



Al-Razi Guess Paper consist of 100 MCQs, 100 Short Questions and Long Questions to get 100% Success in Examination

OBJECTIVE TYPE
Multiple Choice Questions

- Which branch of chemistry is primarily concerned with the analysis of substances?
 - Medicinal Chemistry
 - Environmental Chemistry
 - Analytical Chemistry
 - Astrochemistry
- Matter is present in neon signs in the state of:
 - Supercritical fluid
 - Plasma
 - Gas
 - Liquid crystal
- The state of matter composed of particles with very high kinetic energy is:
 - Plasma
 - Gas
 - Liquid
 - Solid
- The man-made polymer is:
 - Starch
 - Polystyrene
 - Protein
 - Cellulose
- The type of substance made up of two or more different elements combined in a fixed ratio is:
 - Mixture
 - Element
 - Isotope
 - Compound
- The crystals of which substance have a rhombic shape?
 - Brass
 - Sulphur
 - Graphite
 - Bronze
- The following is an example of a compound:
 - Sodium
 - Air
 - Water
 - Iron
- A state of matter whose properties are between those of liquids and crystalline solids:
 - Liquid crystal
 - Supercritical fluid
 - Plasma
 - Dark matter
- The relative mass of a proton as compared to an electron is:
 - 1836 times lighter
 - Equal in mass
 - 1836 times heavier
 - 1000 times heavier
- How many electrons can be accommodated at the most in the third shell of the elements?
 - 8
 - 18
 - 10
 - 32
- What is the relationship to find the number of neutrons (N) in an atom?
 - $N = Z + A$
 - $N = A - Z$
 - $N = Z - A$
 - $N = A \times Z$
- Which particle is present in different number in the isotopes?
 - Electron
 - Neutron
 - Proton
 - Both neutron and electron
- Which hydrogen isotope does not contain a neutron?
 - ${}^1_1\text{H}$
 - ${}^2_1\text{H}$
 - ${}^3_1\text{H}$
 - None of these
- What will be the relative atomic mass of nitrogen given the abundances of its two isotopes. ${}^{14}\text{N}$ and ${}^{15}\text{N}$ are 99.64 and 0.35 respectively.
 - 14.0210
 - 14.0021
 - 14.2100
 - 14.1200
- Which radioactive element disintegrates to give protactinium?
 - Bismuth - 210
 - Thorium - 234
 - Uranium - 238
 - Technetium - 99m
- What is the unit used for measuring the relative atomic mass of elements?
 - Kilogram Kg
 - Mole (mol)
 - Joule (J)
 - Atomic mass unit (amu)
- What is the electronic configuration of chlorine after forming NaCl?
 - 2,6
 - 2,8,7
 - 2,7
 - 2,8,8
- Which element is capable of forming all the three types of bonds; covalent, coordinate covalent or ionic?
 - Carbon
 - Oxygen
 - Magnesium
 - Silicon
- Which example best explains metallic bonding?
 - Iron
 - Copper
 - Gold
 - Sodium
- Which form of carbon is used as a lubricant?
 - Coal
 - Diamond
 - Graphite
 - Charcoal
- The tendency of metals to lose electrons is called?
 - Electronegativity
 - Ionization Potential
 - Electropositive character
 - Reducing property
- Which ionic compound has the highest melting point?
 - NaCl
 - KCl
 - LiCl
 - RbCl
- Intermolecular forces are weakest in:
 - Solids
 - Liquids
 - Gases
 - Ionic compounds

24. Which among the following has a double covalent bond?
A Ethane B Methane
C Ethylene D Acetylene
25. Ratio between ions of sodium chloride is:
A 2 : 1 B 1 : 2
C 2 : 3 D 1 : 1
26. Which is the correct formula of calcium phosphide?
A CaP B CaP₂
C Ca₂P₃ D Ca₃P₂
27. Which of the following ions have a charge of -2?
a O²⁻ B Cl⁻
C N³⁻ D H⁺
28. Structural formula of 2-hexene is CH₃-CH=CH-(CH₂)₂-CH₃. What will be its empirical formula?
A C₂H₂ B CH
C C₆H₁₂ D CH₂
29. Molecular formula of sulphuric acid is:
A HNO₃ B HCl
C H₂SO₄ D H₂O
30. What is the mass of Al in 204g of aluminium oxide, Al₂O₃?
A 26g B 27g
C 54g D 108g
31. In the reaction between calcium carbonate and hydrochloric acid, how many grams of carbon dioxide are produced from one mole of calcium carbonate?
A 73 g B 18 g
C 111 g D 44 g
32. What mass of 95% CaCO₃ will be required to neutralize 50cm³ of 0.5M HCl solution?
A 9.5g B 1.25g
C 1.32g D 1.45g
33. What sign is associated with an endothermic process?
a Positive B Negative
C Neutral
D None of above
34. Formation of which hydrogen halide from the elements is an endothermic reaction?
A HCl b HF
C HBr D HI
35. What type of process occurs when bonds of H₂ and O₂ are broken?
A Spontaneous
B Exothermic
C Neutral
D Endothermic
36. What are the products of anaerobic respiration?
A ATP + CO₂ + H₂O
B CO₂ + Ethanol + Lactic Acid
C ATP + Ethanol + H₂O
D Ethanol + H₂O
37. What determines whether a collision between molecules leads to a reaction?
A Number of molecules
B Container size
C Kinetic energy of the molecules
D Volume of reactants
38. The average bond dissociation energy for the C-H bond is 412 kJ mol⁻¹. Which of the following process will have enthalpy change close to 412 kJ mol⁻¹?
A CH_{4(g)} → C_(s) + 2H_{2(g)}
B CH_{4(g)} → C_(s) + 3H_{2(g)}
C CH_{4(g)} → C_(s) + 4H_(g)
D CH_{4(g)} → C_{3(g)} + H_(g)
39. What happens when reactant molecules collide with sufficient energy?
A They stop moving
b A transition state is formed
C They lose energy
D The reaction stops
40. What is the end product of glucose oxidation in aerobic respiration?
A Pyruvate and ATP
B Ethanol and CO₂
C Lactic acid
D CO₂, H₂O and energy
41. The reaction CuSO₄ · 5H₂O → CuSO₄ + 5H₂O is
a Irreversible
B Reversible
C Physical
D Both b and c
42. Predict which components of the atmosphere react in the presence of lightning.
A N₂ and H₂O
B O₂ and H₂O
C CO₂ and O₂
D N₂ and O₂
43. At equilibrium, the concentrations of reactants and products:
A Increase B Decrease
C Constantly change
D Remain constant
44. Changes in pressure affect equilibrium when:
A Liquids dominate
b Gases are involved
C Solids dominate
D There is no reaction
45. Reducing pressure in a gaseous equilibrium shifts it towards:
A Products B Reactants
C Less gas moles
D More gas moles
46. A catalyst increases the rate of:
A Forward reaction
B Backward reaction
C Both a and b
D None of these
47. Which condition does not affect the position of equilibrium?
A Temperature
B Pressure C Catalyst
D Concentration

48. Why does removing a product from an equilibrium system shift the equilibrium to the right?
A To balance temperature
B To produce more reactants
C To replace the removed product
D To stop the reverse reaction
49. What is nature of battery water?
A Neutral B Basic
C Acidic D Salty
50. While baking, which gas is responsible for raising the bread and making it soft?
A Oxygen
b Carbon dioxide
C Nitrogen
D Carbon monoxide
51. How many water molecules may surround the proton?
A 2 B 3 C 4 D 5
52. How many hydroxide ions, calcium hydroxide will release in water?
A 1 b 2 C Zero D 3
53. Which gas is evolved when Zinc react with H_2SO_4 :
A Oxygen b Hydrogen
C Nitrogen D SO_2
54. Which compound is formed when SO_2 is dissolved in water?
A SO_3 B H_2SO_3
C H_2SO_4 D $H_2S_2O_7$
55. Acids react with metal oxides to produce
a Salt and water
B Base and water
C Salt and oxygen
D Hydrogen gas
56. Which gases are responsible for the formation of acid rain:
a CO_2 and CH_4
B NO_2 and SO_2
C O_2 and O_3
D H_2S and Ammonia
57. The vertical columns in the periodic table represent is:
A Periods
B Atomic masses
C Atomic numbers
d Groups
58. Identify the electronic configuration of the outermost shell of a transition metal.
A ns^2np^4 b nd^xns^2
C ns^2np^6 D ns^2np^5
59. Each period in the periodic table represents the completion of a:
A Group B Block
C Subshell d Shell
60. A yellow solid element exists in allotropic forms which is also present in fossil fuel. Indicate the name.
A Carbon B Iodine
C Aluminium d Sulphur
61. Group II oxides dissolve in water to form:
A Acids
B Neutral solutions
C Salts d Alkalies
62. Which element has the highest melting point?
a Na B K C Rb D Cs
63. The ionization energy of sodium is _____ $kJ\ mol^{-1}$.
a 496 B 520
C 737 D 1450
64. The metallic character of elements determines their:
A Density b Reactivity
C Atomic radius
D Boiling point
65. The melting point of alkali metals _____ down the group.
A Increases b Decreases
C Remains constant
D Fluctuates
66. Which compound do you expect to be coloured?
A KCl B $BaCl_2$
C $AlCl_3$ d $NiCl_2$
67. Halogens exist as _____ molecules.
A Monatomic b Diatomic
C Polyatomic D Ionic
68. Elements of which group are all coloured?
A Second group
b Sixth group
C Fourth group
D Fifth group
69. Transition metals often show _____ oxidation states.
A Fixed B Single
C Variable D None
70. Which oxide is the most basic oxide?
a Na_2O B Li_2O
C MgO D CO
71. The electronic configuration of helium is:
a s^2 B s^2p^6
C s^1p^5 D s^2p^4
72. Which property is correct for group 1 elements?
a Low catalytic activity
B High density
C Low electrical conductivity
D High melting point
73. The percentage of nitrogen in the atmosphere is:
A 0.04% B 1.0%
C 78.0% D 21.0%
74. Which gases are responsible for greenhouse effect?
A SO_2, NO_2 B NO_2, CO
C CO_2, CH_4 D O_2, N_2
75. Acid rain occurs when rainwater has a pH between:
A 5.0 and 6.0
b 4.2 and 4.4 C 6.5 and 7.0
D 7.0 and 7.5
76. Concentration of which gas in the atmosphere is decreased by photosynthesis in plants?
A Oxygen B Nitrogen
C Carbon dioxide
D Water vapour

77. At night, the Earth's surface emits:
 A Short-wave radiation
 B Solar radiation
 C Long-wave radiation
 D None of the above
78. Which catalyst is used in the catalytic converter fixed in the exhaust systems of automobiles?
 A Ni B Cu
 C Pt, Pd and Rh
 D CaO
79. What process do plants use to help clean the air?
 A Combustion
 B Decomposition
 C Photosynthesis
 D Transpiration
80. Hydrocarbons consist only hydrogen and:
 a carbon B oxygen
 C nitrogen D phosphorus
81. Which other metal can be used to reduce alkyl halides?
 A Al b Mg C Ni D Co
82. In IUPAC nomenclature, the prefix 'eth-' indicates the presence of:
 A 1 carbon atom
 b 2 carbon atoms
 C 3 carbon atoms
 D 4 carbon atoms
83. Which reaction is not given by alkanes?
 A Substitution
 B Combustion
 C Addition D Cracking
84. The process of breaking higher molecular mass hydrocarbons into smaller ones is called:
 A Hydrolysis b Cracking
 C Hydrogenation
 D Fermentation
85. Which of the following is not a process of halogenation of alkanes?
 a Cracking
 B Chlorination
 C Bromination
 D Iodination
86. Combustion of alkanes produces CO_2 , H_2O , and:
 a Heat B Light
 C Smoke D Soot
87. In the SI system, the standard unit of length is the:
 a Meter B Foot
 C Inch D Yard
88. In which unit we usually measure the energy present in the food?
 A Kilojoules B Megajoules
 C Calorie D Joule
89. Random errors affect the _____ of the experimental results.
 A Accuracy B Speed
 C Efficiency d Precision
90. Which symbol is used for kilogram in SI units?
 A K B k
 C Kgm d kg
91. Variations in measurements due to slight procedural changes contribute to:
 A Systematic errors
 b Random errors
 C Human errors
 D Calculation errors
92. In SI units prefix nano means:
 a 10^{-9} B 10^{-8}
 C 10^{-11} D 10^{-12}
93. A measurement that repeatedly gives the same result is said to be:
 A Accurate b Precise
 C Reliable D Valid
94. Examples of toxic chemicals include all of the following EXCEPT:
 A Mercury B Benzene
 C Sodium chloride D Ammonia
95. Accidents often result from:
 A making mistakes
 B failure to use common sense
 C failure to follow instructions
 d all of the above
96. Protective glasses in the laboratory are essential for protecting:
 A Ears B Feet
 C Eyes D Hands
97. What should each student know about fire extinguisher?
 A their price
 B their colour & size
 C where they are placed
 D their brand name
98. Example of self-reactive chemical:
 A Potassium B Phenol
 C Picric acid D n-Hexane
99. In the event of a fire in the lab, you should:
 A Open all doors and windows
 b Close doors to confine the fire
 C Use water to extinguish the fire
 D Leave the fire unattended
100. What does a red diamond with a flame symbol indicate?
 A Corrosive b Flammable
 C Radioactive D Oxidizing

Short Questions

- What is biochemistry?
 Ans. See on page No. 3
- Why is there a need to divide Chemistry into many branches. Give three reasons.
 Ans. See on page No. 11
- What are homogeneous mixtures?
 Ans. See on page No. 5
- What types of problems are solved in analytical chemistry?
 Ans. See on page No. 11
- What are the types of mixtures?
 Ans. See on page No. 6

6. Why are supercritical fluids important?

Ans. See on page No. 11

7. What happens to the solubility of gases with temperature?

Ans. See on page No. 7

8. What is the importance of graphene?

Ans. See on page No. 11

9. How much cesium is bigger than helium?

Ans. See on page No. 16

10. Why are elements different from one another?

Ans. See on page No. 23

11. What is Bohr's atomic model?

Ans. See on page No. 17

12. How many neutrons are present in $^{210}_{83}\text{Bi}$?

Ans. See on page No. 23

13. How atomic number and mass number is represented in an atom?

Ans. See on page No. 17

14. How can an atom absorb and evolve energy?

Ans. See on page No. 24

15. What is radioactive decay?

Ans. See on page No. 18

16. Describe ionization of atoms of electron.

Ans. See on page No. 19

17. Define duplet or octet rule?

Ans. See on page No. 26

18. Why does lower molecular mass covalent compound exist as gases or low boiling liquids.

Ans. See on page No. 33

19. Define ionic bond?

Ans. See on page No. 27

20. Give one example of an element which exists as a crystalline solid and it has covalent bonds in its atoms.

Ans. See on page No. 33

21. On which strength of metallic bond depends?

Ans. See on page No. 27

22. Write down dot and cross formula of HNO_3 .

Ans. See on page No. 33

23. Why are alkali metals considered highly reactive?

Ans. See on page No. 28

24. How do non-metals form molecular substances?

Ans. See on page No. 28

25. How a chemical compound is represented?

Ans. See on page No. 36

26. Write down the chemical formula of barium nitride.

Ans. See on page No. 44

27. What is the basic fault of empirical formula?

Ans. See on page No. 37

28. What is the difference between a mole and Avogadro's number?

Ans. See on page No. 45

29. Write down the importance of stoichiometry in chemical industry.

Ans. See on page No. 38

30. How the empirical formula and molecular formula is calculated?

Ans. See on page No. 39

31. What is the molecular formula of n-propyle and calcium carbonate?

Ans. See on page No. 39

32. Define molar mass with examples.

Ans. See on page No. 40

33. Why heat and enthalpy is important?

Ans. See on page No. 49

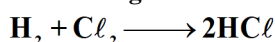
34. What is the difference between enthalpy and enthalpy change?

Ans. See on page No. 56

35. Why it is not possible to calculate the enthalpy of a system?

Ans. See on page No. 50

36. Depict the transition state for the following reaction.



Ans. See on page No. 56

37. Give two examples of endothermic reactions.

Ans. See on page No. 51

38. What is the role of glycogen in our body.

Ans. See on page No. 57

39. What happens when transition state is formed?

Ans. See on page No. 52

40. Why is oxygen important in aerobic respiration?

Ans. See on page No. 52

41. What are the effects of heating on hydrated copper sulfate?

Ans. See on page No. 59

42. How is dynamic equilibrium different from the static equilibrium?

Ans. See on page No. 65

43. How does the containment condition affect the decomposition of CaCO_3 ?

Ans. See on page No. 60

44. How can you get the maximum yield in a reversible reaction?

Ans. See on page No. 65

45. What role does a catalyst play in a reversible reaction?

Ans. See on page No. 61

46. What is the effect of increasing pressure on the following reaction?



Ans. See on page No. 65

47. How does temperature affect equilibrium?

Ans. See on page No. 61

48. Why is removing water beneficial in ethyl acetate production?

Ans. See on page No. 62

49. Write down properties of bases.

Ans. See on page No. 67

50. How does calcium metal react with dilute H_2SO_4 ?

Ans. See on page No. 72

51. What are limitation of Arrhenius acid base concept?

Ans. See on page No. 68

52. How will you justify that HSO_4^- is a Bronsted-Lowry acid?

Ans. See on page No. 73

53. Explain briefly the types of reactions of acids.

Ans. See on page No. 69

54. What chemical name will you give to soap as a compound?

Ans. See on page No. 73

55. What are amphoteric?

Ans. See on page No. 69

56. Write down adverse effects of acid rain.

Ans. See on page No. 70

57. How do elements in the same group behave similarly?

Ans. See on page No. 75

58. What is the significance of the word periodic?

Ans. See on page No. 81

59. What are noble gases?

Ans. See on page No. 76

60. In a group, the elements have the same number of electrons in the outermost shell. Why is it so?

Ans. See on page No. 81

61. Why does the tendency to lose electrons increase down group 2?

Ans. See on page No. 77

62. Why are the most electronegative elements present in sixth and seventh groups?

Ans. See on page No. 81

63. How does electron affinity change in a group?

Ans. See on page No. 77

64. Is it possible for two metals or two non-metals to form an ionic bond?

Ans. See on page No. 81

65. How do alkali metals react with chlorine?

Ans. See on page No. 84

66. Predict the reactivity of potassium towards halogens.

Ans. See on page No. 91

67. Why are halogens called salt-forming elements?

Ans. See on page No. 85

68. Why does iodine exist in the solid state at room temperature?

Ans. See on page No. 91

69. What are transition elements?

Ans. See on page No. 86

70. Why are compounds of transition metals often colored?

Ans. See on page No. 86

71. What is the electronic configuration of noble gases?

Ans. See on page No. 87

72. What is ductility in metals?

Ans. See on page No. 87

73. How has the industrial revolution impacted the atmosphere?

Ans. See on page No. 94

74. How is particulate matter released in the atmosphere?

Ans. See on page No. 101

75. What should individuals avoid to reduce pollution?

Ans. See on page No. 95

76. How does acid rain affect forests?

Ans. See on page No. 101

77. Who is considered the "Father of Acid Rain"?

Ans. See on page No. 96

78. Name any three major sources responsible for the greenhouse effect.

Ans. See on page No. 101

79. How can you maintain good air quality indoors?

Ans. See on page No. 98

80. What is organic chemistry? Explain.

Ans. See on page No. 104

81. Why are organic compounds found in large numbers?

Ans. See on page No. 111

82. What is the general formula for alkanes?

Ans. See on page No. 106

83. How naphtha fraction is decomposed to give lower hydrocarbons?

Ans. See on page No. 111

84. Why are alkanes called saturated hydrocarbons?

Ans. See on page No. 106

85. Write down the names of five such organic compounds which exist naturally?

Ans. See on page No. 112

86. Why are alkanes referred to as paraffins?

Ans. See on page No. 108

87. What problems arise from using different units of measurement in science?

Ans. See on page No. 114

88. Why SI units are user friendly?

Ans. See on page No. 121

89. Why is the mole important in chemistry?

Ans. See on page No. 115

90. What is the reason behind a random error?

Ans. See on page No. 121

91. What are random errors?

Ans. See on page No. 117

92. Mention two benefits scientists get by using SI units.

Ans. See on page No. 121

93. What do you know about accuracy?

Ans. See on page No. 118

94. Why warning signs are displayed in the laboratory?

Ans. See on page No. 123

95. Name some corrosive chemicals.

Ans. See on page No. 123

96. Corrosive chemicals are found in which form?

Ans. See on page No. 124

97. Indicate two such safety instructions which are required to avoid radiation.

Ans. See on page No. 129

98. Write the names of a few chemicals that can pose a risk of suffocation.

Ans. See on page No. 124

99. How fire caused by chemicals should be handled?

Ans. See on page No. 129

100. Enlist personal protective equipment.

Ans. See on page No. 125