परीक्षा का मूल्यांकन : 24
Number of Pages in Booklet : 24
परीक्षा का मूल्यांकन : 100
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Subject Code : OA
विषय/SUBJECT:
CHEMISTRY DIVISION
समय : 2.00 घंटे
Time : 2.00 Hours

प्रदत्त पत्र परीक्षा का तत्तक्ष प्राप्त करने पर परीक्षाकर्ता यह सूचित कर सकता है कि उसका प्रति पत्र परीक्षा में हुई चोरी परीक्षा संदिग्धता अधिक है तो उस प्रति पत्र पर अंकित है। इसमें कोई भिड़ना हो तो बीतक में हुए प्रति पत्र पर अंकित करे। ऐसा न करने पर विभागीय अधिकारी को चाहिए।

The candidate should ensure that Question Paper Booklet No. of the Question Paper Booklet and Answer Sheet must be opened after opening the Paper Seal / Polythene bag. In case they are different, a candidate must obtain another Question Paper. Candidate himself shall be responsible for ensuring this.

परीक्षाधिकारी के लिए निर्देश

1. सभी प्रश्नों के उत्तर लिखें।
2. सभी प्रश्नों के अंक समान हैं।
3. प्रत्येक प्रश्न का लिखने से पहले ही उत्तर लिखें।
4. एक से अधिक उत्तर देने के दौरान प्रश्न के उत्तर को मौजूदा या नाम नहीं लिखें।
5. प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिए गए हैं, जिनमें 1, 2, 3, 4 अंकित किया गया है। विकल्पों को सही उत्तर लिखित करने हेतु उत्तरों में केवल एक वैकल्पिक उत्तर का उत्तर पत्र पर लिखें काठिन पत्र पर सादे सादे लिखें।
6. OMR प्रदत्त पत्र पर पता पत्र परीक्षा के अन्दर रहे। 
7. प्रत्येक प्रश्न के लिए प्रत्येक अंक का 4/1 भाग का श्रेयोद्धार। 
8. प्रत्येक प्रश्न के लिए प्रत्येक वैकल्पिक उत्तर के रूप में 1, 2, 3, 4 अंकित किया गया है। विकल्पों को सही उत्तर लिखित करने हेतु उत्तरों में केवल एक वैकल्पिक उत्तर का उत्तर पत्र पर लिखें।
9. प्रत्येक प्रश्न के लिए प्रत्येक अंक का 4/1 भाग का श्रेयोद्धार। 
10. प्रत्येक प्रश्न के लिए प्रत्येक वैकल्पिक उत्तर के रूप में 1, 2, 3, 4 अंकित किया गया है। विकल्पों को सही उत्तर लिखित करने हेतु उत्तरों में केवल एक वैकल्पिक उत्तर का उत्तर पत्र पर लिखें

पूर्वाधिकारियों ने अन्य पड़ोसी पत्र पर प्रवेश की उपलब्धि हेतु अपने साथ लिखित किया जाता है। यदि विकल्पों के प्रति ऐसे ही प्रश्नों के प्रश्नों का उत्तर पत्र पर लिखना हो तो उनकी उम्मीद की विभागीय अधिकारी को जानते है।

INSTRUCTIONS FOR CANDIDATES

1. Answer all questions.
2. All questions carry equal marks.
3. Only one answer is to be given for each question.
4. If more than one answers are marked, it would be treated as wrong answer.
5. Each question has four alternative responses marked serially as 1, 2, 3, 4. You have to darken only one circle or bubble indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.
6. The OMR Answer Sheet is inside this Test Booklet. When you are directed to open the Test Booklet, take out the Answer Sheet and fill in the particulars carefully with blue ball point pen only.
7. 1/3 part of the marks(s) of each question will be deducted for each wrong answer. A wrong answer means an incorrect answer or more than one answers for any question. Leaving all the relevant circles or bubbles of any question blank will not be considered as wrong answer.
8. Mobile Phone or any other electronic gadget in the examination hall is strictly prohibited. A candidate found with any of such objectionable material with him/her will be strictly dealt as per rules.
9. Please correctly fill your Roll Number in O.M.R. Sheet. 5 Marks can be deducted for filling wrong or incomplete Roll Number.
10. If there is any sort of ambiguity/mistake either of printing or factual nature then out of Hindi and English Version of the question, the English Version will be treated as standard.

Warning: If a candidate is found copying or if any unauthorized material is found in his/her possession, F.I.R. would be lodged against him/her in the Police Station and he/she would liable to be prosecuted. Department may also debar him/her permanently from all future examinations.

Do not open this Test Booklet until you are asked to do so.

OA □
1. IIIrd समूह के सदस्यों के अवशेषण के लिए 

NH₄OH मिलाने से पूर्व NH₄Cl मिलाया 

जाता है, जिसका कारण है 

(1) "OH" आयन की सांद्रता को कम करना। 
(2) Cl⁻ आयन की सांद्रता को बढ़ाना। 
(3) OH⁻ आयन की सांद्रता को बढ़ाना। 
(4) F⁻ आयन के व्यतिकरण को रोकना।

2. टोल्लन अभिकर्मक का उपयोग किस क्रियात्मक 

समूह के विश्लेषण में होता है? 

(1) ऐथनलाइड 
(2) कीटोन 
(3) एटर 
(4) फ्लॉरल 

3. सीडियम नाइट्रोपुसिड का सूत्र है 

(1) Na₂[Fe(CN)₅NO] 
(2) Na₃[Fe(CN)₄NO₂] 
(3) Na₃[Fe(CN)₅NO₂] 
(4) Na₃[Fe(CN)₄NO] 

4. आयसोसीडिक अभिकर्मक परीक्षण से कीटन से क्रियात्मक 

समूह का परीक्षण कर सकते हैं? 

(1) – NO₂ 
(2) – CONH₂ 
(3) – NH₂ 
(4) – CN 

5. Vth समूह के धानयान विश्लेषण में किसी ज्वाला किस आयन की निषिद्धता को 

दर्शाती है? 

(1) Ba²⁺ 
(2) Sr²⁺ 
(3) Na⁺ 
(4) Ca²⁺ 

6. For the precipitation of IIIrd group 

members NH₄Cl is added before the 

addition of NH₄OH. The reason is:

(1) to reduce the concentration of 

OH⁻ ion. 
(2) to increase the concentration of 

Cl⁻ ion. 
(3) to increase the concentration of 

OH⁻ ion. 
(4) to stop the interference of F⁻ ion.

7. Tollens' reagent is used for the 

analysis of which functional group? 

(1) Aldehyde 
(2) Ketone 
(3) Ester 
(4) Phenol 

8. Formula of sodium nitroprusside is:

(1) Na₃[Fe(CN)₅NO] 
(2) Na₃[Fe(CN)₄NO₂] 
(3) Na₃[Fe(CN)₅NO₂] 
(4) Na₃[Fe(CN)₄NO] 

9. Which functional group can be 

detected from Iso-cyanide test? 

(1) – NO₂ 
(2) – CONH₂ 
(3) – NH₂ 
(4) – CN 

10. In analysis of cations of Vth group 

crimson red flame confirms the 

presence of which ion? 

(1) Ba²⁺ 
(2) Sr²⁺ 
(3) Na⁺ 
(4) Ca²⁺
6. The rule on which ultraviolet spectroscopy is based:
   (1) Hook’s law
   (2) Woodword’s law
   (3) Beer-Lambert’s law
   (4) Fieser law

7. Metastable ion are given by the equation:
   (1) $m^* = \frac{m_1^2}{m_2}$
   (2) $m^* = \frac{m_2^2}{m_1}$
   (3) $m^* = \frac{m_1 - m_2}{m_1 m_2}$
   (4) $m^* = \frac{m_2}{m_1 - m_2}$

8. The transition with highest energy is:
   (1) $\sigma - \pi^*$
   (2) $\pi - \sigma^*$
   (3) $\pi - \pi^*$
   (4) $\sigma - \sigma^*$

9. The decrease in the value of molar extinction coefficient of an absorption band due to substitutions or solvent of a molecule is called as:
   (1) Hyperchromic effect
   (2) Hypsochromic shift
   (3) Hypochromic effect
   (4) Bathochromic shift
10. The region in which ESR spectra is observed:
   (1) Microwave region
   (2) X-rays region
   (3) Ultraviolet region
   (4) Radio frequency region

11. The basicity of orthophosphorus acid is:
   (1) 1
   (2) 3
   (3) 4
   (4) 2

12. The common example of buffer having pH of about 7.4 is:
   (1) Milk
   (2) Blood
   (3) Water
   (4) Lime Water

13. The pH of a solution whose [OH\(^-\)] = 10\(^{-7}\) M is:
   (1) 14
   (2) 0
   (3) 7
   (4) –7

14. The conjugate acid of NH\(_2\) is
   (1) NH\(_2\)
   (2) NH\(_3\)
   (3) NH\(_2\)\(^-\)
   (4) NH\(_3\)\(^-\)

15. The most widely used flame in atomic absorption spectroscopy is:
   (1) Air-Coal gas
   (2) Air-Propane
   (3) Air-Acetylene
   (4) Oxy-Acetylene

16. The region in which ESR spectra is observed:
   (1) Microwave region
   (2) X-rays region
   (3) Ultraviolet region
   (4) Radio frequency region

17. The basicity of orthophosphorus acid is:
   (1) 1
   (2) 3
   (3) 4
   (4) 2

18. The common example of buffer having pH of about 7.4 is:
   (1) Milk
   (2) Blood
   (3) Water
   (4) Lime Water

19. The pH of a solution whose [OH\(^-\)] = 10\(^{-7}\) M is:
   (1) 14
   (2) 0
   (3) 7
   (4) –7

20. The conjugate acid of NH\(_2\) is
   (1) NH\(_2\)
   (2) NH\(_3\)
   (3) NH\(_2\)\(^-\)
   (4) NH\(_3\)\(^-\)

21. The most widely used flame in atomic absorption spectroscopy is:
   (1) Air-Coal gas
   (2) Air-Propane
   (3) Air-Acetylene
   (4) Oxy-Acetylene
16. गैस-द्रव वन्यलिखित में स्थिर या स्थिय वर्तमान होती है।
(1) द्रव
(2) गैस
(3) कोई नहीं
(4) द्रव और गैस दोनों

17. यह विलायक जिसकी विशेषता सबसे हृदयन है।
(1) बेंजीन
(2) एसीटीन
(3) ऐथनल
(4) जल

18. निम्नलिखित में से किस औषधि के लिए शीर्षक अभिक्रिया नियमांक योगी होता है?
(1) ऐल्कोहोल
(2) अक्सर धातु वाला
(3) फ्रीनाल
(4) एम्फिल आटा

19. आयन विनयं रेंजन है?
(1) रेखाय
(2) भाषा आणि भाष्य वाले
(3) बिलेबेल
(4) सर्वथा संरचना वाले कार्बनिक समूह

20. निम्नलिखित में से कौन सा आयन धातुआण्विक विनय्यं स्थायी निष्क्रिय होता है?
(1) H⁺
(2) Na⁺
(3) K⁺
(4) Ca²⁺

16. The fixed or stationary phase in Gas-liquid chromatography is:
(1) Solid
(2) Liquid
(3) Gas
(4) Both Solid and Gas

17. The solvent having maximum eluting power is:
(1) Benzene
(2) Acetone
(3) Ethanol
(4) Water

18. For which of the following compound, spraying reagent Ninhydrin is used?
(1) Alkaloids
(2) Inorganic cations
(3) Phenol
(4) Amino acid

19. Ion exchange resin is:
(1) Linear
(2) Low molecular weight
(3) Soluble
(4) Organic polymer of porous structure

20. Which of the following ion get released from cation exchange column?
(1) H⁺
(2) Na⁺
(3) K⁺
(4) Ca²⁺
21. The adsorbent among the following having maximum adsorptive power in column adsorption chromatography is:
(1) Silica Gel
(2) Calcium Sulphate
(3) Cellulose
(4) Aluminium Oxide

22. The adsorbent not used in column adsorption chromatography is:
(1) MgO
(2) Silica gel
(3) Activated Alumina
(4) KMnO₄

23. The gas among the following having maximum thermal conductivity is:
(1) H₂
(2) N₂
(3) CO₂
(4) Ne

24. For which of the following compound spraying agent FeCl₃ is used?
(1) Amino acids
(2) Phenol
(3) Alkaloids
(4) Reducing Sugar

25. In Thin Layer Chromatography the stationary phase is made up _______ and the mobile phase is made up of _______.
(1) Solid, Liquid
(2) Liquid, Liquid
(3) Liquid, Gas
(4) Solid, Gas
26. \((\text{CH}_3)_3\text{C} - \text{CH} - \frac{\text{KMnO}_4}{\text{Oxidation}} \rightarrow [\text{A}]\)

All reactions in the above product [A] form is: 

\[
\begin{align*}
\text{CH}_3 \\
(1) \text{CH}_3 - \text{C} = \text{CH}_2 \\
(2) (\text{CH}_3)_3\text{C} - \text{OH} \\
(3) \text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CHO} \\
(4) \text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH}_3
\end{align*}
\]

27. The alcohol having highest boiling point among the following is:

(1) \(\text{CH}_3 - \text{CH}_2 - \text{OH}\)
(2) \(\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}\)
(3) \(\text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_3\)
(4) \(\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{OH}\)

28. \(\text{CH}_3 - \text{C} = \text{C} - \text{H} + \text{HOH} \xrightarrow{\text{Hg}^{2+}/\text{H}^+; 333 \text{ K}} [\text{A}]\)

All reactions in the above product [A] form is:

(1) \(\text{CH}_3 - \text{CH} - \text{CH}_3\)
(2) \(\text{CH}_3\text{COCH}_3\)
(3) \(\text{CH}_3 - \text{C} = \text{CH}_2\)
(4) \(\text{CH}_3 - \text{CH}_2 - \text{CHO}\)
29. \[ \text{CH}_3 - \text{CH} = \text{CH}_2 + \text{HBr} \rightarrow \text{CH}_3 - \text{CH} - \text{CH}_3 \]

\[ \text{Br} \]

The above reaction is an example of
(1) Free radical reaction
(2) Electrophilic substitution reaction
(3) Electrophilic addition reaction
(4) Nucleophilic addition reaction

30. Least acidic compound among the following is:
(1) Phenol
(2) m-nitrophenol
(3) m-Cresol
(4) p-Cresol

31. The compound among the following which gives iodoform test is:

\[ \text{CH}_3 \]

(1) \[ \text{CH}_3 - \text{CH} = \text{C} - \text{C} - \text{CH}_3 \]

(2) \[ \text{CH}_3 - \text{CH}_2 - \text{C} - \text{CH}_2 - \text{CH}_3 \]

(3) \[ \text{C}_6\text{H}_5 - \text{C} - \text{C}_6\text{H}_5 \]

(4) \[ \text{C}_6\text{H}_5 - \text{C} - \text{CH}_2 - \text{CH}_3 \]

32. The most basic compound among the following (in aqueous phase) is:

(1) \((\text{CH}_3\text{CH}_2)_3\text{N}\)
(2) \(\text{NH}_3\)
(3) \(\text{CH}_3 - \text{CH}_2 - \text{NH}_2\)
(4) \((\text{CH}_3\text{CH}_2)_2\text{NH}\)
33. The most acidic compound among the following is:

- (1) COOH
- (2) COOH
- (3) COOH
- (4) COOH

34. The product formed by the reduction of nitrobenzene with alkaline sodium arsenite is:

- (1) Aniline
- (2) Azoxybenzene
- (3) Azobenzene
- (4) Hydrazobenzene

35. The major product \([A]\) in the above reaction:

\[
\text{[Data]

- (1) \(C_6H_5Cl\)
- (2) \(C_6H_5Cl_2\)
- (3) \(C_6Cl_6\)
- (4) \(C_6H_6Cl_3\)
\]
36. समविभाग भिन्न सम्बंधित है
   (1) ऐमीनो अम्ल
   (2) विटामिन
   (3) कार्बोहाइड्रेट
   (4) लिपिड (वसा)

37. लीक्टोज़ में HC/ के साथ जल-अपवर्धित होने पर देता है
   (1) ग्ल्यूकोज़ + प्रोटीन
   (2) ग्ल्यूकोज़ + मैनोज़
   (3) प्रोटीन + मैनोज़
   (4) ग्ल्यूकोज़ + मैलेटोज़

38. आमोड़ीन मान सम्बंधित है
   (1) पास्टर
   (2) तेल तथा बसा
   (3) आमोड़ीनाम
   (4) एल्कोहॉल

39. यह चीज का जो निनहाइड्रिन के साथ अभिक्रिया करता है नीला रंग देता है
   (1) ग्ल्यूकोज़
   (2) लिपिद
   (3) प्रोटीन
   (4) प्रोटीन

40. ग्ल्यूकोज़ के Br₂ जल से अभिक्रिया कराने पर उत्पन्न प्राप्त होता है
   (1) पेंटाब्रोमोग्ल्यूकोज़
   (2) सैक्सेलिक अम्ल
   (3) ग्ल्यूकोजिनिक अम्ल
   (4) n-हेक्सेन

36. Isoelectric point is related to:
   (1) Amino acid
   (2) Vitamin
   (3) Carbohydrate
   (4) Lipid

37. Lactose on hydrolysis with dilute HC/ gives:
   (1) Glucose + Fructose
   (2) Glucose + Mannose
   (3) Fructose + Mannose
   (4) Glucose + Galactose

38. Iodine value is related to:
   (1) Esters
   (2) Oils and fats
   (3) Iodoform
   (4) Alcohol

39. The compound which gives blue colour on reaction with Ninhydrine is
   (1) Glucose
   (2) Lipid
   (3) Protein
   (4) Fructose

40. The product obtained by the reaction of glucose with Br₂ water is
   (1) Pentabromoglucose
   (2) Saccharic acid
   (3) Gluconic acid
   (4) n-Hexane
41. Heroin is an acetyl derivative of:
   (1) Nicotine
   (2) Morphine
   (3) Quinine
   (4) Cinchonine

42. The mixture of amylose and amyllopectin is called as
   (1) Lactose
   (2) Starch
   (3) Cellulose
   (4) Sucrose

43. Polysaccharide among the following is:
   (1) Glucose
   (2) Ribose
   (3) Glycogen
   (4) Fructose

44. The product obtained by the reduction of fructose with Na – Hg and water is:
   (1) Mixture of sorbitol and mannitol
   (2) Fructose cyanohydrin
   (3) Gluonic acid
   (4) Glycolic acid

45. The example of globular protein is
   (1) Keratin
   (2) Myosin
   (3) Collagen
   (4) Albumin
46. निम्नलिखित आंकों का मध्य
25, 24, 31, 32, 22, 26, 35, 38, 20, 32 है
(1) 25.5
(2) 26.5
(3) 27.5
(4) 28.5

47. अनिर्धार्य त्रुटि को कहते हैं
(1) नियम त्रुटि
(2) व्यक्तिगत त्रुटि
(3) यांत्रिक त्रुटि
(4) आन्दोलन त्रुटि

48. स्थायित्व उदाहरण है
(1) प्रयोग की संबंधता
(2) प्रयोग से बिचार
(3) प्रयोग की सुनिश्चिता
(4) प्रयोग की पुनरुत्थान क्षमता

49. निम्नलिखित त्रुटि के बढ़ने के साथ-साथ आपेक्षिक त्रुटि का मान
(1) घटता है
(2) बढ़ता है
(3) कोई प्रभाव नहीं पड़ता
(4) पहले घटता है तथा बाद में बढ़ता है

50. आन्दोलन त्रुटि का एक उदाहरण है
(1) नियम त्रुटि
(2) आपेक्षिक त्रुटि
(3) अनिर्धार्य त्रुटि
(4) अनिर्धार्य त्रुटि

46. The median of the following data
25, 24, 31, 32, 22, 26, 35, 38, 20, 32 is
(1) 25.5
(2) 26.5
(3) 27.5
(4) 28.5

47. Indeterminate Error is also known as
(1) Constant Error
(2) Personal Error
(3) Random Error
(4) Proportional Error

48. Accuracy expresses the
(1) Correctness of an experiment
(2) Deviation from experiment
(3) Feasibility of an experiment
(4) Reproducibility of an experiment

49. With the increase in absolute error the value of relative error
(1) decreases
(2) increases
(3) has no effect
(4) first decreases and then increases

50. Proportional Error is an example of
(1) Absolute Error
(2) Relative Error
(3) Determinate Error
(4) Indeterminate Error
51. The square root of standard deviation is known as
   (1) Variance
   (2) Mean deviation
   (3) Standard deviation
   (4) Co-efficient of variation

52. The mean of 6, 14, 0, 8 is:
   (1) 3
   (2) 4
   (3) 6
   (4) 7

53. Which of the following is not a determinate error?
   (1) Instrument Error
   (2) Method Error
   (3) Personal Error
   (4) Accidental Error

54. To calculate $\chi^2$ the formula is:
   (1) $\chi^2 = \sum \frac{(O-E)^2}{E}$
   (2) $\chi^2 = \sum \frac{(O-E)^2}{E^2}$
   (3) $\chi^2 = \frac{(O-E)^2}{\Sigma O}$
   (4) $\chi^2 = \frac{(O-E)^2}{\Sigma(O)^2}$

55. The formula for obtaining t-value in t-test is:
   (1) $t = \frac{\bar{d} \times Sd}{\sqrt{N}}$
   (2) $t = \frac{\bar{d}+ Sd}{\sqrt{N}}$
   (3) $t = \frac{\bar{d} - Sd}{\sqrt{N}}$
   (4) $t = \frac{\bar{d}}{\sqrt{N}}$
56. In Inorganic Qualitative analysis the formation of brown ring in test of NO$_3^-$ ion is due to:
   (1) FeSO$_4$NO$_3$
   (2) FeSO$_4$NO$_2$
   (3) [Fe(H$_2$O)$_5$NO]SO$_4$
   (4) [Fe(SO$_4$)$_3$]NOH$_2$O

57. In Analysis of II group cations which sulphide is of black colour?
   (1) CdS
   (2) SbS
   (3) AsS
   (4) PbS

58. K$_2$Hgl$_4$ is used for the analysis of which cation?
   (1) Ca$^{2+}$
   (2) Mg$^{2+}$
   (3) NH$_4^+$
   (4) Ba$^{2+}$

59. Pair of II group sulphide which is separated by yellow ammonium sulphide is:
   (1) PbS, CuS
   (2) CdS, CuS
   (3) CdS, PbS
   (4) CdS, As$_2$S$_3$

60. The method used for Quantitative analysis of nitrogen is:
   (1) Berthelot method
   (2) Lassaigne’s method
   (3) Carius method
   (4) Kjeldahl’s method
61. Excess of nitrogen fertilizers leads to
   (1) growth problems
   (2) fruiting problems
   (3) pest problems
   (4) flowering problems

62. Greenhouse gas which can be emitted
   from storage of nitrogen-based
   fertilizers is:
   (1) nitrous oxide
   (2) nitric oxide
   (3) oxygen
   (4) chlorine

63. Colours that are next to each other on
   the colour wheel are:
   (1) Complementary
   (2) Comparative
   (3) Preliminary
   (4) Analogous

64. Which of the following enhances
    lathering property of soap?
   (1) Sodium rosinate
   (2) Sodium carbonate
   (3) Sodium stearate
   (4) Trisodium phosphate
65. Synthetic rubber paints are prepared from
   (1) Resin
   (2) Rubber
   (3) Synthetic fibres
   (4) Polyvinyl chloride

66. What is used to make paints odourless to an extent?
   (1) Flat latex
   (2) Celluloid sheets
   (3) Acrylic compound
   (4) Ploway resins

67. Which dye is commonly used in A.C.B. Trap cases?
   (1) Anthraquinone
   (2) Methyl Orange
   (3) Phenolphthalein
   (4) Methyl Red

68. Paint should provide resistance to
   (1) Corrosion
   (2) Sound
   (3) Heat
   (4) Warping

69. A food is adulterated if it
   (1) Omits a valuable constituent or substance
   (2) Any substance has been added to increase its bulk or weight
   (3) Any substance has been added to reduce its quality or strength
   (4) All of these
70. Which of the following is a characteristic of an ideal paint?
(1) Health of the worker is unaffected.
(2) Costly
(3) Pleasant smell
(4) Dries rapidly

71. The sulphate of _____ is used with zinc paint so as to eliminate the risk of discoloration of a lead drier.
(1) Magnesium
(2) Potassium
(3) Calcium
(4) Manganese

72. Out of the following, which is inflammable, evaporate rapidly and dries the oil consequently?
(1) Distemper
(2) Turpentine
(3) Linseed oil
(4) Litharge

73. The type of paint prepared from nitro cotton, celluloid sheets, photographic films etc. is termed as
(1) Colloidal paint
(2) Emulsion paint
(3) Cellulose paint
(4) Enamel paint

74. Which of the following is the most commonly used base?
(1) Red lead
(2) Zinc white
(3) White lead
(4) Oxide of iron
75. Which of the following ceramic product is mostly used as pigment in paints?
(1) TiO₂
(2) SiO₂
(3) UO₂
(4) ZrO₂

76. The difference between a dye and a pigment is that a dye:
(1) is held to the surface of the fibre by a resin.
(2) is an inorganic chemical that permeates fibres.
(3) usually diffuses into the interior of a fibre from a water solution.
(4) lays on the surface of the fibre.

77. The compound found in Whisky, Brandy and Beer is:
(1) CH₃OH
(2) CH₃CH₂OH
(3) CH₃CH₂CH₂OH
(4) CH₃CH₂CH₂CH₂OH

78. Which of the following is true?
(1) Oil paint contains calcium sulphide with varnish.
(2) Plastic paint contains calcium sulphide with varnish.
(3) Inodorous paint contain calcium sulphide with varnish.
(4) Luminous paint contains calcium sulphide with varnish.
79. What is Rectified spirit?
   (1) Alcohol content 99.5%  
   (2) Alcohol content 95.5%  
   (3) Alcohol content 100%  
   (4) Alcohol content 42.8%

80. During toxic substance metabolism formaldehyde can appear in an organism. In this case the reason of intoxication is:
   (1) Isopropyl alcohol  
   (2) Ethanol  
   (3) Resorcinol  
   (4) Methanol

81. All liquors can be termed as illicit if:
   (1) They are not produced in authorised distillery.  
   (2) The constituents of the ingredient vary from standard.  
   (3) The liquor obtained in a prohibited zone.  
   (4) All of these

82. In methyl alcohol poisoning, there is central nervous system depression, cardiac depression and optical nerve atrophy. These effects are produced due to:
   (1) Formaldehyde and formic acid  
   (2) Acetaldehyde  
   (3) Pyridine  
   (4) Acetic acid
83. Toxicologist carries out testing the distillate for the presence of volatile poisons. What reagent is used for detection of acetone in the distillate?

(1) Bromine Water
(2) Furfural
(3) The Millon’s reagent
(4) Fuchsinsulphuric acid

84. Which of the following reagent is used when detecting ethylene glycol by its oxidation to oxalic acid?

(1) Nitric acid
(2) Potassium iodate
(3) Sodium nitrite
(4) Potassium iodide

85. Which of the following is an alloy of cobalt?

(1) Vitallium
(2) Brass
(3) Invar
(4) Solder

86. Poisoning by a volatile poison happened, Urine has a dark green colour. What volatile poison can be suspected as the reason of the poisoning?

(1) Formaldehyde
(2) Phenol
(3) Acetone
(4) Ethanol
87. Yellow metal is more commonly known as
(1) Cartridge brass
(2) Naval brass
(3) Admiralty brass
(4) Muntz metal

88. Commonly used antidote in mercury poisoning is
(1) Atropine sulphate
(2) Vitamin K₁
(3) Folic acid
(4) Dimecaprol

89. Zinc sulphide as a poison is commonly found in:
(1) Rodenticide
(2) Fungicide
(3) Herbicide
(4) Pesticide

90. Which of the following is an alloy of copper and tin?
(1) Brass
(2) Bronze
(3) Gunmetal
(4) Cupro-nickel
91. Mercury salt in the presence of diphenyl carbazone solution produces a _______ colour.
   (1) Violet – blue
   (2) Pink – green
   (3) Yellow – green
   (4) Brown – red

92. A positive test for zinc with Potassium Ferrocyanide is indicated by the formation of:
   (1) Red precipitate
   (2) Bluish-green precipitate
   (3) White precipitate
   (4) Brown precipitate

93. Brass is an alloy of copper and _______.
   (1) Zinc
   (2) Tin
   (3) Tin and Zinc
   (4) Nickel

94. In Legal’s test for detection of acetone, the final colour observed is:
   (1) Purplish-red
   (2) Blue
   (3) Green
   (4) Greenish-Yellow

95. Reinsch test for arsenic give _______ shaped crystals.
   (1) Tetrahedral
   (2) Octahedral
   (3) Hexagonal
   (4) Pentagonal
96. Which of the following is responsible for turning Taj Mahal yellow?
   (1) Nitrogen dioxide
   (2) Sulphur
   (3) Chlorine
   (4) Sulphur dioxide

97. Which of the following gases has the highest affinity for blood haemoglobin?
   (1) Carbon dioxide
   (2) Oxygen
   (3) Carbon monoxide
   (4) Nitrogen

98. Which is the major source for sulphur dioxide pollution?
   (1) Volcanic eruption
   (2) Coal and crude oil combustion
   (3) Burning of petrol
   (4) Sewage treatment process

99. Compound which is added to soap to impart antiseptic properties is:
   (1) Sodium lauryl sulphate
   (2) Sodium dodecylbenzene sulphonate
   (3) Bithional
   (4) Rosin

100. Secondary air pollutant is:
      (1) Ozone
           (2) Carbon monoxide
           (3) Nitrogen dioxide
           (4) Sulphur dioxide