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FBISE Chemistry Class 9
Topical workbook - Volume 3 of 3

127 questions arranged by official framework topic.
National Curriculum 2022-23; supported examinations from 2027.

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Periodic Table & Periodicity

Domain C: Inorganic Chemistry

1.5 + 1.5	OR	How shielding effect affects the atomic size down the group? Give one example of alkali group. شیلڈنگ ایفیکٹ گروپ میں ایٹمک سائز کیسے اثر انداز ہوتا ہے؟ الکلی گروپ سے ایک مثال دیں۔	03

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Group Properties and Elements

Domain C: Inorganic Chemistry

FBISE model paper | Section A Q10 | 0.5 marks

10.	X and Y are diatomic elements. X is less reactive than Y. What are elements X and Y?	Chlorine and iodine	Fluorine and nitrogen	iodine and bromine	oxygen and nitrogen

FBISE model paper | Section A Q11 | 0.5 marks

11.	Which pair of properties are both correct for a typical transition element?	Forms coloured compounds and soluble in water	High density and has variable oxidation states	Low density and high melting point	Low melting point and can act as a catalyst

First Annual 2025 | Section B Q2(ii) | 3 marks

(ii)	Give any two displacement reactions of halogens. ہیلوجنز کے کوئی سے دو ڈسپلیسمنٹ ری ایکشنز تحریر کریں۔	**1.5 +**	**OR**	Briefly describe the following properties of gas: گیس کی درج خصوصیات کی مختصر وضاحت کریں:	**1.5 +**

First Annual 2025 | Section B Q2(vi) | 3 marks

(vi)	Enlist any three characteristics of transition elements. ٹرانزیشن عناصر کے کوئی سے تین خواص تحریر کریں۔	**03**	**OR**	What is meant by NPK fertilizers? Why are these fertilizers used?	**2+1**

First Annual 2025 | Section C Q3 | 6 marks

Q.3	Compare given properties of metals and non- metals. میٹلز اور نان میٹلز کی درج شدہ خصوصیات کا موازنہ کریں: i Thermal conductivity تھرمل کنڈکٹیویٹی ii Ductility ڈکٹیلیٹی iii Melting point میلٹنگ پوائنٹ	**2x3**	**OR**	Draw electron dot and cross structures for the following: درج شدہ کے الیکٹران ڈاٹ اور کراس سٹرکچر بنائیں۔ **a)** NH_3 **b)** N_2 **c)** CH_4	**2x3**
Q.4	Give balanced reactions of HCl with:			How can alkanes be prepared by the following? Give	

First Annual 2025 | Section B Q2(vi) | 3 marks

(vi)	Enlist any three uses of transition elements. ٹرانزیشن عناصر کے کوئی سے تین استعمالات لکھیں۔	**03**

Second Annual 2025 | Section A Q2 | 1 mark

2.	The elements of _____ have one electron in their outer shell.	Group II	Group I	Group III	Group VII

Second Annual 2025 | Section B Q2(ii) OR | 3 marks

OR	Give any three differences between metals and non-metals. میٹلز اور نان میٹلز میں کوئی سے تین فرق تحریر کریں۔	1x3

Second Annual 2025 | Section B Q2(vi) | 3 marks

(vi)	What are halogens? State the general trends observed down this group in 'density' and 'reactivity'. ہیلوجینز کیا ہیں؟ اس گروپ میں نیچے جاتے ہوئے 'ڈینسٹی' اور 'ری ایکٹویٹی' کے عمومی رجحانات بیان کریں۔	1x3

Second Annual 2025 | Section C Q3 | 6 marks

Q.3	Electronic configuration of element X is given. Identify the possible group number, period number and likely name of this element. Compare the properties of this element with another element that is present below it in the same group. $1s^2, 2s^2, 2p^6, 3s^1$	**1+1 +1 +3**

First Annual 2026 | Section A Q8 | 1 mark

Which trend is observed down the Group in Group I-A elements?	All become gases	Melting point increases	Reactivity decreases	Density increases

First Annual 2026 | Section B Q2(ix) | 3 marks

(ix)	State the general trends observed down the group for elements of Group-I for their density, and reactivity.	**1.5 + 1.5**	**OR**
(x)	How are 'dissolved oxygen' and 'essential minerals'	**1.5**	

First Annual 2026 | Section C Q5 | 6 marks

Compare metals and non-metals in terms of their: **a.** Thermal conductivity **b.** Electrical conductivity **c.** Malleability and ductility	**2+2** **+2**

First Annual 2026 | Section A Q7 | 1 mark

Which of the following relationships is **INCORRECT** regarding relative reactivity of Halogens for displacement reactions?	$F_2 > Cl_2$	$Br_2 > F_2$	$Br_2 > I_2$	$Cl_2 > Br_2$

First Annual 2026 | Section B Q2(iii) OR | 3 marks

	reaction.	
٢	State the trend in melting point and density of Group I-A elements down the group.	**1.5 + 1.5**

First Annual 2026 | Section B Q2(vii) OR | 3 marks

	solution.	
	Complete the given displacement reactions of Halogens if they are possible: **a.** $Br_2 + 2KI \rightarrow$ **c.** $I_2 + 2KBr \rightarrow$ **b.** $F_2 + 2KCl \rightarrow$	**1x3**
	Classify the following compounds as alcohol, ether	

First Annual 2026 | Section B Q2(v) OR | 3 marks

	Complete the given displacement reactions if possible: **a.** $Cl_2 + 2KF \rightarrow$ **b.** $F_2 + 2KI \rightarrow$ **c.** $Cl_2 + 2KBr \rightarrow$	**1x3**
	Name three nitrogen containing fertilizers used in	

First Annual 2026 | Section B Q2(vii) | 3 marks

(vii)	What is meant by the thermal stability of hydrogen halides? Arrange HF, HCl, HBr, and HI in order of increasing thermal stability.	**2+1**

	b. $H_2S + Cl_2 \rightarrow 2HCl + S$				
Q.5	**a.** What is meant by exothermic reaction and endothermic reactions? **b.** Calculate the enthalpy change (ΔH) for given reaction. $H_{2(g)} + F_{2(g)} \rightarrow 2HF_{(g)}$ Bond energy values for H-H, F-F and H-F bonds are 436 kJ/mol, 155 kJ/mol and 567 kJ/mol.	**(1.5 + 1.5) +3**	**OR**	Explain in detail how the following properties change down a group in the periodic table for Group-IA elements: **a.** Atomic radius **b.** Reactivity Give reasons for each trend.	**3+3**

FBISE model paper | Section B Q2(ii) | 3 marks

(ii)	Predict reactions of Cl_2 with following halide ions. a. Br^{-1} b. I^{-1}	1+1+1

FBISE model paper | Section B Q2(v) | 3 marks

(v)	Give three examples of transition metals where they act as catalysts.	1+1+1

Second Annual 2025 | Section A Q1 | 1 mark

	Question سوال	A	B	C	D
1.	Halogens react with metals to form: ہیلوجنز دھاتوں کے ساتھ تعامل کر کے کیا تشکیل دیتے ہیں؟	Hydrides ہائیڈرائیڈز	Oxides آکسائیڈز	Sulphides سلفائیڈز	Halides ہیلائیڈز

Second Annual 2025 | Section B Q2(i) | 3 marks

(i)	Differentiate between soft and hard metals with one example each. نرم اور سخت دھاتوں میں فرق کریں اور ایک ایک مثال دیں۔	2+1

First Annual 2026 | Section B Q2(ix) OR | 3 marks

OR	Why Fluorine can oxidize and displace all other Halide ions? Give one example. فلورین دیگر ہیلائیڈ آئنز کو کیوں آکسیڈائز اور ریپلیس کر سکتی ہے؟ ایک مثال بھی دیں۔	03

First Annual 2026 | Section B Q2(vi) | 3 marks

(vi)	Write any three properties of transition element. ٹرانزیشن عناصر کے کوئی سے تین خواص لکھیں۔	1x3

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Atmosphere

Domain D: Environmental Chemistry

FBISE model paper | Section A Q29 | 0.5 marks

29.	Which gas cannot be removed from the exhaust gases of a petrol-powered car by its catalytic converter?	carbon dioxide	carbon monoxide	hydrocarbons	nitrogen dioxide

FBISE model paper | Section A Q30 | 0.5 marks

30.	Which noble gas is present in the largest percentage by volume in air?	argon	helium	krypton	neon

FBISE model paper | Section A Q57 | 0.5 marks

Scenario for MCQ (57-60)	**In a busy city, heavy traffic releases gases like carbon monoxide (CO), carbon dioxide (CO_2), and nitrogen oxides (NO_x). People living near roads often complain of breathing problems.**

57.	Which gas is most dangerous because it binds with haemoglobin?	CO_2	CO	NO_2	SO_2

FBISE model paper | Section A Q58 | 0.5 marks

Scenario for MCQ (57-60)	**In a busy city, heavy traffic releases gases like carbon monoxide (CO), carbon dioxide (CO_2), and nitrogen oxides (NO_x). People living near roads often complain of breathing problems.**

58.	Why is carbon monoxide toxic?	It increases oxygen supply	It forms carboxyhemoglobin reducing oxygen transport	It destroys the red blood cells completely upon contact	It damages the lung tissues

FBISE model paper | Section A Q59 | 0.5 marks

Scenario for MCQ (57-60)	**In a busy city, heavy traffic releases gases like carbon monoxide (CO), carbon dioxide (CO_2), and nitrogen oxides (NO_x). People living near roads often complain of breathing problems.**

59.	Which gas contributes most to global warming among these?	CO	CO_2	NO_2	SO_2

FBISE model paper | Section A Q60 | 0.5 marks

Scenario for MCQ (57-60)	**In a busy city, heavy traffic releases gases like carbon monoxide (CO), carbon dioxide (CO_2), and nitrogen oxides (NO_x). People living near roads often complain of breathing problems.**

60.	What is the main source of nitrogen oxides in cities?	Burning household garbage in residential areas.	Motor vehicles and the combustion of fossil fuels.	Industrial wastewater treatment plants.	The widespread use of air conditioners and refrigerators

First Annual 2025 | Section B Q2(ix) OR | 3 marks

How a closed system may contribute to the establishment of equilibrium in reversible reactions? Give one example.	1+2	OR	How do the following air pollutants cause harm? درج شدہ ہوائی آلودگیاں کیسے نقصان دہ ہیں؟ **a)** Carbon monoxide کاربن مونو آکسائیڈ **b)** Methane میتھین	03

First Annual 2025 | Section B Q2(iv) | 3 marks

(iv)	How do the following air pollutants cause harm? درج شدہ ہوائی آلودگیاں کیسے نقصان دہ ہیں؟ **a)** Carbon monoxide کاربن مونو آکسائیڈ **b)** Sulfur dioxide سلفر ڈائی آکسائیڈ	03	OR	Briefly d **a)** **b)** **c)**

Second Annual 2025 | Section A Q11 | 1 mark

11.	Catalytic converters help in controlling the emission of:	Cl_2	N_2, O_2	CO, NO	He

Second Annual 2025 | Section B Q2(iv) | 3 marks

(iv)	What is meant by Greenhouse effect? Enlist any two greenhouse gases. گرین ہاؤس ایفیکٹ سے کیا مراد ہے؟ کوئی سی دو گرین ہاؤس گیسز کے نام لکھیں۔	2+1

First Annual 2026 | Section A Q9 | 1 mark

9.	The approximate percentage of nitrogen (N_2) in clean, dry air is:	10%	21%	78%	90%

First Annual 2026 | Section A Q10 | 1 mark

10.	Sulfur dioxide (SO_2) is released into the air during:	Use of catalytic converters in cars and vehicle	Combustion of fossil fuels containing sulfur compounds	Melting of ice on glaciers	Rusting of iron in industry

First Annual 2026 | Section A Q8 | 1 mark

The percentage of oxygen in clean, dry air is about:	21%	50%	78%	92%

First Annual 2026 | Section A Q8 | 1 mark

Carbon monoxide and particulates are mainly produced by:	Complete combustion	Incomplete combustion	Plant respiration	Evaporation

First Annual 2026 | Section A Q9 | 1 mark

Sulfur contributes to acid rain mainly by forming:	HNO_3	H_2CO_3	HCl	H_2SO_4

FBISE model paper | Section A Q1(x) | 1 mark

(x)	What is the purpose of using catalytic converters in vehicles?	To increase fuel consumption	To reduce harmful gases in exhaust	To make cars run faster	To add more sulfur dioxide to the air

FBISE model paper | Section A Q1(xi) | 1 mark

(xi)	Which compound is most likely to damage marble buildings due to the reaction with acid rain?	$CaSO_4$	$Ca(NO_3)_2$	$CaCO_3$	CaC_2O_4

First Annual 2026 | Section B Q2(i) | 3 marks

Attempt the following parts: **(11 x 3 =33)** سوال نمبر2 درج شدہ اجزاء کے مختصر جوابات تحریر کریں۔

How acid rain damages marble structures. Write reactions of sulphuric and nitric acids. تیزابی بارش سنگِ مرمر کی عمارتوں کو کس طرح نقصان پہنچاتی ہے؟ سلفیورک اور نائٹرک ایسڈ کے ری ایکشنز تحریر کریں۔	1.5 + 1.5	OR	Draw the structural formula of CH_3OH and identify functional group in it. CH_3OH کا سٹرکچرل فارمولا بنائیں نیز اس میں فنکشنل گروپ کی پہچان کریں۔	2+1

First Annual 2026 | Section B Q2(iv) OR | 3 marks

Increased levels of methane contribute to global warming and climate change. How? میتھین کی مقدار میں اضافہ عالمی حدت (Global Warming) اور موسمیاتی تبدیلی میں کردار ادا	03

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Environmental Chemistry- Water

Domain D: Environmental Chemistry

First Annual 2025 | Section B Q2(v) | 3 marks

(v)	Suggest any three measures to control water scarcity problem in Pakistan. پاکستان میں پانی کی کمی کے مسئلے پر قابو پانے کے لیے کوئی سے تین حل تجویز کریں۔	1x3	OR	Give chemical reactions of alkanes for: الکینز کے درج شدہ ری ایکشنز تحریر کریں۔ a) Complete combustion مکمل کمبسچن	1.5 + 1.5

First Annual 2025 | Section B Q2(vi) OR | 3 marks

OR	What is meant by NPK fertilizers? Why are these fertilizers used?	2+1

First Annual 2025 | Section B Q2(v) | 3 marks

(v)	Briefly state any three causes of water scarcity in Pakistan.	03	OR	Write the reactions of CH_4 with Cl_2 in: CH_4 کے Cl_2 کے ساتھ درج کنڈیشنز میں ری ایکشن لکھیں۔	1.5 +

Second Annual 2025 | Section B Q2(v) | 3 marks

(v)	What are the sources of Nitrates and Phosphates found in water? Why are they considered harmful?	03

Second Annual 2025 | Section B Q2(vi) OR | 3 marks

ends vity'. ہیلو جینز کریں۔	1x3	OR	Complete the given table: درج ٹیبل کو مکمل کریں: **Disease** بیماریاں / **Cause** وجہ / **Symptoms** علامات Dysentery ڈائیسنٹری Typhoid ٹائی فائڈ Hepatitis ہیپاٹائٹس	2+1

First Annual 2026 | Section B Q2(ix) OR | 3 marks

1.5 + 1.5	OR	Name the three main types of chemical fertilizers commonly used in agriculture.	1+1 +1

First Annual 2026 | Section B Q2(x) | 3 marks

	reactivity.	1.5	
(x)	How are 'dissolved oxygen' and 'essential minerals' beneficial for aquatic life? Describe briefly.	1.5 + 1.5	OR

First Annual 2026 | Section A Q9 | 1 mark

9.	Which factor increases water scarcity in Pakistan?	Population growth	Cloud formation	Wind speed	Soil erosion

First Annual 2026 | Section B Q2(ix) | 3 marks

(ix)	Why are Sedimentation and Chlorination used in water treatment?	1.5 + 1.5

First Annual 2026 | Section B Q2(viii) | 3 marks

				b. $I_2 + 2KCl \rightarrow$	
(viii)	Write benefits of dissolved oxygen and essential minerals found in water.	**1.5 + 1.5**	**OR**	Classify the following compounds as alcohol, ether and phenol: **a.** $CH_3OCH_2CH_3$ **c.** C_6H_5OH	**1+1 +1**

First Annual 2026 | Section A Q10 | 1 mark

Which substance in natural water is useful for aquatic life?	Dissolved oxygen	Sewage	Dissolved Nitrates	Dissolved Plastics

First Annual 2026 | Section B Q2(vi) OR | 3 marks

c. $Cl_2 + 2KBr \rightarrow$	
Name three nitrogen-containing fertilizers used in agriculture.	**1+1 +1**

FBISE model paper | Section B Q2(iv) | 3 marks

(iv)	How do following water pollutants effect living organisms? 1. House hold wastes 2. Agricultural wastes 3. Metals	1+1+1

FBISE model paper | Section B Q2(v) OR | 3 marks

OR	What are the primary nutrients provided by urea, ammonium salts, and nitrates when used as fertilizers?	1+1+1

First Annual 2026 | Section B Q2(v) | 3 marks

(v)	Briefly describe any two common water-borne diseases. پانی سے پھیلنے والی کسی بھی دو عام بیماریوں کی مختصر وضاحت کریں۔	1.5 + 1.5

First Annual 2026 | Section B Q2(vi) OR | 3 marks

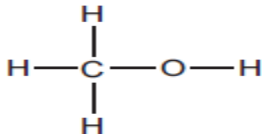
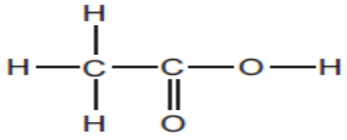
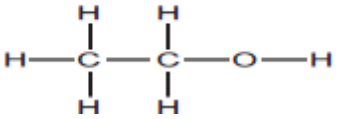
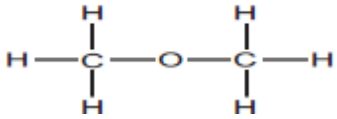
OR	Enlist any three harmful substances that may be found in natural water sources.	03

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Organic Chemistry

Domain E: Organic Chemistry

FBISE model paper | Section A Q12 | 0.5 marks

12.	Which two compounds are members of the same homologous series? 1  2  3  4 	1 and 2	1 and 3	1 and 4	2 and 4
	Which structure is not an		CH_3		

FBISE model paper | Section A Q27 | 0.5 marks

27.	Which of the following groups contain compounds that all belong to the same homologous series?	CH_4 C_2H_6 C_3H_6	CH_4 C_2H_6 C_3H_8	C_2H_4 C_3H_6 C_4H_{10}	C_3H_4 C_3H_8	C_3H_6

FBISE model paper | Section A Q28 | 0.5 marks

28.	Butane and methylpropane are isomers. Which formula is different for the two isomers?	empirical formula	general formula	molecular formula	structural formula

FBISE model paper | Section A Q53 | 0.5 marks

Scenario for MCQ (53-56)	**A student studies a group of organic compounds: methane (CH_4), ethane (C_2H_6), propane (C_3H_8), and butane (C_4H_{10}). He observes that each compound differs by one carbon atom and shows similar chemical behavior.**				
53.	If the student wants to continue the study with the next compound in this exact same group, what should its chemical formula be?	C_5H_{10}	C_4H_{12}	C_5H_{12}	C_6H_{14}

FBISE model paper | Section A Q54 | 0.5 marks

Scenario for MCQ (53-56)	**A student studies a group of organic compounds: methane (CH_4), ethane (C_2H_6), propane (C_3H_8), and butane (C_4H_{10}). He observes that each compound differs by one carbon atom and shows similar chemical behavior.**				
54.	What is the common difference between successive members?	CH_2 group	CH_3 group	C_2H_4 group	H_2 group

FBISE model paper | Section A Q55 | 0.5 marks

Scenario for MCQ (53-56)	**A student studies a group of organic compounds: methane (CH_4), ethane (C_2H_6), propane (C_3H_8), and butane (C_4H_{10}). He observes that each compound differs by one carbon atom and shows similar chemical behavior.**				
55.	Why do these compounds show similar chemical properties?	Same molecular mass	Same functional group	Same number of atoms	Same physical state

FBISE model paper | Section A Q56 | 0.5 marks

Scenario for MCQ (53-56)	**A student studies a group of organic compounds: methane (CH_4), ethane (C_2H_6), propane (C_3H_8), and butane (C_4H_{10}). He observes that each compound differs by one carbon atom and shows similar chemical behavior.**				
56.	Which property shows a gradual change in a homologous series?	Chemical reactivity	Functional group	Boiling point	Type of bonding

First Annual 2025 | Section B Q2(i) OR | 3 marks

OR	Draw structural formula of the following: درج شدہ کا ساختی فارمولا بنائیں: **a)** Methanol میتھانول **b)** Methanoic acid میتھانوئیک ایسڈ	**1.5 + 1.5**

First Annual 2025 | Section B Q2(vii) | 3 marks

(vii)	Write general formulas of the following. Also give one example of each. درج شدہ کے جنرل فارمولے تحریر کریں نیز ایک مثال بھی دیں۔ **a)** Alkene الکین **b)** Alkyne الکائن **c)** Alcohol الکحل	**03**

First Annual 2025 | Section B Q2(i) OR | 3 marks

OR	Draw structural formula of the following: درج شدہ کے سٹرکچرل فارمولے بنائیں: a) Methanoic Acid میتھانوئیک ایسڈ b) Propane پروپین	1.5 + 1.5

First Annual 2025 | Section B Q2(vii) | 3 marks

(vii)	Write general formula of the following. Give an example of each. درج شدہ کے جنرل فارمولے تحریر کریں نیز ایک مثال بھی دیں۔ a) Alkene الکین b) Carboxylic acid کاربوکسلک ایسڈ c) Alkane الکین	1.5 + 1.5	OR	Identify the period number of the following elements by their electronic configuration: درج شدہ عناصر کے پیریڈ نمبر کی شناخت الیکٹرانک کنفیگوریشن کے ذریعے کریں۔ a) $^{6}_{3}Li$ b) $^{9}_{5}B$ c) $^{21}_{10}Ne$	03

Second Annual 2025 | Section A Q9 | 1 mark

9.	The functional group in amines is: امائینز میں کون سا فنکشنل گروپ ہوتا ہے؟	$-OH$	$-COOH$	$-CHO$	$-NH_2$

Second Annual 2025 | Section B Q2(i) OR | 3 marks

OR	Draw the structural formula of C_4H_{10}. Is it a saturated hydrocarbon or unsaturated hydrocarbon? C_4H_{10} کا ساختی فارمولا بنائیں۔ کیا یہ ہائیڈروکاربن سیر شدہ ہے یا غیر سیر شدہ ہے؟	

Second Annual 2025 | Section B Q2(vii) | 3 marks

(vii)	Compare 'aldehydes' with 'ketones'. Give one example of each. ایلڈی ہائیڈز اور کیٹونز کا موازنہ کریں۔ ہر ایک کی ایک مثال بھی دیں۔	03

First Annual 2026 | Section A Q11 | 1 mark

11. Which of the following can have more than one structural formula?

CH_4	C_2H_6	C_3H_8	C_4H_8

First Annual 2026 | Section A Q10 | 1 mark

10. The general formula of Carboxylic acids is:

C_nH_{2n+2} COOH	$C_nH_{2n}O_2$	$C_nH_{2n+1}COOH$	$C_nH_{2n}COOH$

First Annual 2026 | Section B Q2(ix) OR | 3 marks

OR	What is meant by 'homologous series' in organic chemistry? Why do members of a homologous series have similar chemical properties?	2+1
	What is meant by nutrition? Why is healthy eating	

First Annual 2026 | Section B Q2(viii) OR | 3 marks

1.5 + 1.5	OR	Classify the following compounds as alcohol, ether and phenol: **a.** $CH_3OCH_2CH_3$ **c.** C_6H_5OH **b.** CH_3OH	1+1 +1
		What is meant by 'homologous series' in organic	

First Annual 2026 | Section B Q2(ix) | 3 marks

(ix)	Write any three characteristics of homologous series.	**03**

First Annual 2026 | Section B Q2(viii) | 3 marks

(viii)	Draw the structural formula of ethene (C_2H_4) and ethanol (C_2H_5OH) showing the correct bonds.	**1.5 + 1.5**

FBISE model paper | Section A Q1(i) | 1 mark

(i)	Suggest the primary focus of organic chemistry?	The behavior of inorganic salts	The study of carbon-based molecules and their reactions	The study of metals and alloys	The properties of gases and their interactions

FBISE model paper | Section B Q2(vi) | 3 marks

(vi)	Differentiate between molecular formula and structural formula using the example of structural isomers of C_4H_{10}.	1.5+1.5

First Annual 2026 | Section B Q2(i) OR | 3 marks

Draw the structural formula of CH_3OH and identify functional group in it. CH_3OH کا سٹرکچرل فارمولا بنائیں نیز اس میں فنکشنل گروپ کی پہچان کریں۔	**2+1**

OR	Draw the different possible correct structural formulae of the following: درج شدہ کے مختلف ممکن درست سٹرکچرل فارمولے بنائیں: a. C_4H_{10} b. C_4H_8	1.5 + 1.5

APOLLO

Hydrocarbons

Domain E: Organic Chemistry

FBISE model paper | Section A Q26 | 0.5 marks

26.	Alkanes are a homologous series of organic compounds. Which statement about alkanes is correct?	Their boiling points increase as the length of the carbon chain increases	Their general formula is C_nH_{2n}	They are unsaturated hydrocarbons	They take part in addition reactions

First Annual 2025 | Section B Q2(v) OR | 3 marks

OR	Give chemical reactions of alkanes for: الکینز کے درج شدہ ری ایکشنز تحریر کریں۔ **a)** Complete combustion مکمل کمبسچن **b)** Incomplete combustion نامکمل کمبسچن	**1.5 + 1.5**

OR	How can alkanes be prepared by the following? Give a balanced chemical equation for each: الکینز کیسے درج شدہ سے بنائے جاسکتے ہیں؟ کیمیائی ری ایکشنز لکھیں۔ **a)** Alkynes الکائنز **b)** Alkyl halide الکائل ہیلائیڈ What is corrosion? Write its chemical reaction	**3x2**

03	OR	Write the reactions of CH_4 with Cl_2 in: CH_4 کے Cl_2 کے ساتھ درج کنڈیشنز میں ری ایکشن لکھیں۔ **a)** In diffused sunlight/UV light ڈفیوزڈ یا UV لائٹ میں **b)** In direct sunlight سورج کی براہ راست روشنی میں	1.5 + 1.5

First Annual 2025 | Section C Q4 OR | 6 marks

OR	Explain the preparation of alkanes by given methods: انکینز کی درج شدہ طریقوں سے تیاری بیان کریں: **a)** Hydrogenation of alkenes انکینز کی ہائیڈروجنیشن سے **b)** Cracking of larger hydrocarbons	**3x2**

Second Annual 2025 | Section A Q4 | 1 mark

4.	Which of the following is a saturated hydrocarbon?	$CH_2 = CH_2$	$CH_2 = CHCl$	$CH \equiv CH$	$CH_3 - CH_3$

Second Annual 2025 | Section B Q2(v) OR | 3 marks

OR	What is meant by substitution reaction? Write chemical equation for halogenation of methane.	**1+2**

Second Annual 2025 | Section C Q4 OR | 6 marks

	What are alkanes? Why are they generally unreactive? Write any two methods of preparation of alkanes along with chemical equations.	**1+1 +4**

First Annual 2026 | Section A Q12 | 1 mark

[redacted] An alkane is most likely to undergo:	Addition reaction	Neutralization reaction	Dehydration reaction	Substitution reaction

First Annual 2026 | Section B Q2(x) OR | 3 marks

1.5 + 1.5	OR	What are substitution reactions? Which type of compounds shows these reactions?	2+1

[redacted] (Marks 18)

First Annual 2026 | Section C Q5 OR | 6 marks

OR	How ethane can be prepared by: **a.** Hydrogenation of alkynes **b.** Reduction of alkyl Halides	**3+3**

First Annual 2026 | Section A Q12 | 1 mark

Reduction of propyl chloride mainly produces:	Propene	Propane	Methane	Propyne

First Annual 2026 | Section B Q2(x) | 3 marks

				series have similar chemical properties?	
(x)	Why are alkanes called saturated hydrocarbons? Write their general formula to determine their molecular formula.	**2+1**	**OR**	What is meant by nutrition? Why is healthy eating important for the human body?	**1+2**

First Annual 2026 | Section C Q5 OR | 6 marks

	Compare its ionization energy with magnesium.	
OR	What are substitution reactions? Why alkanes show substitution reactions? Illustrate the monosubstituted product formed from Methane when it reacts with Cl_2.	**2+2 +2**

First Annual 2026 | Section A Q11 | 1 mark

11. Which compound is an alkane?	C_2H_4	C_4H_{10}	C_2H_2	C_3H_6

First Annual 2026 | Section A Q12 | 1 mark

12. Substitution reactions commonly occur in:	Alkanes	Alkynes	Alkenes	Aldehydes

First Annual 2026 | Section B Q2(x) | 3 marks

(x)	Write chemical equations for the combustion of methane: **a.** In limited supply of oxygen **b.** In excess supply of oxygen	**1.5 + 1.5**

SECTION

FBISE model paper | Section A Q1(iv) | 1 mark

(iv)	Suggest the correct reagents in the reduction of alkyl halides.	Al_2O_3 at 35^0C	Conc.H_2SO_4 at 170^0C	Zn + Dust	Zn + HCl

OR	How can sunlight be important in substitution reaction of methane with chlorine? Explain with reactions.	1+2

OR	How alkanes can be prepared from the following and also mention the type of reactions in each case. A. $CH_3 – C = CH_2$ B. CH_3-C≡C-CH_3 C. $CH_3CH_2CH_2Cl$	2x3

Why alkanes are generally considered unreactive? Explain in context of their structure. الکینز (Alkanes) کو عموماً غیر عامل کیوں سمجھا جاتا ہے؟ ان کی ساخت کے حوالے سے وضاحت	03

APOLLO

Biochemistry

Domain E: Organic Chemistry

FBISE model paper | Section A Q37 | 0.5 marks

37.	Enzymes help in digestion of food in the human body. Enzymes are:	Carbohydrates	Proteins	Lipids	Minerals

First Annual 2025 | Section B Q2(viii) OR | 3 marks

OR	What are carbohydrates? Give any two examples. کاربوہائیڈریٹس کیا ہوتے ہیں؟ کوئی سی دو مثالیں دیں۔	03

First Annual 2025 | Section C Q6 OR | 4 marks

1+ 1.5 + 1.5	OR	What is meant by 'Lipids' and 'Proteins'? Write two sources of each. 'لپڈز' اور 'پروٹین' کیا ہوتے ہیں؟ ہر ایک کے دو ذرائع بھی لکھیں۔	2+2

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First Annual 2025 | Section B Q2(viii) OR | 3 marks

1.5 + 1.5	OR	What are lipids? Enlist any two sources of lipids. لپڈز کیا ہیں؟ لپڈز کے کوئی سے دو ذرائع لکھیں۔	2+1

First Annual 2025 | Section C Q6 OR | 4 marks

OR	What are 'carbohydrates' and 'proteins'? Write two sources of each.	2+2

Second Annual 2025 | Section A Q10 | 1 mark

10. One of the main source of protein is: پروٹین کا ایک بڑا ذریعہ _____ ہے۔	Meat گوشت	Oil تیل	Water پانی	Sugar چینی

Second Annual 2025 | Section B Q2(viii) OR | 3 marks

State the physical change observed by adding water to $CuSO_4$. Also write its reversible balanced chemical reaction. پانی کو $CuSO_4$ میں شامل کرنے سے کیا فزیکل تبدیلی رونما ہوتی ہے؟ اس کا متوازن ریورسیبل کیمیائی ری ایکشن بھی لکھیں۔	03	OR	Write at least one source of: درج شدہ کا ایک ایک ذریعہ تحریر کریں: Carbohydrate — کاربوہائیڈریٹ Protein — پروٹین Lipids — لپڈز	03

Second Annual 2025 | Section C Q6 OR | 4 marks

$WO_3 + 3H_2 \longrightarrow W + 3H_2O$ What is meant by biomolecules? Name any three major types of biomolecules found in human body. For each type of biomolecule, write its one major function in human body. بائیومالیکیولز سے کیا مراد ہے؟ جانداروں میں پائی جانے والی اس کی تین اقسام کے نام لکھیں۔ نیز ہر	1+3

First Annual 2026 | Section C Q4 OR | 6 marks

OR	Discuss the functions of carbohydrates and proteins in human body. (any three specific functions each)

First Annual 2026 | Section A Q11 | 1 mark

11. Fish is a good source of:	Carbohydrate	Sugar	Protein	Glucose

First Annual 2026 | Section B Q2(x) OR | 3 marks

	series have similar chemical properties?	
OR	What is meant by nutrition? Why is healthy eating important for the human body?	

First Annual 2026 | Section C Q3 OR | 6 marks

OR	Explain the importance of lipids as biomolecules, by mentioning their specific sources and functions in the body. (any three each)	06

First Annual 2026 | Section B Q2(ix) OR | 3 marks

Give two examples of carbohydrate-rich foods. Briefly explain the role of carbohydrates in human body.	1+2

First Annual 2026 | Section B Q2(vii) OR | 3 marks

What is meant by healthy eating? How does it support body functions?	2+1

First Annual 2026 | Section B Q2(viii) OR | 3 marks

	Name the three main biomolecules and state one food source of each.	1+1 +1

FBISE model paper | Section B Q2(vii) OR | 3 marks

OR	Describe carbohydrates as more efficient source of energy than fats and proteins.	03

FBISE model paper | Section C Q5 OR | 6 marks

1+2+3	**OR**	Identify sources of lipids and their recommended daily intake for young adults.	3+3

First Annual 2026 | Section B Q2(iii) | 3 marks

ing of the human body?

غذائیت (Nutrition) کیا ہے؟ یہ انسانی جسم کے افعال کے لیے کیوں ضروری ہے؟ 2+1

What is the role of carbohydrates in daily activities? How a deficiency of carbohydrates can affect the energy levels and functioning of the human body?

APOLLO

Separation Techniques

Domain F: Empirical Data Collection and Analysis

First Annual 2026 | Section A Q11 | 1 mark

11. In a sugar solution, sugar acts as: چینی، کس محلول میں چینی کیا ہے؟	Solvent محلل	Solute حل پذیر (منحل)	Suspension سسپنشن	Colloid کولائیڈ

First Annual 2026 | Section B Q2(x) | 3 marks

(x)	Briefly describe solute and solvent. Give one example of each. منحل اور محلل کی مختصر وضاحت کریں۔ ہر ایک کی ایک مثال دیں۔	1.5 + 1.5