**POLICY GUIDELINES FOR SCIENCE SUBJECTS PAPERS**Paper Pattern and Distribution of Marks

Biology, Physics, **Chemistry** SSC-II

The question paper is organized into **FOUR** sections, namely: "Section A, B, C & D". Questions posed may be text based or derived/unseen but in similar pretext and difficulty level as per the lessons taught in the course. Distribution of the questions with respect to cognitive domain within each section shall roughly be around 30 percent Knowledge (K), 50 percent Understanding (U) and 20 percent Application (A).

The Questions in these subjects will be designed in such a manner that no pet-definitions are required from the candidates to be reproduced. Moreover the questions will be designed keeping in consideration the time for thought-process (particularly in U and A Cognitive Domain questions) and the length of the subsequent text (if any) to be produced by the candidates.

**SECTION — A**

This section consists of 12 compulsory structured part questions - Multiple Choice Questions (MCQs) of one mark each. These MCQs will preferably be designed in such a way to cover the whole course taught. These MCQs objectively test the knowledge, understanding and comprehension of the concepts of the candidates in these subjects.

**SECTION — B**

This section consists of question number two (02) with preferably **EIGHT** part questions – Short Response Questions (SRQs) of three (03) marks each. The candidates are required to attempt (respond to) any **SIX** SRQs for a maximum total of 18 marks in this section.

**SECTION — C**

This section consists of question number three (03) with preferably **SEVEN** part questions – Short Response Questions (SRQs) of three (03) marks each. The candidates are required to attempt (respond to) any **FIVE** SRQs for a maximum total of 15 marks in this section.

**SECTION — D**

This section consists of three (03) Extended Response Question (ERQs) of 10 marks each. Candidates are required to attempt (respond to) any two of these ERQs as per their choice and convenience for a maximum of 20 marks. These questions may comprise of two or more part questions each if deemed necessary by paper setter in order to balance out the distribution various concepts and knowledge areas from different Cognitive Domains taught in course. However none of the part questions shall be of less than 4 Marks.

**Annexure for Policy Guidelines for Paper Setting**Definitions and Disclaimer

Policy guidelines for paper setting vide Notification No.6-8/FBISE/RES/CC/918 dated 27 August 2019 have been conveyed for general information. Definitions of some terminologies and disclaimers are given in this annexure.

1. **Definitions**
   1. **Cognitive Domains**

Cognitive domain refers to development of mental skill and acquisition of knowledge.

In the questions papers developed by Federal Board of Intermediate & Secondary Education, Islamabad from hereon will be intended to test the following cognitive domains of the candidates:

* Knowledge: Approximately 30% Question in each section
* Understanding: Approximately 50% Question in each section
* Application: Approximately 20% Question in each section
  + 1. **Knowledge (K)**

Knowledge refers to the ability of the candidates to recall the learned or memorized information or data.

**Examples**

* A child reciting the alphabets of English
* Memorization and reproducing the dates and other facts etc.

e.g. Pakistan came into being on 27th Night of Ramadan-ul- Mubarak.

**Related Verbs (Command Words)**

Arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce, state etc.

* + 1. **Understanding (U)**

Understand (also called Comprehension) refers to ability of the candidates to comprehend (a set of) information and/or situation and provide his/her response to it accordingly.

**Examples**

* Performing analyses and illustrating the observations
* Comprehending the concepts of Social, Natural and Physical Sciences

e.g. Discuss different types of noise and their impact on human health briefly.

**Related Verbs (Command Words)**

Classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate, rephrase, differentiate, compare etc.

* + 1. **Application (A)**

Application refers to the ability to use learned material in new and concrete situation to solve problems and/or to design a schedule or task.

**Examples**

* Performing analyses and illustrating the observations
* Comprehending the concepts of Social, Natural and Physical Sciences

e.g. Illustrate the similes and metaphors given in the poem Daffodils.

**Related Verbs (Command Words)**

Apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write etc.

* 1. **Sections of Paper**

There are three or four (03 or 04) sections in each question paper:

* + 1. **Section-A**

Contains Multiple Choice Questions (MCQs). All questions are compulsory without any external or internal choice. Usually comprises of 20% of total marks of the (theory if applicable) paper.

* + 1. **Section B**

Contains Short Response Questions (SRQ). Candidates may have external choice up to 33%. In addition to that internal choice may also be offered based upon model, content and/or nature of the subject.

* This section may contain approximately 50% of total marks in some of subjects of the (theory if applicable) paper.
  + 1. **Section C**

This section usually contains Extended Response Questions (ERQ). Candidates may have external choice in the questions. In addition to that internal choice may also be offered based upon model, content and/or nature of the subject. For ERQs it may contain approximately 30% of total marks in some subjects of the (theory if applicable) paper.

* 1. **Choice**

Sometimes the candidates are required to attempt a certain number of questions from a given pool or group of questions, it is commonly known as choice in questions.

There are two types of choices

* + 1. **External Choice**

Whenever the candidates are required to solve (respond to) a certain number of questions from a given pool it is called external choice. This choice may be around 33% in a section.

e.g. 1. Answer any six parts in about 30-40 words each.

(Out of eight questions)

2. Attempt any eight questions from the following.

(Out of eleven questions)

* + 1. **Internal Choice**

Whenever the candidates have to solve (respond to) a question mandatorily but they have an option within the question it is called internal choice.

1. **Disclaimers**
   1. The cognitive levels and categories written in sample model paper are for explanation purpose only. In the actual question papers administered during examination shall not contain description of these cognitive domains.
   2. Association of the cognitive domains is solely based on subject expert’s judgment and may be subject to errors and/or omissions.
   3. In the class rooms and during teaching the candidates (students) need to be taught about the time management in accordance with allocation of marks to the questions.

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| LOGO | Roll No:     |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |   Sig. of Candidate: \_\_\_\_\_\_\_\_\_\_\_\_\_ | Answer Sheet No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Sig. of Invigilator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Federal Board SSC-II Examination  Chemistry Model Question Paper | | |

**SECTION – A**

Time allowed: 20 minutes Marks: 12

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| Note: Section-A is compulsory. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil. |

**Q.1 Encircle the correct option i.e. A / B / C / D. All parts carry equal marks.**

i. Aluminium Hydroxide Al(OH)3 is a base. Which compound is formed by the reaction of this compound with Sulphuric Acid (H2SO4)?

A. Al(SO4)3 B. Al2CO3

C. Al2(SO4)3 D. AlCl3

ii. Marble Buildings are disintegrated by acid rain because the acid attacks:

A. Calcium Sulphate B. Calcium Nitrate

C. Calcium Carbonate D. Calcium Oxalate

iii. Dipeptide is formed by the joining of two molecules of:

A. Amino acids B. Alcohols

C. Carboxylic acids D. Amines

iv. Naturally occurring metallic compounds are called:

A. Rocks B. Minerals

C. Ore D. Gangue

v. The end product of oxidation of acetylene is:

A. Oxalic acid B. Glycol

C. Glyoxal D. Glycine

vi. An unsaturated hydrocarbon reacts with one mole of hydrogen to form a saturated compound Predict its formula.

A. C3 H4 B. C6 H12

C. C4 H10 D. C7 H16

vii. Which of the following is used to remove permanent hardness in water?

A. Slaked lime B. Washing soda

C. Boiling water D. Baking soda

viii. Which of the following compounds is an aldehyde?

A. CH3 - CH2  - OH B. CH3 - COOH

C. CH3 - CHO D. CH3 - COCH3

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**DO NOT WRITE ANYTHING HERE**

ix. The pH of 10-3M aqueous solution of NaOH is:

A. 3 B. 11

C. 2 D. 9

x. Dilute acid reacts with carbonates to produce the given products EXCEPT:

A. Salt B. H2O

C. CO2 d. H2

xi. For a reversible reaction given below the unit of Kcis:

2SO2 + O2 2SO3

A. mol-1 dm3 B. mol-1 dm-3

C. mol.dm-3 D. mol.dm3

xii. A mixture of Cu2S and FeS called matte, is produced in one of the metallurgical operations in the extraction of copper. The name of this operation is:

A. Smelting B. Roasting

C. Bessemerization D. Electro-refining

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**For Examiner’s use only:**

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| **Total Marks:** | **12** |
|  |  |
| **Marks Obtained:** |  |

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| LOGO | Federal Board SSC-II Examination  Chemistry Model Question Paper |

Time allowed: 2.40 hours Total Marks: 53

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| Note: Answer any six parts from Section ‘B’ and attempt any five parts from Section-C. Attempt any two questions from Section ‘D’ on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly. |

**SECTION – B** (Marks 18)

**(Chapter 9, 10, 15 & 16)**

Q.2 Attempt any **SIX** parts from the following. All parts carry equal marks. (6 × 3 = 18)

i. Classify the following substances as Lewis acids or Lewis bases.

a. AlBr3 b. CH3-CH2- OH c. CN-1

ii. What are the conditions of equilibrium of a reversible reaction?

iii. Concentration of H+ ion in a soft drink is 1.0 × 10–5 mol/dm3. What is its pH? Is this solution acidic, basic or neutral?

iv. Complete and balance the chemical equations:

1. Iron sulphide + Sulphuric acid
2. Aluminum + Hydrochloric acid

v. Draw flow sheet diagram for the manufacturing of urea.

vi. Describe ion exchange method for removal of hardness of water.

vii. For the given reversible reaction:

CO + 3H2 CH4 + H2O

a. Write Kc expression.

b. Determine Kc unit.

c. Write forward and backward reactions.

viii. Write down two balanced chemical equations showing

a. Reaction of an acid with metal

b. Reaction of an acid with metal carbonate

**SECTION – C** (Marks 15)

**(Chapter 11-14)**

Q.3 Attempt any **FIVE** parts from the following. All parts carry equal marks. (5 × 3 = 15)

i. Write the structural formulas of the following.

a. Heptane b. Methanal c. Methanoic acid

ii. Define homocyclic and hetero cyclic compound. Give one example of each.

iii. Write two methods of the preparation of propane. Give chemical equation with conditions.

iv. What is Baeyer’s test? Briefly explain with example.

v. Identify A, B and C in the following chemical reaction.

CH3-CH=CH2+ Cl2 CCl4 A Alcohol KOH B Alcohol KOH C

vi. What is NOx? Explain briefly.

vii. Briefly explain the following with examples:

a. Lipids b. Fats c. Oils

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**SECTION – D** (Marks 20)

**Note:** Attempt any **TWO** questions. All questions carry equal marks. (2 × 10 = 20)

**Q.4** a. Describe law of mass action and derive Kc expression for the following reaction

aA +bB cC +dD (5)

b. What is Kw? Explain. (5)

**Q.5** a. What is hard water? Explain the methods for removing temporary hardness. (5)

b. Explain the industrial preparation of Urea. (5)

**Q.6** a. What is Functional group? Explain functional Groups containing Carbon, Hydrogen and Oxygen with suitable examples. (5)

b. Explain Lowery – Bronsted concept of acid and base. (5)

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