



Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD)
Re-accredited with 'A++' Grade by NAAC. Recognized by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Continuous Internal Assessment Test II – October 2025

I SEMESTER

Class : I UG
Major: B.Voc AI & ML

Time: 2 hours
Maximum Marks: 60

23VAIC01 – Applied Mathematics

Course Outcomes:

- CO1. Work with Matrices and construct and co-efficient Matrix.
CO2. Formulate Problems in sets and Apply set operations.
CO3. Be familiar with Fundamental Notions of Probability and Analyze Real World Problems.
CO4. Construct Numerical Solutions of nonlinear equations.
CO5. Model grammars and Languages and able to device languages accepted by Finite State Automata.

Part-A

6x1=6

Choose the correct answer

- Probability of an impossible event----- CO3K1
a) 1 b) 0 c) Insufficient data d) Not defined
- Two unbiased coins are tossed. What is the probability of getting at most one head? CO3K1
a) 1/6 b) 1/3 c) 1/2 d) 3/4
- There are _____ tuples in finite state machine CO3K2
a) 4 b) 5 c) 6 d) 1
- _____ are called Natural languages. CO5K1
a) English b) Tamil c) Hindi d) All of the mentioned
- Language of finite automata is. CO5K2
a) Type 0 b) Type 1 c) Type 2 d) Type 3
- Languages of a automata is CO5K1
a) If it is accepted by automata b) If it halts
c) If automata touch final state in its life time d) All language are language of automata

Part- B

3x6=18

Answer ALL Questions

Each answer should not exceed 400 words or two pages

- a. Define the following terms. CO3K3
1) Event 2) Sample Space 3) Favorable Outcomes
(or)
- b. I) Define Conditional Probability. CO3K3
II) If a bag contains 6 blue ball, and 5 white balls and 4 yellow balls and if a ball is drawn out at random, what is the probability of not getting a white ball. CO3K3
- a. Define dependent and independent probability. CO3K3
(or)
- b. Define the following terms CO5K3
(1) Alphabet (2) String (3) Languages
- a. Let $G = \{(S, A), \{a, b\}, P, S\}$ with productions CO5K2
 $S \rightarrow Ab$
 $A \rightarrow aAb$
 $A \rightarrow \lambda$ CO3K3
(Or)
- b. Distinguish between DFA and NFA. CO3K3

Part-C

3x12=36

Answer ALL questions

Each answer should not exceed 800 words or four pages

10. a. Explain Bayes Theorem briefly. CO3K4
(or)
10. b. (1) Find the probability of 'getting 3 on rolling a die' CO3K4
(2) In a deck of 52 cards, what is the probability of drawing a King, given that the card drawn is a face card (Jack, Queen, or King)?
11. a. Define Axioms of the probability with example CO3K4
(or)
11. b. Explain Derivation tree with example CO5K4
12. a. Define grammar? Explain four types of grammars with examples? CO5K4
(or)
12. b. Briefly explain the finite state automata, and its types. CO5K4

No. of Copies: 55

Staff in-charge: Dr. B.Lavanya