**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  Biology 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. Trachea is a long tube which lies in front of:

A. Larynx B. Oesophagus

C. Stomach D. Heart

ii. During peritoneal dialysis, the waste materials move from:

A. The abdomen to the dialysis fluid.

B. The dialysis fluid to the peritoneum blood vessels.

C. The peritoneum blood vessels to the dialysis fluid.

D. The dialysis fluid to the abdomen.

iii. To which part of ear, the tympanum belongs?

A. Pinna B. Auditory canal

C. Ear drum D. Ear ossicles

iv. Hinge Joint is present in:

A. Neck B. Knee

C. Hip D. Shoulder

v. Calcitonin and parathormone complement each other and regulate the level of \_\_\_\_\_\_\_\_\_ ions in blood.

A. Calcium B. Sodium

C. Potassium D. Magnesium

vi. A corm develops into new garlic plant. This is the process of:

A. Vegetative propagation B. Regeneration

C. Meiosis D. Gametogenesis

vii. \_\_\_\_\_\_\_\_\_ produce secretions that provide nutrients for sperms.

A. Cowper’s glands B. Prostrate glands

C. Seminal vesicles D. Sperm ducts

viii. In the cross pollination between a true-breeding yellow pod plant and a true-breeding green pod plant, where green pod colour is dominant, the resulting offspring’s (F1 generation) will be:

A. B. All yellow

C. D. All green

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**DO NOT WRITE ANYTHING HERE**

ix. According to Darwin the number of offspring profuced by organisms are always more as compared to resources necessary for their survival. Which of the following character offspring should have for maximum chances of survival?

A. Born first and grow fastest

B. Largest and most aggressive

C. Unable to survive longer

D. Best adapted to the environment

x. Enrichment of water with organic nutrients is called:

A. Acid rain B. Eutrophication

C. Debris D. Epidemics

xi. Which chemical is a pain killer produced by the human brain?

A. Digitalis B. Interferon

C. Beta-endorphin D. Urokinase

xii. Which of the following drugs interact with Central Nervous System to depress its activities?

A. Sedatives B. Narcotics

C. Hallucinogens D. Antibiotics

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

**For Examiner’s use only:**

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

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|  |  |
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| LOGO | Federal Board SSC-II Examination  Biology 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 10-14)**

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

i. What are alveoli? Give their location and function.

ii. a. What is meant by metabolic waste?

b. In which form the following plants release their waste products?

i. Keekar ii. Lady finger iii. Conifers

iii. Draw diagram of a leaf indicating the movement of gases.

iv. “Along with excretion, kidneys also play role in osmoregulation”. Justify the statement.

v. Differentiate between diabetes mellitus and diabetes insipidus.

vi. Write the functions of:

a. Thalamus b. Pons c. Medulla Oblongata

vii. Enlist the differences between endoskeleton and exoskeleton?

viii. Complete the table:

|  |  |  |
| --- | --- | --- |
| Feature | Insect pollinated flower | Wind pollinated flower |
| Colour |  |  |
| Floral arrangement |  |  |
| Pollen grain |  |  |

**SECTION – C** (Marks 15)

**(Chapter 15-18)**

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

i. Prove that expression of AB blood group is an example of co-dominance.

ii. Draw a punnett square to find out result of cross *Rr* x *Rr*.

iii. What is meant by Acid rain? Write any two ill effects of it.

iv. What are single cell Proteins? Write their importance.

v. Name the major groups of antibiotics and write the diseases against which they are used (one disease of each).

vi. How have human activities contributed to the loss of balance in nature?

vii. What is meant by ‘GMO’? How is it significant?

Page 1 of 2 Turn Over

**SECTION – D**

(Marks: 20)

Note: Attempt any **TWO** questions from the following. All questions carry equal marks. (210=20)

**Q.4** (a) Explain the mechanism of breathing in Human beings with labeled diagram. **(6)**

**(**b) Explain the components of human Skeleton.  **(4)**

**Q.5** Name the reproductive parts of a flower. Describe the process of sexual reproduction in angiosperm with the help of a labeled diagram. **(10)**

**Q.6** What is the importance of Nitrogen for living organism? Explain Nitrogen cycle with the help of diagram. **(10)**

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