



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-1 CHAPTER-2+3

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	How many electrons are present in Mg^{2+} ?	9	10	11	12	☐	☐	☐	☐
2.	Which one of the following orbitals has double dumbbell shape?	s	p	d	F	☐	☐	☐	☐
3.	The success _____ values is an index of the valance of an atom	Electronegativity	Electron affinity	Ionization energy	Ionic radios	☐	☐	☐	☐
4.	Which one of the following elements has the electronic configuration $[\text{Ar}]4s^03d^9$?	Cu^{+1}	Cu^{+2}	Zn^{+1}	Zn^{+2}	☐	☐	☐	☐
5.	$1s^22s^22p^63s^1$ is the electronic configuration of Na^+ , correspond to	Mg	Na	Ne	F	☐	☐	☐	☐
6.	The clockwise spin of electron is represented by	+1/2	-1/2	+2/3	-2/3	☐	☐	☐	☐
7.	The values of magnetic quantum number for 3d-subshell are	3	5	7	0	☐	☐	☐	☐
8.	Which one of the following properties decreases along the period?	Ionization energy	Electron affinity	Atomic radius	Electro-negativity	☐	☐	☐	☐
9.	Electron was discovered by	Millikan	Rutherford	Neil Bohr		☐	☐	☐	☐
10.	All of the followings are factors affecting electronegativity except	Size of atom	Nuclear charge	Screening by inner electrons	Number of lone pairs	☐	☐	☐	☐
11.	Which one of the following cations have the lowest polarizing power?	Li^{+1}	Be^{+2}	Na^{+1}	Al^{+3}	☐	☐	☐	☐
12.	Which one of the following molecules have Trigonal bipyramid shape?	PCl_5	H_2S	SF_6	ClO_3^{-1}	☐	☐	☐	☐
13.	How many electrons are present in Mg^{2+}	9	10	11	12	☐	☐	☐	☐
14.	The octet rule applies well to the atoms in the _____ row of periodic table	First	Second	Third	Fourth	☐	☐	☐	☐
15.	Which type of intermolecular force of attraction is present in water and ammonia?	Dipole-Dipole	H-bonding	Debye	Ion-Dipole	☐	☐	☐	☐
16.	In Ozone molecule, central oxygen atom donates is electron pair with other oxygen atom and form	Ionic bond	Covalent bond	Metallic bond	Coordinate covalent bond	☐	☐	☐	☐
17.	The second energy level can hold up to _____ electrons.	2	6	8	10	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-1 CHAPTER-2+3

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section ‘B’ AND ‘C’ comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five.

(5 × 3 = 15)

(i)	Discuss factors affecting the ionization energy.	3
(ii)	What do you know about Pauli’s exclusion principle and Hund’s rule?	3
(iii)	Draw dot-and-cross diagram for SeF ₆ molecule. Also predict its shape on the basis of VSEPR model.	3
(iv)	Explain sp hybridization of acetylene.	3
(v)	What you understand by bond order? Draw MO diagram of He ₂ molecule.	3
(vi)	Why the size of anions always larger than parent atoms?	3

SECTION-C (MARKS 13)

Note: Attempt All Parts.

(06 + 07 = 13)

Q.3	Explain Azimuthal quantum number in detail.	6
Q.4	Describe fundamental principle of VBT. Explain the formation of HF and N ₂ on the basis of VBT.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-2 CHAPTER-4+5

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	A flask contains 1 dm ³ of CO at STP. The flask contains CO	28.0 g	14.0 g	1.96 g	2.84 g	☐	☐	☐	☐
2.	The mole of the amount of a substance that contains _____ representative parities.	6.02×10^{23}	6.02×10^{-23}	12.04×10^{23}	3.01×10^{23}	☐	☐	☐	☐
3.	The molar volume of an ideal gas at STP is	22.4 dm ³	44.8 dm ³	67.2 dm ³	11.2 dm ³	☐	☐	☐	☐
4.	One mole of Na and Al has same number of	Molecules	Electrons	Atoms	Protons	☐	☐	☐	☐
5.	The reactant that does not completely use in the reaction, is called	Excess reactant	Active reactant	Limiting reactant	Spectator reactant	☐	☐	☐	☐
6.	Reactant that is left unreacted after the completion of reaction is called	Limiting	Active	Excess	Remaining	☐	☐	☐	☐
7.	The volume of 3.0 moles of gaseous molecule at STP is	22.4 dm ³	44.8 dm ³	67.2 dm ³	11.2 dm ³	☐	☐	☐	☐
8.	The molar mas of a gas which has density of 1.43 g /dm ³ at STP is_____.	16.0 amu	32.0 amu	48.0 amu	64.0 amu	☐	☐	☐	☐
9.	The word stoichiometry is derived from Greek word, Steichen means	Compounds	Ion	Element	Molecular ion	☐	☐	☐	☐
10.	Which one of following processes involve a weakly attraction between particles?	Condensation	Freezing	Crystallization	Evaporation	☐	☐	☐	☐
11.	The temperature at which the vapour pressure of a liquid is _____ to the atmospheric pressure is called the boiling point of liquid.	Lesser	Greater	Equal	Negligible	☐	☐	☐	☐
12.	The distillation under reduced pressure is called	Fractional distillation	Vacuum distillation	Steam distillation	Pressure distillation	☐	☐	☐	☐
13.	A device that measures heat flow is called	Thermometer	Viscometer	Calorimeter	Lactometer	☐	☐	☐	☐
14.	The change in internal energy is symbolically is indicated by	ΔH°	ΔE°	ΔG°	ΔS°	☐	☐	☐	☐
15.	The rate of reaction _____ as the reaction proceeds.	Increases	Decreases	Remains the same	May increase or decrease	☐	☐	☐	☐
16.	18.06×10^{23} molecules of hydrogen gas combine with 2 moles of oxygen to produce _____ of H ₂ O.	1 mole	2 moles	3 moles	4 moles	☐	☐	☐	☐
17.	Boiling point of glycerin at 760 torr is _____.	290°C	210°C	100°C	190°C	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-2 CHAPTER 4+5

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five.

(5 × 3 = 15)

(i)	When 100 g of Mg is treated with dilute HCl. What volume of hydrogen gas can be collected at STP?	3
(ii)	How many grams of NaOH required to neutralize 40 cm ³ of 0.5 M HCl solution $\text{NaOH}_{(aq)} + \text{HCl}_{(aq)} \longrightarrow \text{NaCl}_{(aq)} + \text{H}_2\text{O}_{(l)}$	3
(iii)	Define and explain phenomenon of surface tension.	3
(iv)	If 24 g of KClO_3 is decomposed, how many moles and how much mass of oxygen is produced?	3
(v)	What is vacuum distillation? Explain its application.	3
(vi)	How does intermolecular forces and shape of molecules affect the viscosity of liquid?	3

SECTION-C (MARKS 13)

Note: Attempt All Parts.

(06 + 07 = 13)

Q.3	Define the following terms with examples: (i) Molar volume (ii) Avogadro's number (iii) Molar mass (iv) Mole	6
Q.4	Explain hydrogen bonding and London forces.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-3 CHAPTER 6+7

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	Standard state for a gas is	0.1 atm	0.5 atm	1.0 atm	1.1 atm	☐	☐	☐	☐
2.	The rate of reaction _____ as the reaction proceeds.	Increases	Decreases	Remains the same	May increase or decrease	☐	☐	☐	☐
3.	The enthalpy changes when one mole of a substance is completely burnt in the excess of oxygen under standard conditions, is called	Standard enthalpy of reaction	Standard enthalpy of formation	Standard enthalpy of combustion	Standard enthalpy of solution	☐	☐	☐	☐
4.	The enthalpy change that accompanies the formation of _____ mole compound from its elements is called standard enthalpy of formation	Certain	Given	One	Two	☐	☐	☐	☐
5.	As ionic radius increases, the lattice energy	Remains constant	Increases	Decreases	Become zero	☐	☐	☐	☐
6.	The energy change of solution formation depends on interactions such as	Solute-solute	Solvent- solvent	Solute-solvent	All of them	☐	☐	☐	☐
7.	The heat or thermal energy required to raise the temperature of one gram of water from 14.5°C to 15.5°C is called	BTU	Calorie	Joule	Kilo joule	☐	☐	☐	☐
8.	The energy released when one mole of ionic compound (solid) is formed from constituent gaseous ions, called	Ionization energy	Bond energy	Lattice energy	Thermal energy	☐	☐	☐	☐
9.	The order of reaction is independent of reactant concentration, the overall order of reaction would be	First	Second	Third	Zero	☐	☐	☐	☐
10.	Enzyme are _____ in living system.	Substrates	Products	Reactants	Catalysts	☐	☐	☐	☐
11.	The number of molecules of reactants participating in the rate determining step is	Molecularity	Order of reaction	No. of catalyst	No. of activator	☐	☐	☐	☐
12.	$\text{CHCl}_3(l) + \text{Cl}_2(g) \longrightarrow \text{CCl}_4(l) + \text{HCl}(g)$ has a _____ order of reaction	Zero	First	Second	Fractional	☐	☐	☐	☐
13.	The effect of temperature on rate of reaction is given by	Maxwell equation	Boltzmann equation	Arrhenius equation	Henderson equation	☐	☐	☐	☐
14.	The reaction between H_2 and Cl_2 to produce HCl is _____ order reaction.	A half	First	One and half	Zero	☐	☐	☐	☐
15.	The relationship between half life and rate constant depends on	Activation energy	Rate of reaction	Molecularity	Order of reaction	☐	☐	☐	☐
16.	The value of rate constant changes with	Pressure	Volume	Temperature	Catalyst	☐	☐	☐	☐
17.	For reaction $\text{NO}_{2(g)} + \text{CO}_{(g)} \longrightarrow \text{NO}_{(g)} + \text{CO}_{2(g)}$, the order of reaction with respect to CO is	Zero	First	Second	Third	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-3 CHAPTER 6+7

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five. (5 × 3 = 15)

(i)	Classify the reactions as exothermic or endothermic. Give one example in each case.	3
(ii)	Name and define units of thermal energy.	3
(iii)	Explain standard enthalpy of reaction and standard enthalpy of formation.	3
(iv)	Describe rate of reaction and rate constant.	3
(v)	Justify the statement that the unit of rate constant of a second order reaction is $\text{dm}^3 \text{mol}^{-1}\text{s}^{-1}$.	3
(vi)	Draw energy diagrams that represents the effect of a catalyst in terms of the activation energy.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts. (06 + 07 = 13)

Q.3	Define the terms heat capacity, internal energy and enthalpy of a substance with examples.	6
Q.4	Derive the equilibrium constant, K_c expression from the equation for homogenous reaction.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-4 CHAPTER-8+9

Name:	Roll No.	Section:
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	The equilibrium can be expressed in terms of the equilibrium moles of gases as _____.	K_c	K_n	K_p	K_x	☐	☐	☐	☐
2.	At chemical equilibrium, the concentrations of reactants and products become _____.	Equal	Unequal	Constant	Zero	☐	☐	☐	☐
3.	K_p depends on	Catalyst	Pressure	Volume	Temperature	☐	☐	☐	☐
4.	The relationship between K_p and K_c is given as	$K_p = K_c \left[\frac{P}{n} \right]^{\Delta n}$	$K_p = K_c (p)^{\Delta n}$	$K_p = K_c (p)^{\Delta n}$	$K_p = K_c (RT)^{\Delta n}$	☐	☐	☐	☐
5.	The changes in pressure or volume do not affect such equilibrium in which	$n_{\text{reactants}} > n_{\text{products}}$	$n_{\text{reactants}} < n_{\text{products}}$	$n_{\text{reactants}} = n_{\text{products}}$	$n_{\text{reactants}} \neq n_{\text{products}}$	☐	☐	☐	☐
6.	Catalyst increases the rate of reaction at which equilibrium is established but it doesn't affect the _____ of the reaction mixture	Initial concentration	Equilibrium concentration	Rate constant	Any given concentration	☐	☐	☐	☐
7.	The optimum conditions for the maximum production of SO_3 are	Low temperature and low pressure	Low temperature and high pressure	High temperature and low pressure	High temperature and high pressure	☐	☐	☐	☐
8.	Mathematically, K_c is equal to	$K_c > \frac{K_f}{K_r}$	$K_c < \frac{K_f}{K_r}$	$K_c = \frac{K_f}{K_r}$	$K_c \neq \frac{K_f}{K_r}$	☐	☐	☐	☐
9.	Phenomena that can be observed with naked eye are called _____.	Microscopic	Macroscopic	Telescopic	Semi-microscopic	☐	☐	☐	☐
10.	Formic acid is found from	Sour milk	Citrus fruits	Insect biters	Grape juice	☐	☐	☐	☐
11.	Mineral acids are _____ than organic acids	Stronger	Much stronger	Weaker	Much weaker	☐	☐	☐	☐
12.	The water is _____ in nature.	Acidic	Basic	Un-neutral	Amphoteric	☐	☐	☐	☐
13.	A Lewis base that donate a pair of electrons to form _____.	Ionic bond	Covalent bond	Weak bond	Coordinate covalent bond	☐	☐	☐	☐
14.	A weak acid produces a relatively _____ conjugate base.	Strong	Very strong	Weak	Moderate	☐	☐	☐	☐
15.	K_w is _____ dependent.	Pressure	Volume	Catalyst	Temperature	☐	☐	☐	☐
16.	The pH of 0.1 M HCl solution is	1.00	2.00	3.00	4.00	☐	☐	☐	☐
17.	Greater the K_a value, _____ is the acid.	Weaker	Moderate	Stronger	Very weak	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-4 CHAPTER-8+9

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes PAPER SUBJECTIVE Total Marks: 28

Note: Section ‘B’ AND ‘C’ comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five. (5 × 3 = 15)

(i)	Explain conjugate acid-base pairs with two examples.	3
(ii)	Explain relationship between ionic product and solubility product.	3
(iii)	What is K_b and pK_b ?	3
(iv)	Differentiate homogeneous equilibria and heterogeneous equilibria with examples.	3
(v)	Explain briefly chemical method to determine K_c .	3
(vi)	What is the benefit of continual removal of ammonia in Haber’s process?	3

SECTION-C (MARKS 13)

Note: Attempt All Parts. (06 + 07 = 13)

Q.3	Define and explain the following terms: (i) Equilibrium constant (ii) Le Chatelier’s principle (iii) Dynamic equilibrium	6
Q.4	What is common ion effect? Give three applications of common ion effect.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-5 CHAPTER-10+11+12

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	B, Si, As, Sb, Te and Po are _____.	Metals	Non-metals	Metalloids	Transition elements	☐	☐	☐	☐
2.	Bad conductors, non-malleable and non-ductile are	Metalloids	Semi-metals	Metals	Non-metals	☐	☐	☐	☐
3.	Chalcogens are also called _____ family.	Boron	Carbon	Nitrogen	Oxygen	☐	☐	☐	☐
4.	Although fluorine is the most electronegative element, its electron affinity is _____ than that of chlorine.	Higher	Lower	Not lower	Negligible	☐	☐	☐	☐
5.	Which one of the following oxides will produce a base in H ₂ O?	Na ₂ O	CO ₂	SO ₃	SiO ₂	☐	☐	☐	☐
6.	The IUPAC in 1988 decided that groups would be _____ from left to right.	A and B	Metals and non-metals	1 to 18	i – xviii	☐	☐	☐	☐
7.	The chemical formula of oleum is _____.	H ₂ SO ₄	H ₂ SO ₃	SO ₃	H ₂ S ₂ O ₇	☐	☐	☐	☐
8.	N ₂ shows inert nature because it is difficult to break _____ bond.	Single bond	Double	Triple	Coordinate covalent	☐	☐	☐	☐
9.	Photochemical smog is mixture of pollutants that are formed when oxides of _____ and VOCs react with sunlight, creating a brown haze.	S	N	C	P	☐	☐	☐	☐
10.	Which one of the following halides is the weakest reducing agents?	F ⁻	Cl ⁻	Br ⁻	I ⁻	☐	☐	☐	☐
11.	Which one of the following halogens has reddish brown color?	F ₂	Cl ₂	Br ₂	I ₂	☐	☐	☐	☐
12.	Which one of the following impurities will poison the catalyst used in oxidation of SO ₂ to SO ₃ ?	Sb ₂ O ₃	B ₂ O ₃	As ₂ O ₃	Fe ₂ O ₃	☐	☐	☐	☐
13.	The oxidation of SO ₂ to SO ₃ is catalyzed by the oxides of _____.	Boron	Phosphorus	Nitrogen	Carbon	☐	☐	☐	☐
14.	I ₂ cannot oxidize _____.	F ₂	Br ₂	Cl ₂	All of them	☐	☐	☐	☐
15.	The ability of halogen atoms to attract hydrogen atoms is _____ in the group	Increased	Decreased	Constant	Unchanged	☐	☐	☐	☐
16.	Which one of the halogens has the highest tendency to gain an electron and form halide ion?	F ₂	Cl ₂	Br ₂	I ₂	☐	☐	☐	☐
17.	Relatives thermal stability hydrogen halide gradually _____ from HF to HI.	Increases	Decreases	Changes erratically	Remains constant	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-5 CHAPTER-10+11+12

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five.

(5 × 3 = 15)

(i)	Describe the variation of electronegativity in the periodic table.	3
(ii)	Compare the acidic strength of halogen acids.	3
(iii)	Describe three uses of sulphur compounds in industry.	3
(iv)	Explain the reactivity of halogens as oxidizing agents.	3
(v)	How is PAN prepared? Give equations.	3
(vi)	Describe briefly metals, non-metals and metalloids.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts.

(06 + 07 = 13)

Q.3	Explain the role of NO and NO ₂ in the formation of photochemical smog.	6
Q.4	Describe the reaction of halide ions with aqueous silver ions and conc. H ₂ SO ₄ .	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-6 CHAPTER-13+14

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	A lot of organic compounds are also soluble in water due to _____.	London forces	Hydrogen bonding	Ionic bonding	Covalent bonding	☐	☐	☐	☐
2.	If the pH of rain water is _____ this is called acid rain.	5.6	less than 5.6	greater than 5.6	7.0	☐	☐	☐	☐
3.	Only _____ percent fresh water is present on the earth.	One	Two	Three	Four	☐	☐	☐	☐
4.	Before throwing use water, it must be cleaned. This is called water _____.	Purification	Treatment	Conservation	Recycling	☐	☐	☐	☐
5.	The re-use of wastewater for irrigation is called water _____.	Conservation	Recycling	Purification	Treatment	☐	☐	☐	☐
6.	Used water should be purified, it can save the _____ water.	Raw	Fresh	Rainy	Dirty	☐	☐	☐	☐
7.	Waste water treatment plants should be on _____ level.	Micro	Small	Large	Huge	☐	☐	☐	☐
8.	The cities located near the oceans can use _____ water as a source of fresh water.	Dirty	Rainy	Desalinated	Treated	☐	☐	☐	☐
9.	Drip irrigation, low flow fixture and appliances which are _____ efficient.	Air	Water	Soil	Humidity	☐	☐	☐	☐
10.	What is the primary cause of acid rain?	SO ₂	NO ₂	SO ₂ and NO ₂	CO	☐	☐	☐	☐
11.	What is measure of overall air quality?	AQI	Amount of CO ₂	Amount of SO ₂	Amount of NO ₂	☐	☐	☐	☐
12.	Hydrocarbons are converted into _____ in catalytic converter.	CO	CO ₂	Water vapours and CO ₂	NO ₂	☐	☐	☐	☐
13.	Acid rain accelerates the _____ of building infrastructure.	Rusting	Corrosion	Cleaning	Washing	☐	☐	☐	☐
14.	Industrial smog is associated with	Too much rain	Burning of fossil fuel	Use of machinery	Huge infrastructure	☐	☐	☐	☐
15.	The burning of fossil fuel releases large amounts of	Particulate matter	NO ₂	SO ₂	Particulate matter and SO ₂	☐	☐	☐	☐
16.	Which size of PM is the least dangerous?	2.5	5.0	7.5	10.0	☐	☐	☐	☐
17.	Industrial smog is also called	White smog	Grey smog	Black smog	Brown smog	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-6 CHAPTER-13+14

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes **PAPER SUBJECTIVE** **Total Marks: 28**

Note: Section ‘B’ AND ‘C’ comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five. (5 × 3 = 15)

(i)	Write down the reactions which are involved in the formation of acid rain.	3
(ii)	What is smog? Give general mechanism of formation of smog.	3
(iii)	Differentiate photochemical and industrial smog.	3
(iv)	Describe wastewater treatment.	3
(v)	Explain rain water harvesting.	3
(vi)	Explain briefly oil spillage and mining activities regarding water pollution.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts. (06 + 07 = 13)

Q.3	How is water protected and preserved in water resources?	6
Q.4	Describe the factors affecting the air quality.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-7 CHAPTER-15

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	Which one of the following homologous series has lowest ratio of H to C atoms in its general formula	Carboxylic acid	Alcohol	Halogenoalkane	Aldehyde	☐	☐	☐	☐
2.	Which scientist discovered that NH_4OCN and H_2NCONH_2 are isomers?	Friedel Craft	Fredric Wohler	GN Lewis	L Pauling	☐	☐	☐	☐
3.	The common name of propanedioic acid	Oxalic acid	Valeric acid	Succinic acid	Malonic acid	☐	☐	☐	☐
4.	The general formula of cycloalkane is	$\text{C}_n\text{H}_{2n+1}$	C_nH_{2n}	$\text{C}_n\text{H}_{2n+2}$	$\text{C}_n\text{H}_{2n-2}$	☐	☐	☐	☐
5.	The word saturated is used because each atom bonded to	1 atom	2 atoms	3 atoms	4 atoms	☐	☐	☐	☐
6.	IUPAC name of organic compound, $\text{CH}_3\text{CH}=\text{C}(\text{OH})\text{CH}_3$ is	2-Hydroxybuten-1-ol	3-Hydroxybuten-1-ol	2-Hydroxybuten-2-ol	2-Hydroxybuten-1-ol	☐	☐	☐	☐
7.	While giving systematic name of primary amine are _____ with e of alkane removed by suffix amine	Alka amine	Alkamine	Alkyl amine	Alkyl ammonium	☐	☐	☐	☐
8.	Stereochemical formula is based on	1D	2D	3D	Planarity	☐	☐	☐	☐
9.	The systematic or IUPAC name of pentanoic acid	Valeric acid	Caproic acid	Malonic acid	Succinic acid	☐	☐	☐	☐
10.	The IUPAC name of ether (ROR) is	Alkyl ether	Alkoxy alkane	Dialkyl ether	Alkane ether	☐	☐	☐	☐
11.						☐	☐	☐	☐
12.	The systematic name of vinyl alcohol is	Ethenol	Propenol	Prop-2-en-1-ol	Prop-2-en-2-ol	☐	☐	☐	☐
13.	CH_3Cl involves _____ fission	Homolytic	Heterolytic	Nuclear	Symmetric	☐	☐	☐	☐
14.	Propan-1-ol and propan-2-ol are _____ isomer	Functional group	Tautomer	Chain	Positional	☐	☐	☐	☐
15.	Conversion of Bromoethane to Ethene is a type of _____ reaction	Oxidation	Reduction	Elimination	Substitution	☐	☐	☐	☐
16.	Which does compound usually follow free radical substitution reactions?	Aldehydes	Alkenes	Alkyl halides	Alkanes	☐	☐	☐	☐
17.	Same molecular formulae but different structural formulae with respect to chain length on both sides of a functional group are called	Tautomerism	Chain isomers	Position isomers	Metamerism	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-7 CHAPTER-15

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five. (5 × 3 = 15)

(i)	Define catenation. Justify that this property of carbon is responsible for so large number of organic compounds.	3
(ii)	Describe briefly hydrocarbons with some examples.	3
(iii)	Give mechanism of nucleophilic substitution reactions.	3
(iv)	What do you understand by unsaturated hydrocarbons?	3
(v)	Differentiate condensed structural skeletal formula.	3
(vi)	Describe conjugation in alkene with an example.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts. (06 + 07 = 13)

Q.3	Discuss the following terms with an example in each: (i) Electrophilic addition and electrophilic substitution reaction (ii) Chain isomerism and Tautomerism with examples.	6
Q.4	What is homologous series? Write its main features.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-8 CHAPTER-16

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	Each carbon of benzene is ----- hybridized.	sp	sp ²	sp ³	dsp ³	☐	☐	☐	☐
2.	The conversion of methane into chloromethane is	Oxidation	Combustion	Reduction	Elimination	☐	☐	☐	☐
3.	Each doubly bonded carbon atom shows sp ² hybridization with ----- geometry.	Linear	Trigonal planar	Tetrahedral	Square planar	☐	☐	☐	☐
4.	The position of double bond in alkene can be tested by	Reduction	Oxidation	Ozonolysis	Combustion	☐	☐	☐	☐
5.	The addition of unsymmetrical reagent to an unsymmetrical alkene is in accordance with	Aufbau principle	Markownikov's rule	Hund's rule	Pauli's exclusion principle	☐	☐	☐	☐
6.	The conversion of methanol into methane is	Reduction	Oxidation	Hydrogenation	Combustion	☐	☐	☐	☐
7.	The conversion of ethanamide into ethanamine is	Oxidation	Combustion	Reduction	Elimination	☐	☐	☐	☐
8.	Acetamide upon reduction by LiAlH ₄ gives	Ethane nitrile	Ethanamine	Ethanol	Propanol	☐	☐	☐	☐
9.	Cyclic hydrocarbons are classified into aromatic and	Aliphatic	Acyclic	Open chain	Alicyclic	☐	☐	☐	☐
10.	The bond making of carbon with element of lower electronegativity is called	Reduction	Oxidation	Ozonolysis	Combustion	☐	☐	☐	☐
11.	Being non-polar, alkanes do not react with	Acid	Bases	Oxidizing agent	All of them	☐	☐	☐	☐
12.	On which of the given options, the stability of cations depends?	Negative inductive effect	Positive inductive effect	Negative resonance effect	Positive resonance effect	☐	☐	☐	☐
13.	The H-C-H and C-C-H angles are ----- in cyclopropane.	60°	75°	90°	109.5°	☐	☐	☐	☐
14.	The decrease in number of bonds of carbon with oxygen is called	Reduction	Oxidation	Hydrogenation	Combustion	☐	☐	☐	☐
15.	Ziegler-Natta catalyst is a mixture of	Al(C ₂ H ₅) ₃ & TiCl ₄	Al(CH ₃) ₃ & TiCl ₄	Al(C ₃ H ₇) ₃ & TiCl ₄	Al(C ₄ H ₉) ₃ & TiCl ₄	☐	☐	☐	☐
16.	Conjugation is found in those alkenes which have alternative-----.	Double and single bonds	Triple and single bonds	Triple and double bonds	Delta and single bonds	☐	☐	☐	☐
17.	The gain of hydrogen is called	Reduction	Oxidation	Ozonolysis	Combustion	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-8 CHAPTER-16

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five.

(5 × 3 = 15)

(i)	Explain conjugation in alkenes with a suitable example.	3
(ii)	Give mechanism of halogenation of ethene.	3
(iii)	Prepare but-1-ene by dehydration of alcohols.	3
(iv)	Describe aliphatic hydrocarbons with examples.	3
(v)	Alkenes shows addition reactions while alkane cannot.	3
(vi)	Give dehydrohalogenation of alkenes with a suitable example.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts.

(06 + 07 = 13)

Q.3	Explain briefly the following reactions of ethene with examples. (i) Polymerization (ii) Ozonolysis (iii) Hydrogenation	6
Q.4	Explain the following with mechanism: (i) Free radical substitution of ethane (ii) Hydrogenation of propene	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-9 CHAPTER-17+18

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

	QUESTIONS	A	B	C	D	A	B	C	D
1.	Which one of the given alcohols is resistant towards oxidation?	Methanol	2-Methyl-2-propanol	Isopropyl Alcohol	Ethanol	☐	☐	☐	☐
2.	The most reactive alkyl halide is	R-F	R-Cl	R-Br	R-I	☐	☐	☐	☐
3.	CH ₃ – CH ₂ – Br reacts with alcoholic KOH and gives	Ethane	Ethene	Ethyne	Ethanol	☐	☐	☐	☐
4.	The carbon halogen bond (C-X) are typically	Non-polar	Semi-polar	Quite polar	Hemi-polar	☐	☐	☐	☐
5.	Which of the given is primary alcohol?	Tertiary butyl alcohol	Isopropyl alcohol	Methyl alcohol	All of these	☐	☐	☐	☐
6.	A specie has lone pair of electrons and donate them to the electrophilic carbon of R-X is called	Electrophile	Acid	Substrate	Nucleophile	☐	☐	☐	☐
7.	The general formula of alkyl halides is	C _n H _{2n} X	C _n H _{2n-1} X	C _n H _{2n+1} X	C _n H _{2n-2} X	☐	☐	☐	☐
8.	Which alcohol reacts slowest with HCl/ZnCl ₂ on heating?	Primary	Secondary	Tertiary	All of these	☐	☐	☐	☐
9.	Reaction of alcohols with carboxylic acids is called	Acylation	Esterification	Dimerization	Polymerization	☐	☐	☐	☐
10.	The yellow precipitate AgX insoluble in aqueous NH ₃ indicates the presence of	F ⁻	Cl ⁻	Br ⁻	I ⁻	☐	☐	☐	☐
11.	Which type of hydrogen is necessary for elimination reaction?	α	β	γ	δ	☐	☐	☐	☐
12.	Glycol is a -----alcohols	Tri-hydric	Monohydric	Dihydric	Polyhydric	☐	☐	☐	☐
13.	Isopropyl alcohol is an example of -----alcohol.	Primary	Secondary	Tertiary	Quarternary	☐	☐	☐	☐
14.	When haloalkane is heated with aqueous solution of NaOH, -----is produced.	Hydrocarbon	Alcohol	Amine	Aldehyde	☐	☐	☐	☐
15.	Strong bases like NaOH in ethanol elimination reaction	Substitution	Elimination	Redox	Isomerization	☐	☐	☐	☐
16.	β-hydrogen atom in R-X is slightly ----- due to ----- of X.	Basic, donating	Basic, withdrawing	Acidic, donating	Acidic, withdrawing	☐	☐	☐	☐
17.	Alcohols containing ----- hydroxy group known as polyhydric alcohol.	0	1	2	2 or more	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-9 CHAPTER-17+18

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five.

(5 × 3 = 15)

(i)	How can you convert methanol into chloromethane?	3
(ii)	Explain the reactivity of R – X in terms of bond polarity.	3
(iii)	Differentiate primary, secondary and tertiary alcohol on the basis of Lucas test.	3
(iv)	Tertiary alkyl halides mostly show S _N 1 reactions. Why?	3
(v)	Give iodoform reaction with a secondary alcohol.	3
(vi)	Give three methods of preparation of alkyl halide from alcohols.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts.

(06 + 07 = 13)

Q.3	How can you bring about the following conversions? (i) An aldehyde into an alcohol (ii) An alcohol into an ester (iii) A halogenoalkane into an alcohol	6
Q.4	Compare S _N 1 and S _N 2 reactions comprehensively.	7



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-10 CHAPTER-19 + 20

Name:		Roll No.		Section:	
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Total Time: 1:20 Minutes

PAPER OBJECTIVE

Total Marks: 45

Time Allowed: 20 Minutes

SECTION-A (MARKS 17)

NOTE: Section-A is compulsory. All parts of this section are to be answered on this page and handed over to the center superintendent. Deleting / overwriting in not allowed. Do not use lead pencil.

Q.1 Fill the relevant bubble for each part. All parts carry one mark. (17 × 1 = 17)

QUESTIONS	A	B	C	D	A	B	C	D
1. Which one of the given reagents will oxidized only aldehydes to carboxylic acid?	Grignard reagent	Tollen's reagent	Fehling's reagent	B and C	☐	☐	☐	☐
2. Hydrogen cyanide adds to aldehyde and ketone to form -----.	Nitrile	Ester	Amide	Cyanohydrin	☐	☐	☐	☐
3. Which one of the given aldehydes will give haloform reaction?	Methanal	Ethanal	Propanal	Butanal	☐	☐	☐	☐
4. How many carbons are directly attached to the carbonyl carbon in aldehyde?	1	2	3	4	☐	☐	☐	☐
5. Which one of the given compounds is a reducing agent?	KMnO ₄	Al ₂ O ₃	NaBH ₄	K ₂ Cr ₂ O ₇	☐	☐	☐	☐
6. Aldehydes and ketones are carbonyl compounds. Which of them react both with NaBH ₄ and with Tollen's reagent?	Both aldehydes and ketones	Aldehydes only	Ketones only	Neither aldehydes nor ketones	☐	☐	☐	☐
7. A carboxylic acid contains functional group(s), i.e.	A Hydroxyl group	A Carboxyl group	Hydroxyl and Carboxyl group	A carboxyl and aldehyde group	☐	☐	☐	☐
8. Acetic acid upon reduction by LiAlH ₄ gives	Ethanol	Ethane	Propanol	Propane	☐	☐	☐	☐
9. In carbonyl group, carbon atom has nearly ----- structure.	Linear	Trigonal planar	Tetrahedral	Square planar	☐	☐	☐	☐
10. Catalytic reduction of nitrile gives ----- amines.	Primary	Secondary	Tertiary	Quaternary	☐	☐	☐	☐
11. General formula for secondary amine is	RNH ₂	R ₂ NH	R ₃ N	R ₄ N ⁺	☐	☐	☐	☐
12. Nitrogen containing functional groups such as nitrile, amide and nitro are ----- to amino group.	Oxidized	Dehydrated	Reduced	Neutralized	☐	☐	☐	☐
13. Amines are derivative of -----.	N ₂	NO	NO ₂	NH ₃	☐	☐	☐	☐
14. When amine reacts with acid halide, ----- amide is formed.	Primary	Secondary	Tertiary	Quaternary	☐	☐	☐	☐
15. Due to ability to donate non-bonding electron pair, amine is a base and -----.	An electrophile	An oxidizing agent	A nucleophile	A dehydrating agent	☐	☐	☐	☐
16. In amines, nitrogen atom is ----- hybridized.	sp	sp ²	sp ³	dsp ²	☐	☐	☐	☐
17. An amine with----- different groups is optically active.	Two	Three	Four	Five	☐	☐	☐	☐



HSSC-I (R&T) FEDERAL BOARD CHEMISTRY TEST-10 CHAPTER-19 + 20

Name:		Roll No.		Section:	
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Time Allowed: 60 Minutes

PAPER SUBJECTIVE

Total Marks: 28

Note: Section 'B' AND 'C' comprise page 1 only and questions there in are to be answered on the separate answer book. Use supplementary answer sheet i.e., sheet B if required. Write your answers neatly and legibly.

SECTION-B (MARKS 15)

Q.2 Write short answers of any five.

(5 × 3 = 15)

(i)	Give general mechanism of base catalyst nucleophilic addition reaction of carbonyl compound.	3
(ii)	How can you convert CH_3Cl into CH_3COOH ?	3
(iii)	How does acetaldehyde react with (a) Tollen's reagent (b) 2,4 – DNPH?	3
(iv)	What are amines? Classify them.	3
(v)	Methylamine is a stronger base than ammonia. Explain.	3
(vi)	Give reaction of amine with acid halide.	3

SECTION-C (MARKS 13)

Note: Attempt All Parts.

(06 + 07 = 13)

Q.3	Give three acidic properties of carboxylic acid (involving H-atom of carboxyl group).	6
Q.4	What are the diazonium salts? How would you prepare diazonium salts?	7