**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.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LOGO |  Roll No:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |

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

**SECTION – A**

Time allowed: 20 minutes Marks: 12

|  |
| --- |
| 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. A pendulum is made of plastic ball filled with water having holes in it. During oscillation its mass will decrease. What will be the effect on the time period (T) of pendulum?

 A. T will increase. B. T will decrease.

 C. T will remain constant. D. T will be zero.

ii. A converging lens becomes a magnifying glass when an object is placed at:

 A. Outside the focal length. B. Inside the focal length.

 C. Equal to focal length. D. Double of focal length.

iii. If we half the distance between two charges, then coulomb’s force will:

 A. Increase 4 times. B. Decrease 4 times.

 C. Increase 2 times. D. Decrease 2 times.

iv. A dielectric must be a/an:

 A. Resistor B. Insulator

 C. Good conductor D. Semi-conductor

v. One joule per coulomb is the unit of:

 A. Electromotive force B. Current

 C. Charge D. Electric field

vi. By keeping resistance constant, if we double the voltage, the current should be:

 A. half B. doubled

 C. Increases 4 times D. Reduced 4 times

vii. Which one is ohmic in nature?

 A. Thermister B. Filament lamp

 C. Fixed resistor D. Variable resistor

viii. NOT Gate is also called:

 A. Converter B. Inverter

 C. Transmitter D. Receiver

ix. Coaxial cable wires are used to transmit \_\_\_\_\_\_\_\_\_\_ signals.

 A. Digital B. Analogue

 C. Electric D. Radio

Page 1 of 2

**DO NOT WRITE ANYTHING HERE**

x. The charge and mass of electrons is equal to that of:

 A. X-Rays B. Gamma-Rays

 C. Alpha-Rays D. Beta-Rays

xi. When a neutron emits $β$-particle, it changes into a/an:

 A. proton B. electron

 C. gamma rays D. $α$-particle

xii. If the object is placed between convex lens and Focus Point F, then the image will be formed:

 A. beyond 2F B. behind the object

 C. between F & 2F D. at 2F

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**For Examiner’s use only:**

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

Page 2 of 2

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

Time allowed: 2.40 hours Total Marks: 53

|  |
| --- |
| 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 10-13)**

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

i. What is condition to observe the diffraction of waves clearly?

ii. Describe the principle on which stethoscope operates.

iii. A wave moves on slinky with frequency of 5Hz and wave length of 0.6m. What will be the speed of wave?

iv. Differentiate between intensity level and intensity of sound.

v. Find the critical angle of glass having refractive index of 1.52.

vi. Soldiers are ordered to break their steps while crossing a hanging bridge. Why?

vii. Write down three characteristics of capacitors in series.

viii. If the object is placed beyond F, then where will the image be formed in concave lens. Show it graphically.

**SECTION – C** (Marks 15)

**(Chapter 14-18)**

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

i. Briefly describe the factors affecting resistance.

ii. How long should it take a current of 10mA to deliver 30C of charge?

iii. What is Kilowatt hour? Write down the formula to calculate electricity bill.

iv. In a transformer, if we increase the number of turns in primary coil, what will be its output?

v. The activity of a sample of a radioactive bismuth decreases to 1/16 of its original activity in 30 days. Calculate the half-life of bismuth.

vi. In Cathode Ray Oscilloscope (CRO), if plates for vertical deflection are removed then what will be the wave pattern on the fluorescent screen?

vii. How can you measure electromotive force of a battery? Illustrate your answer with the help of circuit diagram.

Page 1 of 2

**SECTION – D** (Marks 20)

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

**Q.4 a.** Describe the characteristics of sound in detail. (6)

 **b.** An object 20cm high is placed at a distance of 15cm from a concave lens of focal length 10cm. Calculate the position and size of the image. Also state the nature of the image. (4)

**Q.5 a.** Differentiate between Fission and Fusion reactions. (6)

 **b.** Three resistors of 4Ω, 6Ω and 12Ω are connected in parallel. If the voltage of battery is 12V, find the equivalent resistance and total current of the circuit. (4)

**Q.6 a.** Describe the working principle of AC generator. How does AC generator, generate current? (5)

 **b.** How will the variation in length, mass, amplitude, material of string and gravity, affect the time period of simple pendulum. (5)

**\* \* \* \* \***

Page 2 of 2