbitals are always lower in energy than the antibonding orbitals.
- (C) Molecular orbitals are generally described as being more delocalized than hybridized atomic orbitals.
- (D) One of the shortcomings of molecular orbital theory is its inability to account for a triple bond in the nitrogen molecule, N_2 .
55. The most commonly used semiconductor is _____
- (A) Germanium
- (B) Carbon
- (C) Sulfur
- (D) Silicon
56. Conduction band comprises of electrons that are
- (A) Always near the top of the crystal
- (B) Always at the surface of the crystal
- (C) Anywhere in the solid moving freely
- (D) Always bound to its parent atom in outermost orbit
57. Band gap energy is the energy required by electron to
- (A) Jump from bottom surface of the solid to its top surface
- (B) Jump from centre of the solid to its top surface
- (C) Set free itself from valence band and start conduction
- (D) Move itself from one corner of solid to other corner
58. Which of the following transitions are of weak intensities and lie in the visible region?
- (A) $n \rightarrow n^*$
- (B) $\sigma \rightarrow \sigma^*$
- (C) $\pi \rightarrow \pi^*$
- (D) $n \rightarrow \sigma^*$
59. Arrange the various electronic transitions in the order of increasing energy.
- (A) $n \rightarrow \sigma^* < \pi \rightarrow \pi^* < n \rightarrow \pi^* < \sigma \rightarrow \sigma^*$
- (B) $n \rightarrow \pi^* < \pi \rightarrow \pi^* < n \rightarrow \sigma^* < \sigma \rightarrow \sigma^*$
- (C) $n \rightarrow \sigma^* < \pi \rightarrow \pi^* < \pi \rightarrow \pi^* < \sigma \rightarrow \sigma^*$
- (D) $\sigma \rightarrow \sigma^* < \pi \rightarrow \pi^* < n \rightarrow \pi^* < n \rightarrow \sigma^*$
60. Assuming that on a 500 MHz NMR spectrometer the ^{15}N 90° pulse length is 35 μs at 60 dB and a higher decibel value means more power for a pulse, what is most likely the power setting for ^{15}N WALTZ-16 decoupling over a 30 ppm bandwidth?
- (A) 40 dB
- (B) 42 dB
- (C) 45 dB
- (D) 49 dB

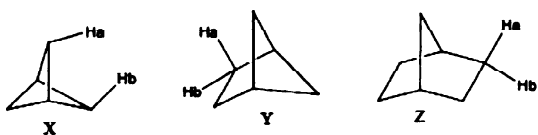
61. ^{13}C spectra without decoupling show multiplicity of ^{13}C peaks due to the coupling of ^1H to ^{13}C . In a ^1D ^1H spectrum of an unlabeled sample (natural abundance ^{13}C), the coupling of ^{13}C to ^1H is neglected because
- the NMR spectrometer decouples ^{13}C from ^1H automatically
 - a large portion of protons are bound to ^{12}C , which is NMR inactive
 - the JCH coupling constant is small compared to the line widths of ^1H peaks
 - both (B) and (C)
62. The amplitude of the vibration, q for NO, CO, HCl is 0.048 \AA , 0.05 \AA , 0.10 \AA . Thus q is
- Larger when the force constant is smaller
 - Smaller when the force constant is smaller
 - Larger when the force constant is larger
 - None of the above
63. The frequency of vibration of H, is 4159 cm and dissociation energy is 4.5 eV . Assuming that it vibrates as a SHO, its vibrational quantum number corresponding to dissociation energy, D is
- 8
 - 10
 - 7
 - 6
64. Ketones absorb in IR at a very high frequency (2150 cm^{-1}) because
- The inner C is sp-hybridised
 - The more s character in a bond, the stronger it is
 - Inner C is sp² hybridised
 - Both (A) and (B)
65. Which of the following methods utilizes the emission of low energy electrons in a process?
- Auger electron spectroscopy
 - Electron impact spectroscopy
 - Electron spectroscopy for chemical analysis
 - Secondary ion mass spectroscopy
66. Which of the following will combine with BH_3 to form a stable complex?
- CO
 - Pt_2^+
 - OH^-
 - methane
67. The ligands $[\text{O}_2\text{C}(\text{CH}_2)_n\text{CO}_2]^{2-}$ for $n = 0, 1, 2$ and 3 form complexes with Zn^{2+} . How do you expect values of $\log K_1$ to vary with n ?
- The largest value of $\log K_1$ is for $n = 0$
 - The largest value of $\log K_1$ is for $n = 3$
 - Values of $\log K_1$ do not depend on n
 - Values of $\log K_1$ probably increase with n in the order $0 < 1 < 2 < 3$

68. Identify N and M :



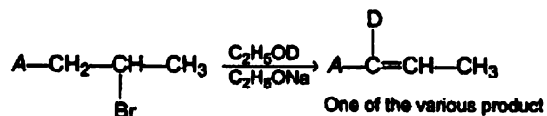
- (A) 6, 4
 (B) 6, 6
 (C) 4, 6
 (D) 4, 4

69. Topological relation between Ha and Hb in given molecules respectively.



- (A) Enantiotopic, Diastereotopic and Homotopic
 (B) Homotopic, Enantiotopic and Diastereotopic
 (C) Enantiotopic, Homotopic and Diastereotopic
 (D) Diastereotopic, Enantiotopic and Homotopic

70. Consider the following reaction and the product formed.



The most likely mechanism of the above reaction is

- (A) E2
 (B) E2C
 (C) E1
 (D) E1Cb

PART-B

71. When is Vijay Diwas observed every year?
- (A) 13 December
 - (B) 14 December
 - (C) 15 December
 - (D) 16 December
72. Who among the following has been given the power by the Constitution of India to "Impose Reasonable Restrictions" on the fundamental rights?
- (A) President
 - (B) Parliament
 - (C) Supreme Court
 - (D) Both Parliament & Supreme Court
73. The main reason for blueness of the sky is
- (A) Due to the presence of water vapor
 - (B) Due to the absorption of blue light due to the air
 - (C) Due to the scattering of sunlight by air molecules
 - (D) None of the above
74. The Ministry of Labour & Employment has launched the DigiSaksham Programme, in partnership with which company to impart digital skill among youths?
- (A) Amazon India
 - (B) Facebook India
 - (C) Microsoft India
 - (D) NITI Aayog
75. 'Clean India Programme' has been inaugurated from which state?
- (A) Bihar
 - (B) West Bengal
 - (C) Uttar Pradesh
 - (D) Gujarat
76. In context of skill based/vocational education, NSQF competency level 8 is equivalent to
- (A) Undergraduate (Hons) Degree
 - (B) Masters (Postgraduate) Degree
 - (C) Diploma
 - (D) Advance Diploma
77. Every rational number is a
- (A) Whole number
 - (B) Natural number
 - (C) Integer
 - (D) Real number

78. If the simple interest for 2 years is Rs. 500/- at 10% rate of interest. Find the compound interest for the same time.
- (A) Rs. 525
 (B) Rs. 500
 (C) Rs. 200
 (D) Rs. 210
79. An article is bought for Rs. 600 and sold for Rs. 500, find the loss percent
- (A) 16.67
 (B) 15.34
 (C) 14.78
 (D) 13.23
80. A man goes to Mumbai from Pune at a speed of 4 km/hr and returns to Pune at speed of 6 km/hr. What is his average speed of the entire journey?
- (A) 4.8 km/hr
 (B) 5 km/hr
 (C) 4.2 km/hr
 (D) 5.6 km/hr
81. What will be the value of $(74.6 - 38.9 - 5.7) / (26.4 - 18.9)$?
- (A) 3.5
 (B) 2.25
 (C) 2.0
 (D) 4.0
82. The average of five numbers is 7. If three new numbers would be added, then the new average comes out to be 8.5. What is the average of those three new numbers?
- (A) 10.5
 (B) 11
 (C) 9
 (D) 11.5
83. The case was put the judge and the judge decided it within an year.
- (A) at
 (B) from
 (C) before
 (D) of
84. Do you go to sleep early? Is it insomnia?
- (A) Ever
 (B) Sometime
 (C) Never
 (D) Always
85. She has not spoken to us we had the argument.
- (A) Since
 (B) While
 (C) So
 (D) As

86. Convert the sentence from Direct Speech to Indirect Speech.

He said to her, Are you coming to the party?

- (A) He asked her whether she was coming to the party.
- (B) He told her if she was coming to the party.
- (C) He asked her if she will be coming to the party.
- (D) He asked her if she will be coming to the party.

87. Synonym of Intricate

- (A) Non complex
- (B) Simplistic
- (C) Involved
- (D) Plain

88. The fire the huts before the fire brigade came.

- (A) had burnt
- (B) will burn
- (C) has burnt
- (D) burns

89. If NOIDA is written as OPJEB, then what will be the code for DELHI?

- (A) EFMAK
- (B) EFAMK
- (C) EFMIJ
- (D) EFMIK

90. Which number is wrong in the series 2, 6, 15, 31, 56, 93?

- (A) 6
- (B) 31
- (C) 56
- (D) 93

91. Hypsiphobia : Height : : Hylophobia : ?

- (A) Forests
- (B) Animals
- (C) Water
- (D) All the above

92. Which of the following set of letters complete the letter series, when sequentially placed at the gaps?

bca _ b _ aabc _ a _ caa

- (A) ccab
- (B) bcbb
- (C) acab
- (D) cbab

93. Which of the following pairs of words are differently related?

- (A) Kind : Cruel
- (B) Slow : Sluggish
- (C) Stale : Fresh
- (D) Truth : Lie

94. Raman says "Anuj's mother is the only daughter of my mother." How is Anuj related to Raman?

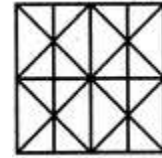
- (A) Brother
- (B) Nephew
- (C) Father
- (D) None of the above

95. Find the number of triangles in the given figure.



- (A) 22
- (B) 24
- (C) 26
- (D) 28

96. Find the minimum number of straight lines required to make the given figure.



- (A) 11
- (B) 14
- (C) 16
- (D) 17

97. March is introduced by April as the son of the only brother of his father's wife. How is April related to March?

- (A) Son
- (B) Son-in-Law
- (C) Uncle
- (D) Cousin

98. From the given statements, choose the conclusions which logically follow:

Statements :

1. All chips are computers.
2. No computer is a mobile.
3. All mobiles are tablets.

Conclusions :

- X : No tablet is a chip.
- Y : Some tablets are chips.

Options :

- (A) Only conclusion X follows
- (B) Only conclusion Y follows
- (C) Either conclusion X or Y follows
- (D) Neither conclusion X nor Y follows

99. Aditya walked 15 m towards south and took a right turn and walked 3 m, he took a right turn again and walked 15 m before stopping. Which direction did he face?
- (A) East
 - (B) West
 - (C) North
 - (D) South
100. If the marked price of 30 articles is equal to selling price of 40 articles, then find the % discount?
- (A) 25%
 - (B) 33.33%
 - (C) 75%
 - (D) 20%

ROUGH WORK

ROUGH WORK

Answer Key Lab Tech Chemistry

1. D	26. C	51. D	76. B
2. C	27. D	52. B	77. D
3. A	28. B	53. C	78. A
4. C	29. B	54. D	79. A
5. A	30. D	55. D	80. A
6. A	31. A	56. C	81. D
7. A	32. C	57. C	82. B
8. B	33. B	58. A	83. C
9. B	34. C	59. B	84. C
10. B	35. C	60. C	85. A
11. D	36. A	61. B	86. A
12. C	37. A	62. A	87. C
13. A	38. C & D	63. A	88. A
14. C	39. D	64. D	89. C
15. B	40. D	65. A	90. D
16. B	41. D	66. A	91. A
17. C	42. A	67. A	92. C
18. C	43. A	68. A	93. B
19. A	44. A	69. B	94. B
20. B	45. C	70. D	95. D
21. C	46. A	71. D	96. B
22. C	47. B	72. B	97. D
23. A	48. B	73. C	98. A
24. D	49. B	74. C	99. C
25. A	50. B	75. C	100. A