

POLICY GUIDELINES FOR SCIENCE SUBJECTS PAPERS

Paper Pattern and Distribution of Marks

Biology HSSC-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 17 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 **TEN** part questions – Short Response Questions (SRQs) of three (03) marks each. The candidates are required to attempt (respond to) any **SEVEN** SRQs for a maximum total of 21 marks in this section.

SECTION — C

This section consists of question number three (03) with preferably **TEN** part questions – Short Response Questions (SRQs) of three (03) marks each. The candidates are required to attempt (respond to) any **SEVEN** SRQs for a maximum total of 21 marks in this section.

SECTION — D

This section consists of three (03) Extended Response Question (ERQs) of 13 marks each. Candidates are required to attempt (respond to) any two of these ERQs as per their choice and convenience for a maximum of 26 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 question 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

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.



Federal Board HSSC-I Examination
Biology Model Question Paper
(Curriculum 2006 – NBF)

Version Number

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SECTION – A

Time allowed: 25 minutes

Marks: 17

Note: Section-A is compulsory. All parts of this section are to be answered on the separately provided OMR Answer Sheet which should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q.1 Choose the correct answer i.e. A / B / C / D by filling the relevant bubble for each question on the OMR Answer Sheet according to the instructions given there. Each part carries one mark.

- Lysosomes function in:
A. processing and packaging
B. intracellular digestion
C. protein synthesis
D. lipid synthesis
- Extreme change in P^H causes the breakdown of enzyme that results in:
A. denaturation
B. saturation
C. competition
D. inhibition
- Substrate level of phosphorylation takes place in:
A. glycolysis and kreb cycle
B. electron transport system and transition reaction
C. glycolysis and electron transport system
D. kreb cycle and transition reaction
- Body of algae which is differentiated into blades, stipes and holdfast belongs to
A. green algae
B. kelps
C. golden algae
D. brown algae
- The antibodies provided to infants through clostrum is:
A. natural passive immunity
B. artificial passive immunity
C. natural active immunity
D. artificial active immunity
- T lymphocytes become mature and complete under the influence of:
A. liver
B. thymus gland
C. bursa of fabricus
D. spleen
- Poisons, antibiotics and drugs are example of:
A. co-enzymes
B. inhibitors
C. co-factors
D. minerals
- A bacteria with tuft of flagella at each pole is:
A. monotrichous
B. lophotrichous
C. peritrichous
D. amphilotrichous



Federal Board HSSC-I Examination Biology Model Question Paper

Time allowed: 2.35 hours

Total Marks: 68

Note: Sections 'B' 'C' and 'D' comprise pages 1-2 and questions therein are to be answered 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 21) (Chapter 1-7)

Q.2 Attempt any **SEVEN** parts from the following. All parts carry equal marks. (7 × 3 = 21)

i. Complete the table:

Enzymes	Functions
Histidine decarboxylase	
Cytochrome oxidase	
	Transfer Phosphate group from ATP to glucose

- ii. Write down symptoms, causes and prevention of the following diseases:
 - a. Blight
 - b. Galls
- iii. How chemoautotrophic bacteria prepare their food?
- iv. Contrast the electromagnetic spectrum with absorption spectrum.
- v. Give reasons for the following:
 - a. Abundance of Peroxisomes in Liver cells
 - b. Tay-Sachs disease
 - c. Left handed sugar molecules are not metabolized
- vi. How is structure of chloroplast related to its function?
- vii. List any three structural proteins along with their roles.
- viii. What is normal flora? How Staphylococcus aureus is beneficial to human?
- ix. Point out three differences between starch and glycogen.
- x. Draw a labelled diagram of influenza virus.

SECTION – C (Marks 21) (Chapter 8-13)

Q.3 Attempt any **SEVEN** parts from the following. All parts carry equal marks. (7 × 3 = 21)

- i. Why are bryophytes called as amphibious?
- ii. Give one example of each type of Cymose, Racemose and compound inflorescence.
- iii. What is the role of phytochrome in photoperiodism?
- iv. Draw a comparison between pseudocoelomate and coelomate diagrammatically.
- v. Pen down the phylum of following organism:
 - a. Pin worm
 - b. Earth worm
 - c. Silver fish
- vi. How does skin play an important role in the line of defence?

- vii. Why is liver called the clearing house of the body?
- viii. What are the evolutionary adaptations in class Reptilia?
- ix. What is the mode of action of antibody?
- x. Place the diseases in the given table according to their symptoms:

a. obesity b. anorexia nervosa c. dyspepsia

1		Excessive acidity in stomach
2		Disorder of thyroid, pituitary or adrenal gland
3		Unable to cope the challenges of puberty and their sexuality

SECTION – D (Marks 26)

Note: Attempt any **TWO** questions. All questions carry equal marks. (2×13 = 26)

- Q.4 a. Contrast the non-cyclic and cyclic electron pathway and discuss the differences noted. Elaborate your answer with the help of diagram. (9)
- b. How is amino acid sequence significant in our body? Explain your answer with the help of example. (4)
- Q.5 a. Describe the characteristics of Basidiomycota. Illustrate your answer with the help of example. Draw diagram also. (8)
- b. How are angiosperms important for humans? (5)
- Q.6 a. Describe the internal structure and function of a dissected human heart. Draw a labeled diagram also. (7)
- b. What is thermoregulation? How plants thermoregulate in different climates? Support your answer with examples. (6)

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