BIO542: Machine Learning for Biomedical Applications (MLBA)
(11ᵗʰ September 2024, Quiz1)

Maximum Marks: 20   **Duration: 20 Minutes**

Name:_____   **Admission No:** _____

Instructions: Attempt all questions, each question carry one mark. Please tick only best possible option.

1. What is the life expectancy in India according to UN 2023?
   a) **~70**   c) ~60
   b) ~80   d) ~50
2. Which is correct order in humans (Small to Big) ?
   a) Cell → Tissue → Atom   c) **Cell → Tissue → Organ**
   b) Cell → Organism → Tissue   d) Atom → Tissue → Cell
3. Which of the following is not amongst the five kingdoms of living organisms?
   a) Prokaryotae   c) Fungi
   b) **Bacteriophage**   d) Protista
4. Which of the following is not a part of a eukaryotic cell?
   a) Mitochondria   c) Golgi Apparatus
   b) Nucleus   d) Cell wall
5. Different cells in our body perform different functions because:
   a) Different cells have different genomes   **c) Different cells express different genes**
   b) Different cells have different organelles   d) None of the above
6. Which of the following statements about DNA is false?
   a) Polymer of 4 nucleotides (A,T,G,C)   c) Double stranded
   b) **DNA stands for Deoxynucleic Acid** d) Strands are 5'->3' and 3'->5'
7. Which of the following have smallest genome?
   a) Bacteriophage   c) **Coronavirus**
   b) E. coli   d) Human
8. In PCR, what is denaturation temperature in centigrade?
   a) 150   c) 54
   b) **94**   d) 21
9. Which of the following is reinforcement learning technique?
   a) KNN   c) C-mean
   b) SVM   **d) SARSA**
10. In the linear regression equation $Y = mX + C$, which one is the independent variable?
    a) Y   c) C
    b) **X**   d) m
11. Which of the following statement is true?
    a) Lasso regression uses L2 penalty   **c) Elastic net uses both L1 and L2 penalty**
    b) Ridge regression uses an L1 penalty d) Ridge regression uses no penalty

12. Which of the following is an equation for identity function?

    a) **f(x) = x**
                        c) f(x) = 1

    b) $f(x) = \begin{cases} 1 & if\ x \geq 0 \\ 0 & if\ x < 0 \end{cases}$
              d) $f(x) = \frac{1}{1+e^{-x}}$

13. Which of the following not a SVM kernel?

    a) Linear kernel
                        c) Polynomial kernel

    b) **HMM kernel**
                        d) RBF kernel

14. In the following markov model, what is the probability of P('Rain'|'Rain') and P('Dry'|'Rain')?

    a) 0.7, 0.3
                        c) 0.3, 0.7

    b) 0.3, 0.8
                        d) 0.3, 0.2

15. How are tuples created in Python?

    a) Using square brackets - [ ]
                c) Using angle brackets - < >

    b) Using curly braces – { }
                d) Using round brackets - ( )

16. For "a = [61, 72, 83, 24, 53]", what is the result of "print a[2]"?

    a) 72
                        c) 83

    b) 2
                        d) 24

17. Which of the following is a visualization library in Python?

    a) Seaborn
                      c) Pandas

    b) SciPy
                      d) OpenCV

18. Which of the following commands is used to drop all the records with missing values?

    a) dropnan()
                   c) removenan()

    b) dropna()
                  d) removena()

19. If we create an array – x = numpy.array([4.5, 2.3, 6.7, 1.2, 1.8, 5.5]); what will be the output for s = x.argsort()?

    a) [3, 4, 1, 0, 5, 2]
            c) [1.2, 1.8, 2.3, 4.5, 5.5, 6.7]

    b) [6.7, 1.2, 4.5, 5.5, 1.8, 2.3]
        d) [4, 5, 2, 1, 6, 1]

20. How to read N bytes of the file?

    a) S = input.readlines(N)
            c) S = input(N)

    b) S = input.read(N)
            d) S = open(input, "N")