AL AMAL LEARNING CENTER

Class 9 Chemistry (FBISE Modal Paper Pattern)

CHEMISTRY CHAPTER 1 QUIZ

NATURE OF SCIENCE IN CHEMISTRY

Time Allowed: 1:00 hour **Total Marks:** 25

Roll Number	Paper Version

Candidate Sign. _____ Invigilator Sign. _____

SECTION A (Marks 10)

Note: Section A is compulsory. Fill the correct bubble for each question. Each question carries 0.5 mark.

Q#	Question	A	B	C	D
1.	Which statement correctly describes organic chemistry as defined in this course?	It deals with all compounds of carbon without any exception	It deals with substances containing hydrogen	It deals with substances containing carbon except carbonates, bicarbonates, oxides and carbides	It deals with the large-scale production of carbon compounds
2.	Which of the following is studied under inorganic chemistry rather than organic chemistry?	Ethanol	Methane	Acetic acid	Sodium carbonate (Na_2CO_3)
3.	Which of the following is an essential question for physical chemistry?	Why is carbon considered the backbone of organic compounds?	How do different types of chemical bonds (ionic, covalent, metallic) form and function?	What role do greenhouse gases play in climate change?	How are drugs designed and developed for specific therapeutic purposes?
4.	A forensic laboratory examines body fluids, fibres and unknown coloured powders to find out which drugs they contain. This work is an application of:	Analytical chemistry	Polymer chemistry	Nuclear chemistry	Geochemistry
5.	Which set contains only examples of synthetic polymers?	Nylon, glucose and Teflon	Plastic bags, proteins and polyester	Nylon bearings, polyethylene cups and epoxy glue	Epoxy glue, starch and Teflon
6.	One chemist studies the chemical composition of rocks, minerals and soils in the Earth's crust. Another studies reactions in comets and interstellar space. The two chemists belong to:	Environmental and nuclear chemistry	Astrochemistry and geochemistry	Inorganic and physical chemistry	Geochemistry and astrochemistry
7.	Which statement correctly describes medicinal chemistry?	It deals with the large-scale production of drugs in factories	It deals with the interaction between drugs and biological targets and the development of new medicinal agents	It deals with physical and chemical changes in living organisms	It deals with pollutants that harm human beings

Q#	Question	A	B	C	D
8.	Which set of methods is used to protect water that has been polluted?	Sedimentation, filtration and disinfection	Hydrogenation, polymerization and cracking	Titration, chromatography and distillation	Electroplating, galvanizing and alloying
9.	A chemist investigates why elements react the way they do. A technologist develops an instrument that analyses substances more quickly. A chemical engineer designs a plant to manufacture detergents on a large scale. These three activities are examples of, in order:	Technology, science, engineering	Engineering, science, technology	Science, technology, engineering	Science, engineering, technology
10.	Which statement about technology is NOT correct?	It is the systematic process of constructing and organising knowledge about the universe	It is the application of scientific knowledge to practical purposes	It results in the creation of tools, machines and systems	It has helped chemists analyse and identify substances more effectively
11.	Which statement best describes green chemistry?	The study of chemical processes occurring in plants	The large-scale production of chemicals at the lowest cost	The study of chemical and toxic substances that pollute the environment	The design of chemical products and processes that reduce the use of hazardous substances
12.	Which branch of chemistry is correctly matched with the area it studies?	Industrial chemistry: chemical and toxic pollutants	Nuclear chemistry: changes that occur in atomic nuclei	Astrochemistry: composition of the Earth's crust	Inorganic chemistry: all substances containing carbon

Scenario for MCQs 13-16

A university chemistry department has several research groups. Group 1 studies how carbohydrates, proteins, nucleic acids and lipids function in living organisms. Group 2 works on the question "How are drugs designed and developed for specific therapeutic purposes?" Group 3 investigates how greenhouse gases contribute to climate change.

Q#	Question	A	B	C	D
13.	Group 1 is working in which branch of chemistry?	Organic chemistry	Analytical chemistry	Biochemistry	Medicinal chemistry
14.	Group 2 is working in which branch of chemistry?	Medicinal chemistry	Biochemistry	Environmental chemistry	Polymer chemistry
15.	The research of Group 3 belongs to:	Astrochemistry	Nuclear chemistry	Physical chemistry	Environmental chemistry
16.	Group 1 and Group 2 often work together on a drug and enzyme project. This shows that:	Their branches of chemistry are identical	Chemistry has interdisciplinary areas in which sub-fields overlap	Medicinal chemistry is a part of geochemistry	Enzymes cannot be studied by chemists

Scenario for MCQs 17-20

In a pharmaceutical factory, chemists study how a compound interacts with an enzyme. Technologists develop instruments that check the purity of the tablets. Chemical engineers design the plant that produces the medicine in large quantities.

Q#	Question	A	B	C	D
17.	The chemists' study of how the compound interacts with the enzyme is an example of:	Science	Technology	Engineering	Green chemistry
18.	The instruments that check the purity of the tablets are the product of:	Science, because they explain the behaviour of the compound	Technology, because they apply scientific knowledge to create tools and machines	Engineering, because they study natural phenomena	Biochemistry, because they work on living organisms
19.	Which statement about the work of the chemical engineers is correct?	They investigate the natural world without any practical purpose	They develop new scientific theories only	They use science and mathematics to design and construct the production system	They only repair the tools made by technologists
20.	Which statement best describes how the three groups are related?	Each group works independently and their work has no connection	Technology and engineering produce the knowledge that science only applies	Engineering seeks to understand nature while science designs the plant	Science provides understanding that technology and engineering apply to practical problems

SECTION B (3 x 3 = 9 Marks)

Note: Attempt all questions.

Q	Question	Marks
Q1	A student says, "Chemistry only deals with making new substances in laboratories." (a) Define chemistry. (b) Use the definition to explain why the student's statement is incomplete.	**1 + 2**
Q2	Each branch of chemistry asks its own essential questions. Formulate one essential question for each of the following branches: (a) Physical chemistry (b) Organic chemistry (c) Environmental chemistry	**1 + 1 + 1**
Q3	Differentiate between science, technology and engineering. Give one example of each from chemistry.	**3**

SECTION C (1 x 6 = 6 Marks)

Note: Attempt the question below.

Q	Question	Marks
Q4	A chemical plant produces nylon fibre and plastic bags. A laboratory in the same company determines the composition of its products using different methods and instruments. Another team finds that the plant's waste gases are adding to greenhouse gases in the air. In the same plant, three more teams carry out the following work: (a) Nylon and plastic bags are examples of which type of substances? Name the branch of chemistry that studies them and state what it focuses on. **[1]** (b) Name the branch of chemistry that the laboratory is working in, and write one essential question that this branch can explore. **[1]** (c) Name the branch of chemistry that the second team is working in, and explain how greenhouse gases affect the environment. **[1]** **Identify the branch of chemistry in each case (1 mark each):** (d) Team 3 studies how fast the polymerization reactions take place and the energy changes that accompany them. **[1]** (e) Team 4 studies the metal catalysts and inorganic salts used in the production process. **[1]** (f) Team 5 redesigns the production process so that fewer hazardous substances are used and released. **[1]**	**6**

Al Amal Learning Center