

## Entry Test Sample for MS in Bioinformatics Program

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### Weightage Distribution:

Section No.	Section Title	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    C. Trounce

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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)

Age	Population
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

### Section No. III – Subjective Knowledge

1. Amino acids are linked together to form proteins by specific bonds called:  
A. Peptide bonds    B. Nitrogen bonds    C. Hydrogen bonds    D. Hydrogen & Nitrogen bonds
2. The enzyme which builds mRNA strand complimentary to DNA transcription unit is called:  
A. DNA polymerase    B. RNA polymerase    C. Helicase    D. DNA ligase
3. The part of gene that codes for a protein is:  
A. Exon    B. Intron    C. Regulatory sequence    D. None of these
4. With regard to the DNA structures:  
A. A and G are Pyrimidine bases    B. A and T are purine bases  
C. C and G are Pyrimidine bases    D. A and G are purine bases
5. What are the repeating units of DNA?  
A. phosphate molecules    B. nucleotides    C. bases    D. sugar molecules

6. Chromosomes are more clearly visible during  
 A. Interphase                      B. Prophase                      C. Metaphase                      D. Anaphase
7. The n chromosome number in normal Human is:  
 A. 16              B. 23              C. 50              D. 36
8. Which of the following descriptions is not correct for chromosomes?  
 A. Metacentric — chromosome arms are almost equal in size.  
 B. Submetacentric — chromosome arms are slightly different in size.  
 C. Acrocentric — chromosome arms are identical in size.  
 D. Telocentric — there is only one chromosome arm.
9. The triplet code of CAT in DNA is represented as \_\_\_\_\_ in mRNA.  
 A. GAA    B. CAT    C. GUA    D. GTA
10. In DNA the amount of adenine (A) is \_\_\_\_\_ the amount of thymine (T).  
 A. much greater than    B. much less than    C. about the same as    D. shows no relationship to
11. The mutations that arise in the absence of known mutagen are known:  
 A. Induced mutations                      B. Fused mutations  
 C. Spontaneous mutations                      D. None of the above
12. A strand of DNA with the sequence A A C T T G will have a complimentary strand with the following sequence:  
 A. CCAGGT              B. AACTTG              C. TTCAAG              D. TTGAAC
13. \_\_\_\_\_ is a genetic change that occur in more than one percent of the population:  
 A. Polymorphisms / SNP                      B. Monotheism  
 C. Frameshift mutation                      D. Synonymous mutation
14. Double stranded DNA is:  
 A. Positively charged              B. Negatively charged              C. Not charged              D. Neutral
15. Gregor Mendel used pea plants to study:  
 A. flowering.    B. gamete formation.    C. the inheritance of traits    D. cross-pollination.
16. Gregor Mendel concluded that traits are:  
 A. not inherited by offspring.  
 B. determined by dominant factors only.  
 C. inherited through the passing of factors from parents to offspring  
 D. determined by recessive factors only.
17. Who is called as father of Genetics?  
 A. Watson    B. Crick    C. Franklin    D. Mendel
18. Which of the following is a genotype?  
 A. A tall pea plant.    B. R and r    C. TtHH    D. Hemophiliac
19. Which of the following is example of alleles?  
 A. AB and Tt.    B. TT and Tt.    C. T and t.    D. X and Y.

20. Mitotic cell division results in two cells that have:
- A. n chromosomes and are genetically identical.
  - B. n chromosomes and are genetically different.
  - C. 2n chromosomes and are genetically identical.
  - D. 2n chromosomes and are genetically different.
21. Both chloroplasts and mitochondria:
- A. are found within the nucleus
  - B. have single stranded DNA
  - C. carry extranuclear DNA
  - D. display a Mendelian pattern of inheritance
22. Meiosis I is called as .....
- A. Equational division
  - B. Reductional Division
  - C. Neutral Division
  - D. Duplication
23. Unlike DNA, RNA contains:
- A. Adenine
  - B. Uracil
  - C. Phosphate groups.
  - D. Thymine.
24. The number of chromosomes in a gamete is represented by the symbol:
- A. Z
  - B. N
  - C. X
  - D. Y
25. Gametes have:
- A. homologous chromosomes.
  - B. twice the number of chromosomes found in body cells.
  - C. two sets of chromosomes.
  - D. one allele for each gene.
26. In which phase of the cell cycle does DNA replication occur?
- A. G0
  - B. G1
  - C. S
  - D. G2
27. Which of the following techniques is primarily undertaken to amplify DNA?
- A. PCR
  - B. Microarray
  - C. Northern Blotting
  - D. Southern Blotting
28. All of the following are used in PCR except
- A. Taq polymerase
  - B. Restriction enzymes
  - C. Oligonucleotide primers
  - D. Deoxynucleoside triphosphates
29. Which of the following does not have introns?
- A. DNA
  - B. Non-processed pseudo genes
  - C. Processed mRNA
  - D. Primary RNA transcript
30. Which out of the following techniques is used for the detection of gene of interest –
- A. Southern Blotting
  - B. Polymerase chain reaction
  - C. Northern Blotting
  - D. DNA Foot printing