U.G. 3rd Semester Examination - 2021

CHEMISTRY

[HONOURS]

Course Code: BCEMSEHT305

Course Title: Basic Analytical Chemistry

Full Marks : 50 Time : 2 Hours

The figures in the right-hand margin indicate marks.

Answer all the questions by choosing the correct alternative: 2×25=50

1. Which of the following is a unit of hardness?
   a) Parts per million b) Degree centrigrate
   c) Kelvin d) Centimeter
2. Which source of water is free from hardness and surface impurities?
   a) Surface water b) Underground water
   c) Rain water d) Sea water
3. Which one is correct?
   a) Absolute error =Experimental value–True value
   b) Absolute error $= \frac{\text{True value} - \text{Experimental value}}{\text{True value}}$

   c) Absolute error $= \frac{\text{True value}}{\text{Experimental value}}$
   d) Absolute error $= \frac{\text{True value}}{\text{Experimental value}} \times 1000$
4. Which of these methods does not remove hardness?
   a) Reverse osmosis b) Sedimentation
   c) Ion exchange resin d) Chelating agent
5. Which is the commonly used chelator?
   a) Rhodamine B b) EDTA
   c) Chlorine d) Bromine
6. Find the median from the values; 0.2041, 0.2049, 0.2039, 0.2043
   a) 0.2049 b) 0.2043
   c) 0.2039 d) 0.2042
7. Phosphorus uptake in alkali soil; in the form of ____.
   a) $H_2PO_4^-$ b) HPO_4^{2-}
   c) PO_4^{3-} d) H_3PO_4
8. Which fertilizer produces acidity in soil?
   a) Ammonium sulphate
   b) Sodium nitrate
   c) Calcium ammonium nitrate
   d) Calcium nitrate

9. Which of the following is an adulterant for turmeric powder?

a) Lead chromate b) Marble chips

c) Brick powder d) Dung powder

10. Coffee is adulterated with–

a) Chicory b) Saw dust

c) Ghee d) All of these

11. Which is a micro element of soil?

a) Fluorine b) Chlorine

c) Bromine d) Iodine

12. Calgon is used for removal of –

a) Sodium carbonate

b) Permanent hardness of water

c) Potassium carbonate

d) None of these

13. Which is not a element of talcum powder?

a) Magnesium b) Silicon

c) Oxygen d) Sodium

14. Highest value of R_f factor in chromatograpy is–

a) 1 b) 0

c) 0.5 d) >1

15. _____ instrumental technique is commonly used for gasoline analysis.

a) Gas-chromatography

b) XRD

c) Fluorimetric

d) Spectrophotometric

16. What is the principle of paper chromatography?

a) Partition b) Adsorption

c) Both (a) & (b) d) None of the above

17. Strong Cation exchange resin have a _____group.

a) Sulfonic acid b) Carboxylic group

c) Amino d) Tetra ammonium

18. Which of the following is used as a spraying reagent in paper chromatography?

a) Ninhydrin solution

b) Conc. HCl

c) NaCl

d) $CuSO_4$ solution

19. Thin layer chromatography is _____

a) Partition chromatography

b) Electrical mobility of ionic species

c) Adsorption chromatography

d) None of these

20. No. of significant number present in 0.0201 is

a) 3 b) 4

c) 2 d) 5

21. Ion-exchange chromatography is generally used for seperation of _____.

a) Polar molecule b) Non-polar molecule

c) All of the above d) None of the above

22. Chromatography with solid stationary phase is called _____.

a) Circle chromatography

b) Square chromatography

c) Solid chromatography

d) Adsorption chromatography

23. The exhausted cation exchange column is regenerated by passing a solution of–

a) Dil HCl b) Dil NaCl

c) Conc. HCl d) Con. NaCl

24. With a sample containing 24.05 mg/L iron, a student performed an experiment find out the value 24.1, 24.2 and 24.3 mg/L respectively in his three measurements. The absolute error for this experiment is _____.

a) 0.15 b) 0.05

c) 0.25 d) 1.5

25. Ion exchange chromatography is based on_____

a) Partition

b) Adsorption

c) Electrical mobility

d) None of the above

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