VIRTUAL UNIVERSITY OF PAKISTAN

M.A. Jinnah Campus, Defence Road Off Raiwind Road, Lahore

Entry Test Sample for Diploma in Molecular Biology

Weightage Distribution:

Section No.	Section Title	Weight
I	English	25%
II	Mathematics	25%
III	Molecular Biology	50%

Section 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 exits 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

Section No. II - Mathematics

Syllabus:

Each of the following topics contributes 2% to 3% towards the overall 25%.
- Exponents and Roots
- Arithmetic
- Inequalities
- Fractions and Decimals
- Percent's
- Ratios and Proportions
- Polynomials
- Solving Equations and Inequalities
- Lines and Angles, rectangle, Triangles, square, Quadrilateral and other Polygons, Circles
- Solving Equations and Inequalities
- Averages, permutation, Combination, Probability

Sample Test Questions

1. $\sqrt[3]{27} \times (-2)^3 = ?$

    A. 24   B. -24   C. 54   D. -6

2. If $10^x = 100$ then value of x is

    A. 10   B. 1   C. 2   D. 3

3. The simplified form of $(5^{-1} \times 2^{-2}) \div 4^{-1}$ is --------

    A. 1/5   B. 5   C. 1/80   D. 40

4. Product of all numbers on a telephone dial is..............

    A. 0   B. 362880   C. 45   D. 360

5. If the number $36 \times x \times 56$ is divisible by 19, then what will be the value for x?

    A. 36   B. 56   C. 92   D. 19

6. Determine the minimum integer value of n for which $3n + 7 > 25$.

    A. 7   B. 6   C. 5   D. 8

7.   If $\frac{1}{x} + \frac{1}{3x} \leq 1$, then which of the following is true for x ?

    A. x>=3/4   B. x>=4/3   C. x>=1/4   D. x<=1/4

8. A mathematics class has 12 boys and 16 girls. What fraction of the class are boys?

    A. 12/16   B. 16/12   C. 12/28   D. 16/28

9. A chemical solution contains 2% of acid. If there is 5 ml of acid, the quantity of the solution is:

    A. 0.1ml   B. 250ml   C. 10ml   D. 1ml

10.   In a tank holding 30 gallons of solution, 1 gallon is alcohol. What is the percentage of alcohol in the solution?

A. 1%   B. 30%   C. 3%   D. 3.33%

11. In the calculation of a question student multiply a number by 3/5 instead of 5/3. What is the percentage error in the calculation?
    A. 60%   B. 64%   C. 36%   D. 20%

12. In a car park, the ratio of red cars to green cars is 5:7 while the ratio of green cars to blue cars is 3:8. The ratio of red cars to blue cars is:
    A. 40:21   B. 15:21   C. 15:56   D. 215:40

13. A pile of 108 identical books weights $30 Kg$. How many books weight $20 Kg$?
    A. 72   B. 36   C. 80   D. 60

14. If 6y=4, then (6y+3)2=………
    A. 7   B. 49   C. 81   D. 36

15. If $(x-y)^2 = 2$ and $x^2 + y^2 = 2$, then xy =........
    A. 2   B. 1   C. 0   D. -1

16. If the length and breadth of a rectangle are 4 and 3 respectively. Then the length of diagonal is _____
    A. 7   B. 12   C. 5   D. 6

17. An angle of measure less than 90 degrees is called a/an -----
    A. Acute   B. Obtuse   C. Right angle   D. None of these

18. The sum of three consecutive numbers is 72. What is the smallest of these numbers?
    A. 22   B. 20   C. 21   D. 23

19. If $\dfrac{a}{3} = \dfrac{b}{4} = \dfrac{c}{7}$, then the value of $\dfrac{a+b+c}{c}$ is ---------
    A. 4   B. 2   C. 3   D. 7

20. The average savings of 2 girls and 2 boys is $250. Each girl saves $50 more than each boy. Find the savings of one boy.
    A. 37.5   B. 12.5   C. 8.5   D. 1.5

Section No. III – Molecular Biology

Sample Test Questions

1. The Central dogma of molecular biology states the flow of genetic information between proteins, DNA, and RNA in the sequence as:
    A. DNA > mRNA > Protein
    B. mRNA > DNA > Protein
    C. Protein >DNA > mRNA
    D. DNA > rRNA > Protein

2. A carbon atom can form maximum _____ bonds.
    A. 2   B. 3   C. 4   D. 5

3. The _____ specify which amino acid will be added next during protein synthesis.
    A. Codons   B. Nucleotides   C. Ribosomes   D. tRNA

4. Which one of the following is not a termination codon?
    A. UAA   B. UGA   C. UAG   D. UAC

5. The repeating units in RNA are _____.
    A. Riboucleotides   B. Deooxyribonucleotides   C. Amino acids   D. Fatty acids

6. Variant of a character is called _____
    A. Trait   B. Genotype   C. Phenotype   D. Character

7. Which one of the following is a pentose sugar?
    A. Deoxyribose   B. Mannose   C. Fructose   D. Galactose

8. Amino acids are the repeating units of _____.
    A. Proteins   B. DNA   C. RNA   D. Lipids

9. Hydrogen bond is a _____ bond.
    A. Ionic   B. Weak   C. Covalent   D. Both B & C

10. The process of generating a genetically identical copy of a cell or an organism is called as _____.
    A. Cloning   B. Genomics   C. Genetics   D. Recombinant DNA Technology

11. Two non-polar compounds interact via _____.
    A. Hydrophobic linkages   B. Hydrophilic linkages   C. Hydrogen bonding   D. Van der Waals forces

12. Which of the following growth elements are required for the synthesis of DNA, RNA, and ATP?
    A. Carbon and nitrogen   B. Carbon and phosphorous   C. Nitrogen and phosphorous
    D. Nitrogen and sulfur

13. X-linked recessive inheritance occurs in males which are usually _____.
    A. Homozygous   B. Heterozygous   C. Homozygous and heterozygous   D. Hemizygous

14. Which one of the following acts as instructions to make proteins?
    A. Gene   B. Intron   C. Transposon   D. Promoter

15. Co-dominance is a situation in which_____.
    A. Both alleles appear in the phenotype   B. One allele mask the effect of another
    C. Alleles has no effect in the phenotype   D. None of the given options

16. Which of the following proteins are present in chromosomes?
    A. Histone   B. Elastin   C. Coronin   D. Actin

17. The basic structural and functional unit of life is called _____
    A. Atom   B. Cell   C. Tissue   D. Organ

18. The tendency of an atom to attract electrons towards itself is called _____
    A. Electronegativity   B. Potential difference   C. Dipole moment   D. Redox potential

19. Which one of the following enzymes catalyzes the transcription process?
    A. RNA dependent RNA polymerase   B. RNA dependent DNA polymerase
    C. DNA dependent RNA polymerase   D. DNA dependent DNA polymerase

20. Which of the following is a feature of eukaryotic cell not found in prokaryotes?
A. Nucleus in cytoplasm, separated by a nuclear envelope
B. Complex chromosomes composed of DNA and associated proteins
C. Complex membranous cytoplasmic organelles
D. All of the given options

THE END