



**VIRTUAL UNIVERSITY OF PAKISTAN**  
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## Entry Test Sample for MS in Molecular Biology Program

### Weightage Distribution:

Section No.	Section Name	Weight
I	English	25%
II	Quantitative Ability	25%
III	Subjective Knowledge	50%

### Section No. I - English

#### Syllabus:

1. Analytical Ability
  - a) Logical Reasoning (5%)
  - b) Analytical Reasoning (5%)
2. Verbal Ability
  - a) Sentence Completion (Grammar) (5%)
  - b) Analogy (5%)
  - c) Antonyms (5%)

#### *Sample Test Questions*

1. "A meadow in springtime is beautiful, even if no one is there to appreciate it."  
This statement would be a logical opposite to which of the following claims?
  - A. People will see only what they want to see.
  - B. Beauty exists only in the eyes of the beholder.
  - C. Beauty does not depend on seasons.
  - D. The greatest pleasure available to mankind is the contemplation of beauty.
2. A map representing countries R, S, W, X, Y and Z is to be drawn. Adjacent countries cannot have the same color in the map. The countries adjacent to each other are as follows:
  - A. Each of R, S, X and Y is adjacent to W.
  - B. X is adjacent to Y.
  - C. Each of R and S is adjacent to Z.

Which of the following is a pair of countries that can be the same color?

- A. R and S                      B. S and W                      C. W and X                      D. X and Y
3. Many surveys \_\_\_\_\_ out the idea that effective communication is essential for success and promotion in every field.
- A. are bearing              B. should have borne              C. has borne              D. have borne
4. IMAGINE : IMAGINATION
- A. Therapy : Thermometer                      C. Oblivion : Obvious  
 B. Bowl : Bowdlerize                      D. Liturgy : Literature
5. Choose the lettered word or phrase that is most nearly opposite in meaning to the word DISINTEGRATE.
- A. Coalesce              B. Pulverize                      C. Annihilate              D. Severe

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## Section No. II - Quantitative Ability

### Syllabus

The quantitative section will consist of questions from following areas of General Mathematics:

- Basic arithmetic
  - Fractions and Decimals
  - Percents and Averages
  - Ratios and Proportions
- Algebra
  - Equations and Inequalities
  - Linear and Quadratic Equations
- Geometry
  - Lines and Angles
  - Triangles
  - Quadrilateral and other Polygons
  - Circle

### **Question Format**

The section will include three types of questions which are:

**a) Discrete Quantitative Question**

Each multiple-choice question will consist of a question statement which requires you to perform some calculations for selecting exactly one of the available choices.

**Example**

Miss Saima, a boutique owner, received a shipment of stitched suits from a stitching factory. She sold half of them in the first week. In second week, after two more were sold, she had exactly  $\frac{2}{5}$  of the suits left. How many suits were in the shipment?

- A. 10 B. 20 C. 30 D. 40

**b) Quantitative Comparison Question**

Quantitative comparison questions consist of two quantities and you have to compare them.

**Example**

A cricketer scored 75 runs in each inning of his first three matches and 80 runs in his fourth and fifth match.	
<b>A</b>	<b>B</b>
Average after 4 innings	Average after 5 innings

- A. The quantity in column A is greater  
B. The quantity in column B is greater  
C. The two quantities in both columns are equal  
D. The relationship cannot be determined from the given information

**c) Data Interpretation Question**

The data is presented in any format (chart, graph or table) and questions are based on the presented information.

**Example**

**Population by Age Group**

(in thousands)

<b>Age</b>	<b>Population</b>
17 years and under	63,376
18–44 years	86,738
45–64 years	43,845
65 years and over	24,054

How many people are 44 years old or younger?

- A. 63,376                      B. 86,738                      C. 150,114                      D. 150,114,000
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### Section No. III – Subjective Knowledge

1. Splicing is the process that does which of the following?
  - A. Remove introns and conserve exons
  - B. Remove exons and conserve introns
  - C. Remove mutated regions of primary transcript RNA
  - D. Add multiple adenosine bases to the end of a primary RNA transcript
  
2. All of the following are used in PCR except:
  - A. *Taq* polymerase
  - B. Restriction enzymes
  - C. Oligonucleotide primers
  - D. Deoxynucleoside triphosphates
  
3. Southern hybridization is used to identify:
  - A. A specific protein
  - B. a specific DNA
  - C. a specific RNA
  - D. both DNA and RNA
  
4. Which reaction in DNA replication is catalyzed by DNA ligase?
  - A. Addition of new nucleotides to the lagging strand
  - B. Addition of new nucleotides to the leading strand
  - C. Base pairing of the template and the newly formed DNA strand
  - D. Formation of phosphodiester bond between the 3'-OH group of one Okazaki fragment and the 5'-phosphate of the next on the lagging strand
  
5. In SDS PAGE, proteins are separated on the basis of their:
  - A. Positively charged side chains
  - B. molecular weight
  - C. Negatively charged side chains
  - D. Isoelectric point
  
6. A nonsense mutation may result into:
  - A. An abnormal elongation of a polypeptide
  - B. A large deletion within the reading frame of a gene
  - C. A premature termination of the synthesis of the polypeptide
  - D. Modification of mRNA

7. How many hydrogen bonds form between U and A in a Watson and Crick base pair interactions?
- A. Zero      B. 1      C. 2      D. 3
8. The bonds between complementary bases in DNA are called:
- A. Phosphodiester linkages      B. Hydrogen bonds  
C. Peptide bonds      D. Amide bonds
9. The site where RNA polymerase attaches to the DNA molecule to start the formation of RNA is called a(n)
- A. Promoter      B. Exon      C. Intron      D. GC hairpin
10. Which one of the following is not a termination codon?
- A. UAG      B. UGA      C. UUU      D. UAA