CODE: A1CS501T	R23	H.T.No:										

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations NOV 2025

Subject Name: INTRODUCTION TO ARTIFICIAL INTELLIGENCE

Branch: CSE

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	List the main disciplines that contributed to the foundation of AI?	2M	CO1	BTL1
	b	Define an intelligent agent.	2M	CO1	BTL1
	c	What are uninformed search strategies? Give one example.	2M	CO2	BTL1
	d	What is a hill-climbing algorithm, and why can it get stuck?	2M	CO2	BTL2
	e	What is reinforcement learning?	2M	CO3	BTL1
	f	Define information extraction in NLP.	2M	CO3	BTL1
	g	What is machine translation? Give an example.	2M	CO4	BTL1
	h	What are early image processing operations? Give one example.	2M	CO4	BTL1
	i	Differentiate between deterministic and uncertain movement planning.	2M	CO5	BTL2
	j	Mention any four potential risks of AI development?	2M	CO5	BTL1
PART-B					
UNIT-I					
2	a	What are the key components of an AI system? Explain their roles with examples	5M	CO1	BTL2
	b	Compare simple reflex agents, model-based reflex agents, goal-based agents, and utility-based agents.	5M	CO1	BTL4
OR					
3	a	Describe the evolution of AI through its different historical phases, highlighting key milestones.	5M	CO1	BTL2
	b	Discuss the different types of environments in which agents operate.	5M	CO1	BTL2
UNIT-II					
4	a	Explain the concept of a problem-solving agent. How does it differ from a simple reflex agent?	5M	CO2	BTL4

	b	Compare Greedy Best-First Search and A* Search with suitable examples.	5M	CO2	BTL4
OR					
5	a	Explain the working of A* algorithm. Why is it considered optimal and complete under certain conditions?	5M	CO2	BTL3
	b	Discuss the advantages and disadvantages of Iterative Deepening Search compared to Breadth-First and Depth-First Search.	5M	CO2	BTL4
UNIT-III					
6	a	Explain the working mechanism of Passive Reinforcement Learning with an example.	5M	CO3	BTL3
	b	Describe the steps involved in building a text classification system.	5M	CO3	BTL2
OR					
7	a	Illustrate any two real-world applications of reinforcement learning and explain their significance.	5M	CO3	BTL2
	b	Discuss the major challenges faced in Information Extraction and possible solutions.	5M	CO3	BTL2
UNIT-IV					
8	a	Discuss the process of syntactic analysis in Natural Language Processing with a suitable example.	5M	CO4	BTL2
	b	What are the main stages of speech recognition? Explain the role of feature extraction and language modeling.	5M	CO4	BTL2
OR					
9	a	Explain the process of image formation in computer vision.	5M	CO4	BTL2
	b	Describe object recognition from structural information with the help of an example.	5M	CO4	BTL3
UNIT-V					
10	a	Explain the role and types of robot hardware used in modern robotics systems.	5M	CO5	BTL2
	b	Discuss how robots handle planning under uncertainty. Mention any common techniques used.	5M	CO5	BTL4
OR					
11	a	Differentiate between Weak AI and Strong AI with suitable examples.	5M	CO5	BTL4
	b	Discuss any three application domains of robotics and explain their societal or industrial impact.	5M	CO5	BTL3

*****

CODE: A1CS502T	R23	H.T.No:										

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations NOV 2025

Subject Name: COMPUTER NETWORKS

Branch: CSE

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	What is the difference between Local Area Network (LAN) and Wide Area Network (WAN)?	2M	CO1	BTL2
	b	Identify the suitable network type for connecting devices within a home.	2M	CO1	BTL3
	c	What is Collision in data communication?	2M	CO2	BTL1
	d	Distinguish between Classic Ethernet and Switched Ethernet.	2M	CO2	BTL2
	e	What is store-and-forward packet switching?	2M	CO3	BTL1
	f	Mention any two differences between IPv4 and IPv6.	2M	CO3	BTL2
	g	Mention any two wireless issues that affect transport layer performance.	2M	CO4	BTL1
	h	What is User Datagram Protocol (UDP) and when is it preferred?	2M	CO5	BTL2
	i	What is the function of a Mail Transfer Agent (MTA)?	2M	CO6	BTL1
	j	State the difference between HTTP and HTTPS.	2M	CO6	BTL2
PART-B					
UNIT-I					
2	a	Explain the concept of Protocol Layering and its advantages in network design.	5M	CO1	BTL2
	b	Justify the importance of reliability and service primitives in achieving effective network communication.	5M	CO1	BTL4
OR					
3	a	Illustrate the working of a Home Network with the help of a neat diagram.	5M	CO1	BTL3
	b	Discuss the functions and importance of Network Protocols in communication.	5M	CO2	BTL2
UNIT-II					
4	a	Explain the different types of Guided Transmission Media used in computer networks with neat diagrams.	5M	CO2	BTL2
	b	Differentiate between Go-Back-N and Selective Repeat Sliding Window Protocols.	5M	CO2	BTL3

		OR			
5	a	Describe the various Framing methods used in the Data Link Layer with suitable examples.	5M	CO2	BTL3
	b	Explain the Aloha Protocol and discuss its efficiency and limitations.	5M	CO2	BTL4
		UNIT-III			
6	a	Explain the design issues of the Network Layer and discuss its main responsibilities in data communication.	5M	CO3	BTL2
	b	Explain how packet fragmentation and reassembly are performed when networks support different packet sizes.	5M	CO3	BTL4
		OR			
7	a	Compare and contrast Virtual-Circuit and Datagram networks with examples.	5M	CO3	BTL4
	b	Explain the operation of BGP (Border Gateway Protocol) and its role as an exterior gateway routing protocol.	5M	CO3	BTL2
		UNIT-IV			
8	a	Explain with a neat diagram the working of an Internet File Server using socket programming.	5M	CO4	BTL2
	b	Explain the structure of the TCP Segment Header and the function of each field.	5M	CO4	BTL2
		OR			
9	a	Describe the services provided by the Transport Layer to the upper layers with suitable examples.	5M	CO4	BTL2
	b	Discuss the importance of congestion control and flow control in TCP with suitable examples.	5M	CO4	BTL3
		UNIT-V			
10	a	Explain the working of HTTP with request and response message formats.	5M	CO6	BTL3
	b	Compare the Client-Server model and Peer-to-Peer model in the Application Layer with examples.	5M	CO5	BTL4
		OR			
11	a	Explain the architecture and working of a Content Delivery Network (CDN) with a suitable diagram.	5M	CO5	BTL2
	b	Discuss the advantages and disadvantages of P2P networks compared to client-server architectures.	5M	CO6	BTL4

*****

CODE:	R23	H.T.No:									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B. Tech III Year I Semester Regular Examinations NOV 2025

AUTOMATA THEORY AND COMPILER DESIGN(A1CS503)

Branch: CSE

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	Distinguish between DFA and NFA.	2M	CO1	BTL4
	b	List out the advantages of regular expressions.	2M	CO1	BTL1
	c	Compare and contrast the Rightmost derivation with Left most derivation with example.	2M	CO2	BTL2
	d	Distinguish between deterministic and nondeterministic PDA.	2M	CO2	BTL4
	e	Describe the multi head Turing Machine.	2M	CO3	BTL2
	f	How many phases does analysis phase consists define it?	2M	CO3	BTL1
	g	Define LR (0) items in bottom-up parsing?	2M	CO4	BTL1
	h	Translate **x + y-(a*b) + c** into three address code?	2M	CO4	BTL3
	i	Define Peephole optimization?	2M	CO5	BTL1
	j	Generate the target machine code for the statemen **x: =x+1**	2M	CO5	BTL1
PART-B					
UNIT-I					
2	a	Construct a DFA to accept set of all strings ending with **0101**.	5M	CO1	BTL2
	b	Design NFA for accepting any binary string that contains **11** as a substring and Convert to DFA.	5M	CO1	BTL6
OR					
3	a	Convert Regular Expression **01* + 1** to Finite Automata.	5M	CO1	BTL3
	b	State Pumping Lemma for Regular Languages with a suitable example.	5M	CO1	BTL2
UNIT-II					
4	a	Consider a = ({S, A}, {a,b}, P, S) where P consists of **S → aAS | a** **A → SbA | SS | ba** Convert it to its equivalent CNF	5M	CO2	BTL3
	b	Write properties of context free languages?	5M	CO2	BTL2
OR					
5	a	Define push down automata? Design PDA for the language L = {001}	5M	CO2	BTL1
	b	Write a short note on PDA with two stacks with diagram?	5M	CO2	BTL2
UNIT-III					
6	a	Explain a role of Syntax analysis and Semantic analysis?	5M	CO3	BTL3
	b	Explain the architecture and working of a Turing Machine with a neat diagram.	5M	CO3	BTL2
OR					
7	a	Define compiler? State various phases of a compiler and explain them in detail?	5M	CO3	BTL1
	b	Explain the role and issues of Lexical Analyzer?	5M	CO3	BTL2

		UNIT-IV			
8		Construct predictive parsing table for the following grammar, E → TE' E' → +TE'/ε T → FT' T' → *FT'/ε F → (E)/id	10M	CO4	BTL6
		OR			
9	a	Construct predictive parser for the given grammar and input string is acbdh S -> aBh | Ce B -> cC C -> bd | €	5M	CO4	BTL2
	b	What are the benefits of intermediate code generation?	5M	CO4	BTL1
		UNIT-V			
10	a	Explain the principle sources of code optimization in detail?	5M	CO5	BTL2
	b	Explain how the following expression can be converting in a DAG. **a + b*(a + b) + c + d**	5M	CO5	BTL2
		OR			
11	a	Analyze the role of DAG in detecting common subexpressions and optimizing computations	5M	CO5	BTL3
	b	Consider the following basic block of 3-address instructions. Generate target code for the source language statement and finds its cost. a: = b + c x: = a + b b: = a – d c: = b + c d: = a – d y: = a – d	5M	CO5	BTL4

*****

CODE: A1CS505k	R-23	SET-2

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations NOV-2025

INTRODUCTION TO QUANTUM TECHNOLOGIES AND APPLICATIONS

Time: 3 Hours Branch: CSE **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	What is meant by 'superposition' in quantum mechanics?	2M	CO1	L1
	b	Why quantum entanglement is considered as a non-classical phenomenon?	2M	CO1	L1
	c	What is a Hilbert space in the context of quantum information?	2M	CO2	L1
	d	How does quantum randomness differ from classical determinism?	2M	CO2	L1
	e	Why 'scalability' is an important requirement for a quantum computer?	2M	CO3	L1
	f	Name the four core conditions required for a functional quantum system.	2M	CO3	L1
	g	What is quantum gate? Give one example.	2M	CO4	L1
	h	Mention the steps involved in quantum key distribution (QKD).	2M	CO4	L1
	i	Why standardization is important in quantum technology adoption?	2M	CO5	L1
	j	What skills are essential for carriers in quantum computing?	2M	CO5	L1
PART-B					
UNIT-I					
2	a	Why is quantum science considered revolutionary for technology development and national security?	5M	CO1	L1
	b	Write a short note on Bloch sphere representation of a qubit	5M	CO1	L2
OR					
3	a	What is the significance of "measurement" in quantum mechanics?	4M	CO1	L1
	b	Define uncertainity principle. What implications does it have for measurements at the atomic scale.	6M	CO1	L1
UNIT-II					
4	a	Describe the working principles of superconducting circuits as quantum systems	5M	CO2	L4
	b	Write a short note on philosophical implications of quantum determinism.	4M	CO2	L2
OR					
5	a	What is superconductivity? Explain about different components of superconducting circuits in quantum systems.	7M	CO2	L2
	b	Why trapped ions are good choice for quantum systems?	3M	CO2	L2
UNIT-III					
6	a	Analyze the importance of quantum error correction, explain why it is necessary in building quantum machines.	5M	CO3	L4
	b	How can quantum software reduce the impact of noise and error in quantum systems?	5M	CO3	L2
OR					
7	a	Examine the gap between vision and reality in quantum computer development: what has been achieved and what major challenges remain?	6M	CO3	L4
	b	Why isolation is important in quantum systems?	4M	CO3	L2
UNIT-IV					
8		Discuss the differences between quantum parallelism and classical parallelism and why quantum parallelism provides a computational advantage?	10M	CO4	L6
OR					
9	a	Evaluate the real-world importance and future potential of quantum communication and computing technologies.	6M	CO4	L5
	b	How does quantum entanglement contribute to communication?	4M	CO4	L1
UNIT-V					
10	a	Analyze the role of education and training in quantum workforce development.	6M	CO5	L4
	b	List out emerging carrier roles in quantum field.	4M	CO5	L4
OR					
11	a	Analyze the impact of quantum computing on material science focusing on breakthroughs in sustainable catalysts and energy storage materials.	7M	CO5	L4
	b	What is the primary focus of Microsoft's quantum program	3M	CO5	L2

*****

CODE: A1CS504as	R23	H.T.No:									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations NOV 2025

Subject Name: Software Testing Methodologies

Branch: CSE

Time: 3 Hours **SET-1** **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	What is the role of a model in MBT?	2M	CO1	BTL1
	b	Define a control flow graph.	2M	CO1	BTL1
	c	What is integration testing?	2M	CO2	BTL1
	d	Define finite state machine.	2M	CO2	BTL1
	e	Differentiate between predicate coverage and clause coverage.	2M	CO3	BTL2
	f	What is functional testing?	2M	CO3	BTL1
	g	What is the goal of mutation testing?	2M	CO4	BTL1
	h	Define terminal and non-terminal symbols in a grammar.	2M	CO4	BTL2
	i	Mention any two types of tests performed on web services.	2M	CO5	BTL1
	j	What is polymorphism testing?	2M	CO5	BTL1
PART-B					
UNIT-I					
2	a	Define the following terms with examples: Error, Fault, Failure, Test Case, and Test Suite.	5M	CO1	BTL1
	b	What are the advantages of using JUnit for automated testing? Explain how JUnit supports regression testing.	5M	CO1	BTL2
OR					
3	a	Differentiate between verification and validation. Why are both essential in the testing lifecycle?	5M	CO1	BTL4
	b	Describe node coverage, edge coverage, and path coverage.	5M	CO1	BTL2
UNIT-II					
4	a	Define multiple condition coverage and modified condition/decision coverage. Explain their role in testing safety-critical systems.	5M	CO2	BTL3
	b	Describe predicate coverage and clause coverage.	5M	CO2	BTL2

		OR			
5	a	Compare specification-based testing and graph-based structural testing.	5M	CO2	BTL4
	b	What are stubs and drivers? Explain their role in different integration strategies with suitable examples.	5M	CO2	BTL3
		UNIT-III			
6	a	Explain logic coverage criteria with an example.	5M	CO3	BTL3
	b	Differentiate between state coverage, transition coverage, and logic coverage in FSM testing.	5M	CO3	BTL4
		OR			
7	a	Define Input Space Partitioning (ISP)? How are partitions identified, and how are test inputs chosen from them?	5M	CO3	BTL2
	b	Explain any four common covering criteria used in software testing.	5M	CO3	BTL2
		UNIT-IV			
8	a	Explain different Mutation Operators for Source Code.	5M	CO4	BTL2
	b	Compare Mutation Testing with Graph-Based and Logic-Based Testing.	5M	CO4	BTL4
		OR			
9	a	Describe how input grammars can be used to improve test coverage in syntax-based testing.	5M	CO4	BTL2
	b	Explain strong mutation and weak mutation testing.	5M	CO4	BTL2
		UNIT-V			
10	a	Explain the key challenges in testing Web Applications.	5M	CO5	BTL2
	b	Discuss the characteristics of Object-Oriented Applications that affect testing.	5M	CO5	BTL2
		OR			
11	a	Explain the major steps in Symbolic Execution.	5M	CO5	BTL2
	b	Describe the architecture of DART and explain how it automatically generates high-coverage test inputs.	5M	CO5	BTL4

*****

CODE: A1HS505f	R23	H.T.No:									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech III Year I Semester Regular Examinations November 2025

Subject Name: **ENGLISH FOR COMPETITIVE EXAMINATIONS**

Branch: Common to All Branches of Engineering

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	Find the errors (Nouns) (i) She gave me an advices. (ii) He bought two furnitures	2M	CO5	L2
	b	Fill in the blank with the suitable Articles: (i) ___ apple a day keeps the doctor away. (ii) Fill in the blank: He met ___ European scholar	2M	CO4	L2
	c	Fill in the blanks with the correct Tense form. (i) I ___ (finish) my homework yesterday. (ii) He ___ (meet) me tomorrow.	2M	CO2	L2
	d	Convert into Active Voice. (i) The food was cooked by Ramu. (ii) The letter is being typed by her	2M	CO1	L2
	e	Verbal Analogy (Abstract Pattern): (i) Innovation : Progress :: Negligence : ____ (Failure / Discovery / Motivation) (ii) Hypothesis : Experiment :: Blueprint : ____ (Construction / Drawing / Analysis)	2M	CO2	L3
	f	Instruction (Academic Vocabulary Task): (i) Write a synonym for analyse. (evaluate / ignore / confuse) (ii) Write the antonym of expand. (contract / extend / maximize)	2M	CO3	L6
	g	Choose the correct antonym. (i) Accept → (reject / allow / give) (ii) Scarce → (plenty / closed / high)	2M	CO3	L3
	h	Phrasal Verbs: Choose correct meaning. (i) Look into → (investigate / stare / search) (ii) Turn down → (reject / rotate / write)	2M	C04	L1
	i	Punctuation: (i) Add commas where needed: After the meeting we went to lunch (ii) Add quotation marks: He shouted stop immediately	2M	CO1	L4
	j	(i) Define paragraph. (ii) State one characteristic of a good paragraph.	2M	CO3	L2

PART-B					
UNIT-I					
2	a	Find and correct the Noun errors: a) She has many informations. b) He gave me a good advices. c) The sceneries are beautiful. d) He has much friends. e) These news are false.	5M	CO1	L3
	b	Fill in the blanks with suitable Conjunctions: a) He missed the bus ___ he was late. b) Work hard ___ you will fail. c) She is poor ___ honest. d) Wait here ___ I come back. e) He didn't come ___ he was sick.	5M	CO1	L3
OR					
3	a	Correct the following sentences (Adverbs): a) She runs quick. b) He did it good. c) The baby is crying loud. d) She sings sweetlyly. e) He behaved bad yesterday.	5M	CO2	L3
	b	Fill in the blanks with Prepositions. a) The cat is hiding ___ the bed. b) The boy is sitting ___ his friend. c) He lives ___ Chennai. d) They are good ___ English. e) She is fond ___ music.	5M	CO1	L2
UNIT-II					
4	a	Change to Passive Voice. (i) They are making a cake. (ii) She has written the report. (iii) He will finish the work. (iv) I cleaned the room. (v) They teach English.	5M	CO1	L5
	b	Fill in the correct Tense of the verbs. (i) I ___ (read) now. (ii) She ___ (go) yesterday. (iii) They ___ (play) tomorrow. (iv) He ___ (write) every day. (v) We ___ (eat) already.	5M	CO4	L5
OR					

5	a	Write any 5 sentences converting Direct to Indirect Speech. Provide your own examples.	5M	CO4	L4
	b	Change into Reported Speech. (i) He said, "I like music." (ii) She said, "We are studying now." (iii) They said, "We went yesterday." (iv) He said, "I will come tomorrow." (v) She said, "I have finished it."	5M	CO3	L2
UNIT-III					
6	a	Write a coherent paragraph (7–10 sentences) on 'Importance of Data Privacy'	5M	CO5	L3
	b	Verbal Analogies (Conceptual Reasoning) Choose the correct pair: (i) Algorithm : Solution :: Blueprint : ____ A) Building B) Engineer C) Machine D) Document (ii) Processor : Speed :: Memory : ____ A) Capacity B) Size C) Weight D) Cost (iii) Keyboard : Input :: Monitor : ____ A) Output B) Storage C) Processing D) Connection (iv) Neuron : Brain :: Transistor : ____ A) Circuit B) Motor C) Wire D) Signal (v) Programmer : Code :: Writer : ____ A) Ink B) Novel C) Music D) Paper	5M	CO5	L5
OR					
7	a	Instruction-Based (Do as Directed) (i) Choose the best synonym for evaluate: A) judge B) ignore C) break D) create (ii) Choose the best antonym for expand: A) contract B) improve C) continue D) modify (iii) Convert to passive: Engineers design machines. A) Machines are designed by engineers. B) Machines were designed by engineers. C) Machines are designing engineers. D) Engineers are machines. (iv) Choose the correct academic word for very important: A) critical B) small C) casual D) temporary (v) Select the correctly used form of feasible: A) This plan is not feasible. B) I feasible the design. C) Feasible are plans. D) They feasibility it.	5M	CO2	L3

	b	Write a short note on the topic' Technology is a double edged knife'	5M	CO4	L5
UNIT-IV					
8	a	Synonyms: Choose the closest meaning. (i) Vital → (ii) Benevolent → (iii) Adequate → (iv) Pioneer → (v) Emphasize →	5M	CO1	L2
	b	Antonyms: Choose the correct opposite. (i) Rigid → (ii) Frequent → (iii) Artificial → (iv) Generous → (v) Permanent →	5M	CO2	L2
OR					
9	a	Write a short on 'Speed Reading techniques'.	5M	CO4	L3
	b	Suggest some Memory techniques to enhance learning.	5M	CO6	L2
10	a	Paragraph Writing (100 words each): Write a paragraph on 'Importance of Time Management'	5M	CO5	L3
	b	Write an essay on Note taking and Note making with examples.	5M	CO4	L3
OR					
11	a	Expansion of Proverbs (10-12 sentences): Prevention is better than cure	5M	CO5	L2
	b	Write a short essay (120–150 words) on Festivals Strengthen Culture.	5M	CO5	L4

*****