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CHEM 121

HISTORICAL SURVEY ON DEVELOPMENT AND IMPORTANCE OF ORGANIC CHEMISTRY

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REVISION QUESTIONS AND ANSWERS BASED ON SOME HISTORICAL SURVEY ON DEVELOPMENT AND IMPORTANCE OF ORGANIC CHEMISTRY

1. Who defined Organic Chemistry as a branch of science in 1820?
   A) Fredrich Wohler B) Berthelot Newton C) Isaac Newton D) Jons Jacob Berzelius
   Ans: D) Jons Jacob Berzelius

2. Organic Chemical Compound was classified into Organic and _____.
   A) Inorganic B) Organic C) Aromatic D) Hydrocarbons
   Ans: A) Inorganic

3. Jons Berzelius believed in the ideal of _____.
   A) Realism B) Evolution C) Vitalism D) Organism
   Ans: C) Vitalism

4. Vital force theory states that all organic compounds are produced from living organisms due to the presence of a _____. A) Carbon B) Vital force C) Oxygen D) Air
   Ans: B) vital force (pressure, temperature etc.…)

5. When was the vital false theory abandoned?
   A)1827 B) 1815 C) 1829 D) 1828
   Ans: D) 1828

6. Berzelius' student, Fredrich Wohler synthesized Urea by evaporating a solution called Potassium Isocyanate and Ammonium Sulfate to yield an inorganic substance called _____.

A) Ammonium Syrate B) Ammonium Cyanate C) Uranium D) Tristearin

Ans: B) Ammonium Cyanate

7. $2KNCO + (NH4)_2SO_4 \rightarrow 2NH_4NCO + K_2SO_4$

$NH_4NCO \leftrightarrow H_2N - CO - NH_2$

"$H_2N - CO - NH_2$" in the equation above is a known as _____

A) Tristearin B) Urea C) Potassium Isocyanate D) Ammonia

Ans: B) Urea

8. Who was the first chemist to synthesis an organic compound?

A) Jons Berthelot B) J.J Berzelius C) Fredrich Wohler D) William Thompson

Ans: C) Fredrich Wohler

9. In 1854 Berthelot synthesized fat by reacting dry _____ with _____acid at the temperature of 200°C to yield Tristearin.

A) Nitrate and Ethanoic B) Ice and Methanoic C) Coke and Hydrochloric D) Glycerol and Stearic

Ans: D) Glycerol and Stearic

10. What did the synthesis of Urea and Fat disprove?

Ans: The synthesis of Urea and Fat disproved J.J. Berzelius theory that Organic chemistry could not be synthesis in the laboratory and from inorganic compounds.

11. Carbonate (CO_3^{2-}), Bicarbonate (HCO^{3-}), and Cyanide (NaCN) and _____ are Inorganic compounds.
A) Methanol B) Carbides C) Urea D) Estersue/False
Ans: B) Carbides

12. In 1820, J.J. Berthelot proposed that _____ were real elements of organic chemistry that could pass from one compound to another without any change.
A) Radicals B) Ions C) Hydrocarbons D) Anions
Ans: A) Radicals

13. The branch of Chemistry that studies the structures, properties and reactions of organic compounds which contain carbon and covalent boding is known as _____.
A) Microchemistry B) Organic Chemistry C) Pharmaceuticals D) Inorganic Chemistry
Ans: B) Organic Chemistry

14. The study of the _____ determines the chemical composition and formation.
A) Bonds B) Reactions C) Properties D) Structure
Ans: D) Structure

15. The study of the properties includes physical and _____ properties.
A) Environmental B) Chemical C) Atmospheric D) Hybrid
Ans: Chemical

16. The evaluation of chemical reactivity is to _____.

A) examine their physical properties B) study chemical synthesis C) Discover more inorganic compounds D) Understand their behaviours

Ans: D) Understand their behaviours

17. The study of _____ includes the chemical synthesis of natural products, drug and polymers.

A) Molecular Reactions B) Vital Force C) Organic Reactions D) Fullerene

Ans: C) Organic Reactions

18. Which of the following is not an importance of Organic Chemistry?

A. Flexibility of carbon B. Pharmaceutical C. Food Distribution D. Employment Opportunity E. Molecular Biology

Ans: C) Food Distribution

19. Which of the following is an importance of Organic Chemistry?

A) Explosives Reactions B) Multiple Inflation C) Environmental Contaminants Analysis D) Overpopulation

Ans: Environmental Contaminants Analysis

20. Fullerene is the _____ allotrope of carbon.

A) First B) Second C) Third D) Fourth

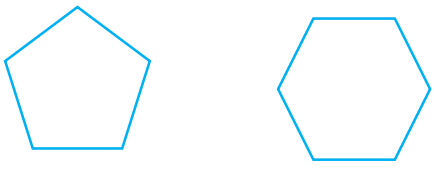
Ans: D) 4th Allotrope of Carbon.

21. In 1985, a team of scientists. Robert F. Curl, Harold W. Kroto and Richard E. Smalley at Rice University discovered a new allotrope of carbon called _____.
A) Fullerene B) Graphite C) Diamonds D) Amorphous
Ans: A) Fullerene

22. The allotrope was named after an American architect called _____.
A)Buckminister Fuller B) Buckminster Fuller C) Buckminister Fullar D) Buckminister Fuler
Ans: B) Buckminster Fuller

23. The 4th allotrope of carbon is also called Bulky ball or _____.
A) Buck Football B) Graphite C) Buckminster Football D) Buckminister Football
Ans: C) Buckminster Football

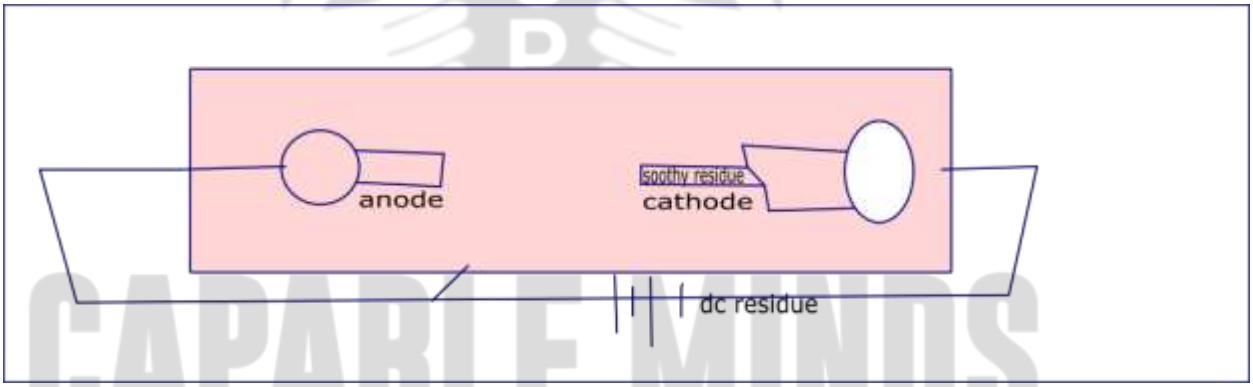
24. Fullerene contains a pentagonal ring and a hexagonal ring with _____ carbon atoms held by a covalent bond.
A) 60 B) 50 C) 40 D) 6
Ans: 60 Carbon atoms



25. It has 20 hexagons, 12 pentagons but no 2 pentagons shared a/an _____.
A) Electron B) Electron cloud C) Carbon D) Net
Ans: D) net

26. Each carbon atom was connected to exactly _____ neighbouring atoms
A) 60 B) 3 C) 6 D) 12
Ans: B) 3

27. Fullerene also exists in various shapes in which carbon atom are arranged is a cage-like structure of hollow sphere C-60, Ellipsoid C-70 and _____.
A) C-80 Ellipsoid B) C-80 Pllisoid C) Tubes D) Circular Cones.
Ans: tubes (nanotubes)



28. Fullerene carbon atoms present in XP2 hybrid form are usually linked together by _____ bonds.
A)Electrovalent B) Dative C) Covalent D) Metallic
Ans: C) Covalent Bonds

29. Two major types of Fullerene are the closed bulky balls and the open-ended _____ carbon nanotubes.
A)Hexagonal B) Cylindrical C) Octahedral D) Triangular

Ans: B) Cylindrical Carbon nanotubes

30. Fullerene can change under different pressure and it's a good conductor of _____. A) Black holes B) Silicone C) Silt D) Electricity
Ans: D) Electricity

31. Fullerene is quite stable and very reactive. True/False?
Ans: False (Fullerene is stable and not very reactive)

32. In chemical reactions, Fullerene acts as a/an _____.
A) Electrophile B) Anti bond element C) Nucleophile D) Ferromagnetic Element.
Ans: A) Electrophile

33. Fullerene can act like an electron-accepting group and it's characterized as an _____ agent.
A) Reducing Agent B) Oxidizing Agent C) Drying agent D) Precipitating Agent
Ans: B) Oxidizing Agent.

34. When dumped or crystallized with alkaline or earth metals. Fullerene showcases _____ properties.
A) Insulative B) Conductive C) Semi-conductive D) Super-conductivity
Ans: Super-conductivity properties.

35. The ingredient in Aspirin is _____.
A) Ethanoic acid B) Acetylsalicylic acid C) Willow-bark D) Urea
Ans: B) Acetylsalicylic acid

36. _____ is the only allotrope of carbon known to be soluble in many carbon solvents like Carbon Disulphide.
A) Fullerene B) Graphite C) Diamonds D) Amorphous

Ans: A) Fullerene

37. Fullerene is a great ingredient in sunscreen, skin whitening and anti-ageing products. due to it's _____ capacity
A) Anti-Reducing B) Anti-Biotic C) Anti-Oxidant D) Anti-ageing
Ans: C) Anti-Oxidant Capacity

38. It has a potential to be used as a drug delivery system for cancer, AIDs and other diseases. True/False
Ans: True

39. Fullerene is used as a ball bearing and also used as a _____.
A) Stone-bearing B) Lubricant C) Ice-bearing D) Reducing Agent
Ans: Lubricant

40. Fullerene can be used as a catalyst by attaching it to _____. A) Water B) Hydrogen C) Metal D) Non-metal
Ans: Metal

41. It's used as organic voltaic (N-type material) and in the contamination of purified water. True/False
Ans: False, it is use in the purification of contaminated water from free radicals

42. Fullerene is used as a composite to _____ materials.
A) Strengthen B) Weaken C) Dilute D) Pollute
Ans: Strengthen materials

43. Nanotubes are made up of _____ sheets.
A) Acidic B) Silicon C) Aluminum D) Graphene
Ans: D) Graphene Sheets

44. The two major types of Nanotubes are single wall carbon nano tubes and _____ walls CNTs.
A) Plugged B) Chemical C) tensile D) Multi walls
Ans: D) Multi walls CNTs

45. Nanotubes haves a high _____ strength
A) texture B) tensile C) Insulating D) semi-conductive
Ans: B) Tensile

46. Nanotubes are good conductor of heat True/False
Ans: True

47. Nanotubes shows electrical _____ similar to that of copper.
A) Relativity B) Magnetism C) Ferro-magnetism D) Conductivity
Ans: D) Conductivity

48. The following are uses of Nanotubes except
A. Biomedical applications B. CNT based graphics C. CNT based fabrics and fibres (in bullet proofs) D. Medical Insulators. E. Cosmetics
Ans: D) Medical Insulators

49. Which of the following is a good use of nanotubes?
A. Adsorbent for gas. B. Solvent of Potassium floride. C. Medical Insulators D. Hyperinflation E. Atom fussion of Hydrocarbons.
Ans: A) Adsorbent for gas.

50. An allotrope containing a single-layer of carbon atoms arranged in a rectangular form is known as _____.
A) Graphite B) Graphene C) Diamond D) Fullerene
Ans: Graphene

51. Graphene is a heavy material and a poor conductor of heat and electricity. True/ False.
Ans: False, Graphene is a very light material and it's agood conductor

52. Graphene has a good optical property and it can transmit about 97.7% of _____.
A) Light B)Heat C) Neutrons D) Beam Energy
Ans: Light

53. Which of the following is not an application of Graphene?
A. Touchscreens B. Super-Insulators C. DNA sequence D. Batteries and Transistors E. Drug delivery system.
Ans: Super-Insulators

54. Nanostructures ranges between 1nm to _____ nm on a molecular scale in at least one dimension.
A) 54nm B) 10nm C) 100m D) 100nm
Ans: D) 100nm

55. Nano surfaces, cylindrical nano surface and nanospheres are common nano structures. True/False
--TRUE

56. The branch of Nanoscience that deals with the chemical applications of nanomaterials in nanotechnology is known as _____.
    A)Nanotechnology B) Nano chemistry C) Nano structure D) Nano material science
    Ans: B) Nano Chemistry

57. Nanochemistry involves the study of the synthesis and characterization of materials of _____ size.
    A) Mini B) Mega C) Macro D) Nano
    Ans: D) Nano

58. Nanochemistry as a branch of chemistry was conceived 1956 True/False.
    Ans: False, Nanochemistry is a relatively new branch of Chemistry

59. What is a nanometer?
    A)A Billion meter B) A Billionth of a meter C) A trillionth of a meter D) A millionth of a meter
    Ans: B) A nanometer is a billionth of a meter (1nm = 10^-9m)

60. The design of characterization, production and application of structures, devices and systems by controlled manipulation of size and shape at the nanometer scale (atomic, molecular and macromolecular scale) that produces structures, devices and system with at least one novel/superior with at least one novel/superior characteristics or properties is knows as _____.

A) Nano Science B) Nanotechnology C) Nano Bioscience D) Nano Chemistry

Ans: Nanotechnology