ONTARIO CHEMISTRY, GRADE 12, UNIVERSITY PREPARATION (SCH4U) · FINAL EXAM · 50 QUESTIONS

Final Exam — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **The IUPAC name for the compound with formula $CH_3CH_2CH_2CH_3$ is**

- A Pentane
- B Ethane
- C Butane
- D Propane

Understand It with Pulse | Flag a mistake

2 **Ammonia has a trigonal pyramidal shape because nitrogen has**

- A Two bonding pairs
- B No lone pairs
- C Three bonding pairs and one lone pair
- D Four bonding pairs

Understand It with Pulse | Flag a mistake

3 **In an endothermic reaction, the enthalpy change delta H is**

- A Positive
- B Always one
- C Zero
- D Negative

Understand It with Pulse | Flag a mistake

4 **At equilibrium, the concentrations of reactants and products are**

- A Always increasing
- B Constant but not necessarily equal
- C Zero
- D Equal

Understand It with Pulse | Flag a mistake

5 **Alkenes are characterized by the presence of a**

A Carboxyl group

B Triple bond

C Carbon carbon double bond

D Hydroxyl group

Understand It with Pulse | Flag a mistake

6 **Hydrogen bonding occurs between molecules containing hydrogen bonded to**

A Sulfur only

B Any metal

C Nitrogen oxygen or fluorine

D Carbon only

Understand It with Pulse | Flag a mistake

7 **A catalyst is not consumed in a reaction because it is**

- A Destroyed
- B Regenerated
- C A reactant only
- D A product only

Understand It with Pulse | Flag a mistake

8 **Le Chatelier principle predicts a system at equilibrium shifts to**

- A Increase temperature always
- B Counteract the disturbance
- C Increase the disturbance
- D Stop reacting

Understand It with Pulse | Flag a mistake

9 **An ester is formed by the reaction of a carboxylic acid with an**

A Alkane

B Alkene

C Alcohol

D Amine

Understand It with Pulse | Flag a mistake

10 **Dipole dipole forces occur between**

A Ions and metals

B Polar molecules

C Nuclei

D Nonpolar atoms only

Understand It with Pulse | Flag a mistake

11 **According to collision theory, a reaction occurs only if colliding particles have sufficient**

A Mass

B Colour

C Charge

D Energy and correct orientation

Understand It with Pulse | Flag a mistake

12 **For an exothermic reaction, increasing temperature shifts equilibrium toward the**

A Reactants

B Products

C Right always

D Catalyst

Understand It with Pulse | Flag a mistake

13 **Elimination of water from an alcohol produces an**

A Alkane

B Ester

C Carboxylic acid

D Alkene

Understand It with Pulse | Flag a mistake

14 **Diamond is hard because each carbon atom is bonded to four others in a**

A Single chain

B Layered sheet

C Three dimensional network

D Ring only

Understand It with Pulse | Flag a mistake

15 For a second order reaction in one reactant, doubling its concentration makes the rate

- **A** Quadruple
- **B** Stay the same
- **C** Halve
- **D** Double

Understand It with Pulse | Flag a mistake

16 For silver chloride with Ksp 1.8×10^{-10} , the molar solubility is about

- **A** 1.3×10^{-5}
- **B** 1.0×10^{-5}
- **C** 3.6×10^{-10}
- **D** 1.8×10^{-10}

Understand It with Pulse | Flag a mistake

17 **Which reaction type converts an alkene to an alkane**

A Substitution

B Esterification

C Addition of hydrogen

D Elimination

Understand It with Pulse | Flag a mistake

18 **Ionization energy generally increases across a period because electrons are**

A Farther from the nucleus

B Shielded more

C In higher shells

D Held more tightly

Understand It with Pulse | Flag a mistake

19 **Given delta H for A to B is -100 kilojoules per mole and B to C is -50, the enthalpy change for A to C is**

A -150 kilojoules per mole

B +50 kilojoules per mole

C +150 kilojoules per mole

D -50 kilojoules per mole

Understand It with Pulse | Flag a mistake

20 **Electrons in a galvanic cell flow through the external wire from the**

A Cathode to salt bridge

B Anode to cathode

C Salt bridge to anode

D Cathode to anode

Understand It with Pulse | Flag a mistake

21 **Which statement about isomers is correct**

- A Isomers have different numbers of atoms
- B Isomers are always identical
- C Isomers have different molecular formulas
- D Isomers have the same molecular formula but different structures

Understand It with Pulse | Flag a mistake

22 **A polar covalent bond forms between atoms with**

- A Equal sharing always
- B Identical electronegativity
- C Different electronegativity
- D No electronegativity

Understand It with Pulse | Flag a mistake

23 **Bond forming is always**

A Impossible

B Endothermic

C Neutral

D Exothermic

Understand It with Pulse | Flag a mistake

24 **In electrolysis, electrical energy is used to drive a**

A Non spontaneous reaction

B Spontaneous reaction

C Neutralization

D Equilibrium shift only

Understand It with Pulse | Flag a mistake

25 **Condensation polymerization differs from addition polymerization because a small molecule is**

A Added

B Reduced

C Oxidized

D Eliminated

Understand It with Pulse | Flag a mistake

26 **Water has a high surface tension mainly because of**

A London forces only

B Ionic bonds

C Metallic bonds

D Hydrogen bonding

Understand It with Pulse | Flag a mistake

27 **The units of a first order rate constant are**

A Per second

B Seconds

C Litres per mole per second

D Moles per litre per second

Understand It with Pulse | Flag a mistake

28 **The standard cell potential is positive for a cell that is**

A Spontaneous

B Impossible

C At equilibrium

D Non spontaneous

Understand It with Pulse | Flag a mistake

29

An alcohol functional group is

A Carboxyl

B Carbonyl

C Amino

D Hydroxyl

Understand It with Pulse | Flag a mistake

30

Methane has bond angles of about

A 120 degrees

B 109 degrees

C 180 degrees

D 90 degrees

Understand It with Pulse | Flag a mistake

31 **The Arrhenius equation relates rate constant to temperature and**

A Pressure

B Activation energy

C Volume

D Concentration

Understand It with Pulse | Flag a mistake

32 **The reaction quotient Q compared with K predicts direction: if Q is less than K, the reaction shifts toward**

A Products

B Neither

C The catalyst

D Reactants

Understand It with Pulse | Flag a mistake

33 **The functional group of a carboxylic acid is**

A Carbonyl only

B Ester linkage

C Carboxyl

D Hydroxyl only

Understand It with Pulse | Flag a mistake

34 **Which molecule is nonpolar despite having polar bonds**

A Hydrogen chloride

B Ammonia

C Carbon dioxide

D Water

Understand It with Pulse | Flag a mistake

35 **An enzyme is an example of a catalyst that is a**

A Gas

B Biological protein

C Acid only

D Metal ion only

Understand It with Pulse | Flag a mistake

36 **For the Haber process, increasing pressure favours ammonia formation because the product side has**

A More gas moles

B Fewer gas moles

C Equal gas moles

D No gas

Understand It with Pulse | Flag a mistake

37 **Hydrogenation of an unsaturated fat converts double bonds to**

A Carbonyl groups

B Triple bonds

C Aromatic rings

D Single bonds

Understand It with Pulse | Flag a mistake

38 **Solubility of a polar solute in water is best explained by**

A High pressure

B Like dissolves like

C Metallic bonding

D Dispersion forces only

Understand It with Pulse | Flag a mistake

39 **Entropy increases when a solid melts because particles become**

A More ordered

B More disordered

C Closer together

D Colder

Understand It with Pulse | Flag a mistake

40 **A strong acid in water ionizes**

A Partly

B Only when heated

C Completely

D Not at all

Understand It with Pulse | Flag a mistake

41 **A ketone has its carbonyl group**

A Attached to a halogen

B At the end of the chain

C Replaced by nitrogen

D Within the carbon chain

Understand It with Pulse | Flag a mistake

42 **Which ion is larger than its parent atom**

A Chloride ion

B Magnesium ion

C Aluminium ion

D Sodium ion

Understand It with Pulse | Flag a mistake

43 **A calorimeter constant accounts for heat absorbed by the**

A Air only

B Calorimeter itself

C Water only

D Reactants only

Understand It with Pulse | Flag a mistake

44 **At the equivalence point of a strong acid strong base titration, the pH is**

A Less than 7

B 0

C Greater than 7

D 7

Understand It with Pulse | Flag a mistake

45 **An aromatic amine with an NH_2 group on a benzene ring is named**

- A Benzaldehyde
- B Toluene
- C Phenol
- D Aniline

Understand It with Pulse | Flag a mistake

46 **Which allotrope of carbon is used as a lubricant**

- A Graphite
- B Diamond
- C Coal
- D Fullerene only

Understand It with Pulse | Flag a mistake

47 **If rate doubles when concentration doubles and quadruples when concentration quadruples, the order is**

A Second

B Third

C First

D Zero

Understand It with Pulse | Flag a mistake

48 **A magnesium silver cell has magnesium potential -2.37 volts and silver potential +0.80 volts. Its standard potential is**

A +3.17 volts

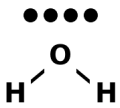
B -3.17 volts

C -1.57 volts

D +1.57 volts

Understand It with Pulse | Flag a mistake

49 **The diagram shows water with two lone pairs on oxygen. The shape is**



- **A** Tetrahedral
- **B** Linear
- **C** Bent
- **D** Trigonal planar

Understand It with Pulse | Flag a mistake

50 **Which compound has the lowest boiling point**

- **A** Methane
- **B** Hydrogen fluoride
- **C** Water
- **D** Ammonia

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. C
2. C
3. A
4. B
5. C
6. C
7. B
8. B
9. C
10. B
11. D
12. A
13. D
14. C
15. A
16. A
17. C
18. D
19. A
20. B
21. D
22. C
23. D
24. A
25. D
26. D
27. A
28. A
29. D
30. B
31. B
32. A
33. C
34. C
35. B
36. B
37. D
38. B
39. B
40. C
41. D
42. A
43. B
44. D
45. D
46. A
47. C
48. A
49. C
50. A

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