Total No. of Questions : **08** Roll No. : 0701.....

B.Tech EIGHTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-8301 CLOUD COMPUTING AND APPLICATION

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a)	Explain cloud service life cycle in detail.	***07***
(b)	Illustrate the characteristics of cloud computing.	***07***
2(a)	Describe different components of cloud computing.	***07***
(b)	Explain in detail about CloudSim architecture.	***07***
3(a)	Explain basic principles of cloud computing in detail.	***07***
(b)	Describe various security challenges in cloud computing.	***07***
4(a)	What is virtualization? Explain VMware level virtualization.	***07***
(b)	Describe different application and benefits of cloud computing.	***07***
5(a)	What is IaaS? Explain with its benefits and features?	***07***
(b)	What are the issues in cloud computing? How to improve the performance of cloud platforms?	***07***
6	Explain the following in detail : (i) Software as a Service (ii) Platform as a Service.	***14***
7(a)	How to create a new virtual machine on local host?	***07***
(b)	Illustrate the government policies of cloud computing and how these policies are adopted by any organization?	***07***
8(a)	Differentiate between traditional IT service providers and cloud providers?	***07***
(b)	Explain following term (**any two**) : (i) Green cloud (ii) Grid computing (iii) Cloning virtual machine.	***07***

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B.Tech EIGHTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

CS-8313 (EL-I) ARTIFICIAL INTELLIGENCE

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Describe hill climbing and its variations (steepest ascent, stochastic, simulated annealing). When does it fail? ***07***

(b) Explain the concept of a game tree. What is the evaluation function and how is it used? ***07***

2(a) Define predicate logic and explain the structure of a well-formed formula (WFF). Translate the following English sentence into predicate logic: "Every student who studies AI passes the exam." Discuss the importance of quantifiers in this context. ***07***

(b) Compare and contrast the following knowledge representation techniques in terms of expressiveness, reasoning capability and ease of use : predicate logic, semantic networks, frames and conceptual dependency. Under what situations would each be preferable? ***07***

3(a) Identify at least three real-world applications of neural networks. For one of the applications, explain how the network is trained and what metrics are used to evaluate performance. What challenges might arise during training? ***07***

(b) Explain the different types of learning (supervised, unsupervised, reinforcement) used in neural networks. For each type, give a practical example and describe how the error or reward guides weight updates. ***07***

4(a) Consider two fuzzy sets A and B defined on universe U = $\{x_1, x_2, x_3\}$ with membership grades : ***07***

$A = \{(x_1, 0.2), (x_2, 0.6), (x_3, 1.0)\}$
$B = \{(x_1, 0.5), (x_2, 0.4), (x_3, 0.7)\}$

Compute the union, intersection, and complement of set A and B using standard fuzzy operations.

(b) List and briefly describe three real-world industrial applications of fuzzy logic. For one application, describe how the fuzzy logic controller processes inputs and gives output decisions. ***07***

5(a) Explain genetic encoding in the context of GAs. Compare binary encoding, real-valued encoding, and permutation encoding. Provide an example of encoding a knapsack problem using binary encoding. ***07***

(b) Describe three real-world applications of Genetic Algorithms in different fields such as engineering design, machine learning, and bioinformatics. For each application, explain how GA optimizes the problem and the specific GA parameters used. ***07***

P.T.O.

6(a) Compare and contrast forward chaining and backward chaining inference techniques. Using a simple knowledge base, demonstrate both techniques with step-by-step execution. ***07***

(b) Compare a biological neuron with an artificial neuron. How does the abstraction in the artificial neuron model capture the information processing capability of the biological one? Identify the limitations of this abstraction. ***07***

7(a) What is a membership function in fuzzy logic? Sketch and describe any three types of membership functions. What are the criteria for selecting a membership function in an application? ***07***

(b) Consider a Genetic Algorithm applied to a simple optimization problem with a population size of 4 and a chromosome length of 5 bits. The population is initialized as follows : ***07***

P = {01101, 10110, 11000, 01011}

Using roulette wheel selection, calculate the probability of selection for each individual in the population.

8 Write short note on **any two** : ***14***

(i) Alpha-beta pruning
(ii) Auto-associative and hetro-associative memory
(iii) Fuzzy and Crisp relations
(iv) Semantic Net–slots

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Total No. of Questions : **08** Roll No. : 0701.....

B.Tech EIGHTH SEMESTER EXAMINATION JUNE-2025

(Branch : Computer Science & Engineering)

ME-8347 (OEL-IV) ROBOTICS

Time : Three Hours ***Maximum Marks : 70***
Min. Pass Marks : 22

Note : Attempt any five questions. Each question carries equal marks.

1(a) Describe the different categories of industrial robots according to their mechanical structure. ***07***

(b) What do the terms repeatability, accuracy, compliance and resolution mean in the context of robotics, and why are they important? ***07***

2(a) What are the key differences in performance and efficiency between hydraulic, pneumatic, and electric drives in robotics? ***07***

(b) What are the key factors to consider when choosing a drive system for robotic applications involving low, medium and high payloads? Provide a brief explanation for each. ***07***

3(a) When selecting a distance sensor for a robot, what key characteristics should be evaluated? What aspects are important when choosing a sensor that will be used in very hot environments? ***07***

(b) What benefits and drawbacks are associated with the use of multimodal sensor systems, such as those combining vision and tactile sensing in robotics? ***07***

4(a) What are the fundamental principles and characteristics of proximity and range sensors? ***07***

(b) What factors are important to consider when choosing a sensor for a particular application? ***07***

5(a) Describe various types of robot programming methods. ***07***

(b) Distinguish between walk through and lead through programming. ***07***

6(a) List five major applications of robots in the manufacturing industry. ***07***

(b) What are the important factors to consider when designing robot grippers? ***07***

7(a) Briefly discuss the safety consideration and its levels of robots in an industrial environment. ***07***

(b) Discuss the acceptance rule for industrial robots. ***07***

8 Write short notes on **any two** : ***14***

(i) Current and future applications of robots
(ii) Economic considerations for robots
(iii) Robotic exoskeletons

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