

Arts, Commerce and Science College, Bodwad.

Multiple Choice Question Bank

T.Y. B.Sc. Sem-V

Subject: - Analytical Chemistry (Chemistry)

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1. Reciprocal of ..... is called wave number  
a. Frequency **b. wave length** c. velocity d. density
2. Visible region is from 380 nm to .....  
a.700 b.730 **c.780** d.750
3. Dispersion by grating is.....  
a. nonlinear **b. linear** c. same d. none of these
4. The analytically important UV region is from.....  
**a. 200-380nm** b. 100-280 c. 200-480 d.380-780
5. Dispersion by prism is.....  
**a. nonlinear** b. linear c. same d. none of these
6. Number of waves or cycles passing a fixed point per unit time is called as .....  
**a. frequency** b. wavenumber c. wavelength d.transmittance
7. Absorbance (A) is related to transmittance (T) by the equation...  
**a.  $A = \log_{10} 1/T$**  b.  $A = \log_{10} T$  c.  $A = 2T$  d.  $A = \log_{10} 1/T$
8. The absorptivity is defined as absorbance of the solution when path length is low and concentration is 1.....  
a. mg/liter b. moles/liter **c. gm/litr** 4. kg/liter
9. The complementary colour of blue colour is.....  
a. Green b. White c. Violet **d. yellow**
10. The tungsten filament lamp gives continuous broad spectrum over a wavelength range of ....  
**a. 325-2500nm** b. 300-1200nm c. 1300-2500nm d. 30-2500nm
11. If absorbance of solution is less than expected, then the solution shows....  
a. positive deviation **b. Negative deviation** c. obey Beer law d. straight line graph of absorbance VS conc.

12. Absorbance is a.....
- a. Extensive property **b. additive property** c. Intensive property d. constitutive property
13. Wavelength of maximum intensity passed by the slit is called....
- a. nominal wavelength** b. normal wavelength c. frequency d. proper wavelength
14. chemical deviation can be minimize by using.....
- a. concentrated solution b. dilute solution c. cold solution **d. buffer solution**
15. Isobestic point is the point corresponding to a wavelength at wch more than one absorbing species have ..... absorptivities
- a. identical** b. different c. double d. none of these
16. Globar source required IR radiation temperature.
- a. 1000-1100o/c **b. 1300- 1700 0/c** c. 700-800 0/c d. 6000 o/c
17. Nernst glower heated to the temp.
- 1000-1800 o/c** b. 1300-1700 o/c c. 700-800 o/c d. 6000 o/c
18. **Which detector is detecting IR radiation by potential difference?**
- a. Thermocouple** b. Bolometer c. Thermistor d. None of this
19. Nernst glower consist of
- a. Zirconium b. yttrium c. thorium **d. all of the above**
20. which compound is used as diluent in IR sampling?
- a. alkali halide** b. ketone c. aldehyde d. acetone
21. which material is used to prepare rod of globar source?
- a. silicon dioxide **b. silicon carbide** c. silicon oxide d. all of the above
22. What is Nujol?
- a. polymer b. crude oil **c. mineral oil** d. volatile oil
23. In what region of the spectrum does infrared radiation occur?
- a. at the low energy end **b. between the visible and microwave region**
- c. between the visible and x-ray region d. at the high energy end
24. The alkali and alkaline earth metal can be detected by

- a. AAS **b. flame test** c. titration method d. gravimetric analysis
25. Flame emission spectroscopy is a special type of emission spectroscopy in which is used for excitation of **atoms**
- a. **flame** b. burner c. lamp d. furnace
26. Flame photometer use ..... as detector.
- a. phototube **b. photomultiplier tube** c. photovoltaic cell d. photoconductor
27. The intensity of spectral line ..... in different part of the flame.
- a. **Varies** b. remain same c. changes d. remain unchanged
28. In flame most of the line emitted are from the
- a. neutral atom b. gaseous atom **c. gaseous ion** d. ion
29. spectral interference is caused especially when ..... are used to isolated and desired radiant energy
- a. grating **b. prisms** c. filter d. monochromator
30. spectral interference is much ..... When monochromator is used .
- a. less b. high c. very high **d. low**
31. flame emission is primarily used for quantitative determination of
- a. ICP-AES** b. flame c. Ion-Exchange d. gas chromatography
33. Higher temperature promotes dissociation of non-emitting compounds like...
- a. alkali halide** b. aldehyde c. ketone d. ester
34. Plasma analysis is done by simple ..... Technique
- a. AAS b. HPLC **c. ICP-AES** d. gas chromatography
35. ICP torch consist of ..... gas
- a. CO b. O<sub>2</sub> c. HCl d. **argon**
36. plasma can conduct ..... fields
- a. Electricity** b. Magnetic c. Solar d. None
37. Plasma can affected by..... Fields
- a. electricity **b. magnetic** c. solar d. None

38. Plasma is cloud of .....

**a. Electron ,proton ,neutron** b. Proton and neutron c. Electron , neutron d. Electron and proton

39. IN AAS the ground state metal atoms can absorb radiation from source made up of ..... metal is experimental solution

a. different **b. some** c. inert d. none of the above

40. potentiometer an analytical tool to measure potential or emf of solution uses a set ..... Of electrode in cell

a. One **b. Two** c. Three d. Four

41. Saturated calomel electrode is widely used as secondary reference electrode , whose standard oxidation potential value is ..... volt at 25 d c.

a. 0. 242 **b. -0.242** c. -0.424 d. 0.424

42. In glass combined electrode glass is ..... and calomel is..... electrode.

a. reference indicator b. Self probe **c. indicator –reference** d. primary secondary

43. A glass electrode is type of ion-selective electrode that is sensitive to a specific ..... ion

a. Parchment b. cellulose c. Water **d. Glass**

45. The ..... potential is developed across surface of glass membrane i.e the interface between the external hydrated gel layer and external test solution.

a. asymmetric b. diffusion **c. boundary** d. cell.

46. The net diffusion potential due to different rate of migration of  $Na^+$  and  $H^+$  ion is ..... Occurring at both side of membrane.

**a. zero** b. same c. opposite d. equal.

47. When PH electrode are used in strongly acidic solution i.e  $PH < 0.5$  a systematic error occurred called as ..... error.

a. alkaline b. acidic c. water activity **d. both b&c**

48. A series of certified standard buffers used for calibration of PH meter are developed by .....institute .

a. **NIST** b. INST C. NCL d. CSIR.

49.As per NIST , the standard buffer of composition of 0.05M potassium hydrogen phthalate has PH .....unit at , 25o/c.

a. 4.00 b. 7.00 **c. 4.008** d. 9.20

50. Lanthanum fluoride electrode , containing a crystal of lanthanum fluoride , doped with europium fluoride , is a ..... Type of ion selective electrode.
- a. enzyme b. plastic membrane c. liquid-liquid **d. solid-state**
51. The ..... Electrode containing a crystal of lanthanum fluoride ,doped with europium fluoride ,is a ..... type of ion selective electrode.
- a. Enzyme b. plastic membrane c. liquid –liquid **d. solid-state**
52. The ..... electrode are nothing but biosensors ,used in biomedical and biotechnological field
- a. Enzyme** b. plastic membrane c. liquid-liquid d. solid –state.
53. Crown –ether are used in ..... type of ion selective electrode.
- a. Enzyme **b. ionophore** c. liquid-liquid d. coated wire.
54. The bulky phenyl group attached ,14-crown -4ether is 800 times selective for .....ions in presence of sodium.
- a. Lithium** b. potattasium c. Calcium d. fluoride .
55. In basic solution ,PH>9, glass electrode respond to the concentration of not only hydrogen ion but also alkali metal ions, giving rise ..... Error.
- a. Alkaline** b. acidic c. water activity d. both b&c
56. In chemistry ,PH is a scale used to specify ..... of a water –based solution
- a.power of hydrogen b. Potential of hydrogen c. strength of acid basic **d. all a,b,c,&d**
57. Mathematically ,PH is expressed as
- a.log H+ b. log H c. –log H+ **d. –log 10 H+**
58. PH meter ,is an electric device used to measure ..... in solution .
- a. **hydrogen –ion activity** b. anti log H c. log H+ d. enthalpy
59. In PH metry , the PH responsive electrode is usually .....
- a. calomel b. silver-silver chloride c. mercury –mercurous chloride **d. glass.**
60. By Nernst equation ,the glass potential is ..... per PH unti at 25 de c
- a. 0.0591mV b. 1.0183 mV **c. 59**
61. In the glass electrode ,the glass bulb is filled with a solution of ..... PH
- a. high **b. constant** c. changing d. variable
62. Accuracy of PH measurement is related to the .....

a. extent of deviation from true value b. free from error c. close to the true value **d. all**  
**a,b**

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**,a&d**

63. To establish accuracy in PH meters ,required the simulataneous use of the.....  
a. constant b. different c. same **d varying**
64. The potential scale is calibrated in PH unit such that , 1PH unit ..... mV at 25de c  
**a. 59.16** b. 0.05616 c. 1.018 d. -0.242
65. The three standard electronic buffers provided for calibration of PH meter are namely.....  
a. 7.00,4.20&9.00 b. 4.00,7.20& 9.00 **c. 4.00,7.00&9.20** d. none
67. For acidic solution value of PH of aqueous solution is .....  
a. PH =7.00 b. PH= 4.00 c. PH<4.00 **d. PH<7.00**
68. For basic solution value of PH of aqueous solution is.....  
a. PH=7.00 b. PH>4.00 c. PH<7.00 **d.PH>7.00**
69. For neutral solution value of PH of aqueous solution is .....  
**a. PH=7.00** b.PH=4.00 c. between 4.00&7.00 d.none
70. AT constant temperature PH of solution depends on.....  
a.Faraday constant F b. gas constant R **c. activity of test solution** d. none
71. Which of the following is a correct statement?  
a. The fingerprint region is most easily used to determine the functional grp in the molecule  
b. IR spectroscopy can be used to easily determine molecular mass  
**c. IR spectroscopy is used to determine the frequency of vibration between atom**  
d. IR spectroscopy is used to determine the shape of the carbon backbone .
72. Bolometer is used for the measurement of ?  
**a. temperature** b. flow rate c. current d. potential difference
73. Which of the following is used in golay cell ?  
**a. xenon** b. water vapour c. hexachlorobutadiene d. KBr
74. which of the following statement is false about double beam absorption instrument ?  
a. its similar to single beam instrument except two beam are present

- b. both the beam after they pass through respective sample are compared  
**c. reference beam must have a higher intensity than sample beam**  
 d. none of these
75. Fourier transform is basically a ..... Operation  
 a. physical    b. chemical    **c. mathematical**    d. electrical
76. Which of the following is an application of IR spectrometry  
 a. useful in functional group identification    b. study of degradation of polymer  
 c. examination of old paintings    **d. all of these**
77. Vibrational spectroscopy involves the transitions falling in the spectral approximate range of .....  
 a. 100-1000  $\text{cm}^{-1}$     b. 300-3000  $\text{cm}^{-1}$     **c. 400-4000  $\text{cm}^{-1}$**     d. 500-5000  $\text{cm}^{-1}$
78. An instrument used for measuring potential of unknown cell in circuit is known as .....  
**a. potentiometer**    b. pH meter    c. conduct meter    d. colorimeter
79. The alkaline error in the measurement of pH is negligible when pH is  
 a.  $>9$     **b.  $<9$**     c.  $<7$     d.  $>7$
80. At 25°C the potential scale in mV is calibrated in pH unit with each pH unit equal to  
 a. 58.16 mV    b. 60.16 mV    **c. 59.16 mV**    d. 57.16 mV
81. Boundary potential resides at  
 a. cell    b. battery    c. terminal    **d. surface of the glass membrane**
82. The diffuse potential results from a tendency of proton in the inner part of gel layer to diffuse toward .....  
 a. wet membrane    **b. dry membrane**    c. hydrated membrane    d. membrane
83. Atomic absorption spectrophotometry is identical in principle to .....  
 a. mass spectroscopy    b. atomic fluorescence    c. **absorption spectrophotometry**  
 d. atomic emission spectroscopy
84. The electronic transition from the ground state to the lowest excited state corresponds to .....  
 a. base line    **b. resonance line**    c. help line    d. dead line

85. The sample is drawn up into the flame by the support gas by.....
- light effect
  - photoelectric effect
  - capillary effect
  - d. venturi effect**
86. The flame temperature of acetylene oxygen mixture is .....o/c
- a. 2900 o/c**
  - 2677
  - 2045
  - 3060
87. Refractory compound means ..... compound.
- air stable
  - water stable
  - c. heat stable**
  - none of these
88. The atomization efficiency increases by the use of ..... solvent.
- inorganic
  - universal
  - c. organic**
  - none of these
89. In flame spectrometry the ideal solvent is one that produces .....
- a. neutral atom**
  - positive ion
  - negative ion
  - both positive & negative ion
90. Refractory compound formation in AAS is avoided by using .....flame
- Broad
  - shord
  - low temperature
  - d. high temperature**
91. Ionisation interference can be suppressed by adding more ..... ionized element
- difficulty
  - lightly
  - tightly
  - d. easily**
92. .... flame is based for refractory element in AAS
- hydrogen air
  - acetelyne air
  - c. nitros oxide acetylene**
  - acetylene oxygen
93. The distance travelled by the wave during one complete cycle is called .....
- a. wavelength**
  - frequency
  - wave number
  - amplitude
94. The reciprocal of wavelength is called.....
- wavelength
  - frequency
  - c. wave number**
  - amplitude
95. spectral interference is caused especially when are used to isolate and desired radiant energy.
- gratings
  - b. prism**
  - filters
  - monochromator
96. spectral interference is much ..... when monochromator are used.
- less
  - high
  - very high
  - d. low**
97. The Al from blood is determined by wch technique
- a. ICP-AES**
  - flame
  - ion - exchange
  - gas chromatography
98. Hollow cathode lamp is referred as ..... in the AAS instrument.

**a. light source** b. flame c. burner d. detector

99. Which of the following is not a fuel used in flame photometry?

a. Acetylene b. propane c. hydrogen **d. camphor oil**

100. Dispersion by grating is.....

a. nonlinear **b. linear** c same d. none of these