

POLICY GUIDELINES FOR SCIENCE SUBJECTS PAPERS

Paper Pattern and Distribution of Marks

Biology, Physics, Chemistry SSC-I

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/SSC/823 dated 8 June 2019 have been conveyed for general information. Definitions of some terminologies and disclaimers are given in this annexure.

1. Definitions

I. 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

i. 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.

ii. 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.

iii. 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.

II. Sections of Paper

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

i. 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.

ii. 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.

iii. 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.

III. 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

i. 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)

ii. 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.

2. Disclaimers

- I.** 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.
- II.** Association of the cognitive domains is solely based on subject expert's judgment and may be subject to errors and/or omissions.
- III.** 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.

DO NOT WRITE ANYTHING HERE

- x. Which one of the following statement is **TRUE** for blood group A?
A. It has antibody A B. It has antibody B
C. It has antigen B D. It can donate blood to O group
- xi. Left ventricle contracts and pumps blood into the:
A. Pulmonary artery B. Pulmonary vein
C. Aorta D. Superior vena cava
- xii. The substance change pepsinogen into its active form pepsin by the help of:
A. Trypsin B. Mucous
C. HCl D. Gastrin
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For Examiner's use only:

Total Marks:

12

Marks Obtained:



Federal Board SSC-I Examination Biology 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 1-5)

- Q.2 Attempt any **SIX** parts from the following. All parts carry equal marks. Be brief and to the point. (6 × 3 = 18)
- i. Differentiate between colonial organization and multicellular organization.
 - ii. Each organ carries out its specific function, which collectively appears as the function of an organ system. Justify the statement.
 - iii. Differentiate between Qualitative and Quantitative observations.
 - iv. Prove the hypothesis “*Plasmodium* is the cause of malaria.”
 - v. State the principles of Cell Theory.
 - vi. Differentiate between Skeletal and Cardiac muscles.
 - vii. How does a cell work as an open system?
 - viii. Define Apoptosis. Enlist the major steps of Apoptosis.

SECTION – C (Marks 15) (Chapter 6-9)

- Q.3 Attempt any **FIVE** parts from the following. All parts carry equal marks. Be brief and to the point. (5 × 3 = 15)
- i. Elaborate the effect of temperature on enzyme activity.
 - ii. Complete the following table for comparison of “Lock and key” and “Induced fit” models of enzyme action.

Features	Lock and key Model	Induced fit Model
Proposed by		
Year		
Nature of Active site		
 - iii. Why are there more chloroplasts in Palisade mesophyll than in Spongy mesophyll?
 - iv. What is the role of soluble and insoluble dietary fibers in the process of digestion?
 - v.
 - a. Differentiate between Chyme and Bolus.
 - b. How does the soft palate in pharynx help in the process of swallowing?
 - vi. Which blood group is considered as universal donor? Explain briefly.
 - vii. Differentiate between Pulmonary and Systemic circulation.

SECTION – D (Marks 20)

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

- Q.4** **a.** What are the basis of five kingdom classification? Who devised five kingdom classification system? Describe general characteristics of five kingdom classification system. (No need to draw flow chart) (06)
- b.** Show energy budget of respiration by a flow chart. (04)
- Q.5** Describe all steps of somatic cell division with the help of diagrams. (10)
- Q.6** **a.** Draw a table showing names of any five arteries arising from dorsal aorta and the organ to which they supply blood. (05)
- b.** How is the structure of a villus related to its function? Elaborate your answer with diagram. (05)

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