3 Yr. Degree/4 Yr. Honours 6th Semester Examination, 2026 (CCFUP)

Subject : Computer Application

Course : BCA6012 (MAJOR)

(Artificial Intelligence)

Time: 2 Hours **Full Marks: 40**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* questions from the following: 2×5=10

(a) Define heuristic search.
(b) What is hill climbing?
(c) What is predicate logic?
(d) What is a rule-based system?
(e) What is plateau in context of search space?
(f) What is a game-playing problem in AI?
(g) Define an expert system.
(h) What is knowledge base?

2. Answer *any two* questions from the following: 5×2=10

(a) Differentiate between blind search and heuristic search. Write down different knowledge representation techniques. 2+3
(b) What is state space? Draw a simple state space diagram for a problem of your choice. 1+4
(c) Write any two advantages of semantic network. Explain how knowledge can be represented using a semantic network. 2+3
(d) What is uncertainty in AI? Explain the need for handling uncertainty in intelligent systems. 2+3

3. Answer *any two* questions from the following: 10×2=20

(a) Explain the hill climbing algorithm with an example. Discuss the advantages and limitations of hill climbing. 5+5
(b) Explain the basic components of predicate logic. Represent the following statements using predicate logic: 5+5
  (i) All students are intelligent.
  (ii) Some birds can fly.
(c) Explain the basic steps involved in a Genetic Algorithm. Discuss the roles of crossover and mutation operation. 6+4
(d) Write short notes on: 5+5
  (i) Robotics
  (ii) Advantages of Neural Networks

BCA (Honours) 5th Semester Examination, 2024

Subject : Computer Application

Course : BCA-505

(Intelligent Systems)

Time: 4 Hours **Full Marks: 80**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer Q1 *and* any four *from the rest.*

2×8=16

1. Answer *any eight* questions:
   (a) Define Artificial Intelligence.
   (b) Define rational agent.
   (c) What is a Knowledge Based System?
   (d) What is supervised learning?
   (e) What is Neural Network?
   (f) What is over fitting in context of machine learning?
   (g) What is computer vision?
   (h) What is the principle of fuzzy logic?
   (i) Define modus ponens.
   (j) Define Hypothetical syllogism.
   (k) What is knowledge?
   (l) What is local maxima in context to search space?

2. (a) How is AI impacting various industries?
   (b) Write down the differences between informed and uninformed search.
   (c) Write down the main challenges of Artificial Intelligence. 6+6+4

3. (a) Explain A* Algorithm with suitable example.
   (b) Explain Learning by induction. 12+4

4. (a) Discuss different types of knowledge representation scheme.
   (b) Write down the relation between knowledge and intelligence.
   (c) Explain forward and backward chaining of inference. 4+6+6

5. (a) What are the techniques used to avoid over fitting in machine learning?

   (b) What is the role of activation functions in neural networks?

   (c) What are some commonly used Artificial Neural Networks? 4+5+7

6. (a) What is Pruning?

   (b) Briefly explain the concept of Alpha-beta pruning.

   (c) Explain Bayesian network with example. 2+8+6

7. Write short notes (*any two*): 8×2=16

   (a) Genetic Algorithms

   (b) Fuzzy Logic and its usage

   (c) Natural Language processing

   (d) Expert system

BCA (Honours) 5th Semester Examination, 2023

Subject : Computer Application

Course : BCA-505

(Intelligent Systems)

Time: 4 Hours **Full Marks: 80**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer Q1 *and* any four *from the rest.*

2×8=16

1. Answer *any eight* questions:
   (a) What is Artificial Intelligence?
   (b) What is Supervised Learning?
   (c) What are Intelligent Agents?
   (d) What is knowledge base?
   (e) What is overfitting?
   (f) What is Text mining?
   (g) What is a heuristic function?
   (h) What are the steps that is used in constructing a plan?
   (i) What is Neural Network?
   (j) What is a top-down parser?
   (k) What is a rational agent and what is rationality?
   (l) What is Tautology? Give example.

2. (a) What are the different types of Artificial Intelligence?
   (b) Explain the different domains of Artificial Intelligence.
   (c) What are the different platforms for Artificial Intelligence development? 5+7+4

3. (a) Write down AO* Algorithm with suitable example.
   (b) Write down the differences between Breadth First Search and Depth First Search. 12+4

4. (a) What is Fuzzy Logic?
   (b) Write down different applications of Fuzzy logic.
   (c) What is Q-learning? 4+8+4

Please Turn Over

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5. (a) What is Natural Language processing?
   (b) Discuss different components of Natural Language Processing.
   (c) Write the differences between Forward and Backward Chaining. 3+7+6

6. (a) List some of the rules of inference.
   (b) Distinguish between fact and predicate.
   (c) Explain Bayesian Networks with example.
   (d) Define a well formed formula (WFF). 5+3+6+2

7. Write short notes (*any two*): 8×2=16
   (a) Genetic Algorithms
   (b) Expert System
   (c) First Order Predicate Logic (FOPL)
   (d) Alpha-beta pruning

BCA (Honours) 5th Semester Examination, 2022

Subject : Computer Application

Course : BCA-505

Time: 4 Hours **Full Marks: 80**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Answer any eight *from* Q1 *and* any four *from the rest.*

1. Answer *any eight* questions: 2×8=16

(a) What is tautology?
(b) Define knowledge base.
(c) What is the use of computer vision in AI?
(d) What is reinforcement learning?
(e) Explain rational agents.
(f) What is inference engine?
(g) What is Heuristic function?
(h) What is overfitting?
(i) What is Fuzzy Logic?
(j) Define State Space Search.
(k) What is WFF?
(l) Represent the sentence 'All teachers like all students' in predicate formula.

Answer *any four* questions. 16×4

2. (a) What are some real life applications of AI?
(b) What is the difference between strong AI and weak AI?
(c) How agents are used in AI? 6+4+6

3. (a) Explain the commonly used Artificial Neural Networks.
(b) What is the Turing Test in AI?
(c) What is Game Theory? Is it related to AI? 8+3+5

4. (a) Discuss briefly A* algorithm with example.
(b) What is the difference between breadth first and depth first search algorithm?
(c) What are iterative deeping DFS algorithm? 8+5+3

Please Turn Over

5. (a) What is an Expert System?
   (b) List the characteristics of the expert system.
   (c) What are the components of the expert system? 2+7+7

6. (a) What are Bayesian Networks? How is it used in AI?
   (b) What is perceptron?
   (c) Discuss Alpha-beta pruning. 8+2+6

7. Write short note (*any two*): 8×2=16
   (a) Genetic Algorithm
   (b) Natural Language Processing
   (c) FOPL
   (d) Fuzzy Logic

B.C.A(Hons)Semester V Examination, 2021

Paper Name: Intelligent System ***Paper Code:BCA 505***

Subject: Computer Application

F.M:80 **Time:3Hrs.**

Group A

Answer any *six* questions. **6x5=30**

1. Differentiate between Strong Artificial Intelligence and Weak Artificial Intelligence? 2+3
2. State five applications of Artificial Intelligence. 5
3. Explain different operators in propositional logic. 5
4. List some of the rules of inference. 5
5. List the characteristic features of an expert system. 5
6. Briefly explain Fuzzy logic with example. 5
7. Explain the concept of planning with state space search. 5
8. Discuss the limitations of Predicate logic with an example. 5

Group B

Answer any five Questions. **5x10=50**

1. **(a)**Define a well-formed formula (wff).

(b) Distinguish between forward and backward chaining. 4+6

2. Explain Bayesian networks with example. 10

3. Explain the steps involved in the knowledge engineering process. Give an example. 10

4. **(a)**What are the basic aspects of the robotics?

(b) Briefly explains Conditional probability with example. 4+6=10

5. What is Natural Language Processing? Discuss different components of Natural Language Processing. 3+7=10

6. Explain A* algorithm with an example. 10

7. Explain the following with example (any one): 1x10=10

a. Minimax algorithm

b. Genetic algorithms