Time: 3 Hours   **Max. Marks: 80**

Note:
 (1) Question No. 1 is **Compulsory**.
 (2) Attempt any **three** questions out of the remaining **five** questions.
 (3) Each question carries 20 Marks.
 (4) Assume suitable data if required.

1.		Attempt **any four.**	
	(a)	Define Intelligent Agent. What are the characteristics of an Intelligent Agent?	**5**
	(b)	Write applications of the Breadth First Search (BFS) algorithm.	**5**
	(c)	What is FOPL? Represent the following sentences using FOPL i) John has at least two friends ii) If two people are friends then they are not enemies.	**5**
	(d)	Differentiate between forward and backward chaining.	**5**
	(e)	Explain PEAS with the help of one example.	**5**
2.	(a)	Draw and Describe the Architecture of the Utility-based agent. How is it different from a Model-based agent?	**10**
	(b)	Explain A* Algorithm with an example.	**10**
3.	(a)	Explain the Resolution by Refutation with a suitable example.	**10**
	(b)	State the limitations of the steepest-ascent Hill climbing algorithm.	**10**
4.	(a)	Describe the Min-Max algorithm in detail with the help of one example. Also, discuss the properties of the Min-Max algorithm.	**10**
	(b)	Explain different inference rules for First Order Predicate Logic (FOPL).	**10**
5	(a)	Define the terms chromosome, fitness function, crossover and mutation as used in Genetic algorithms. Explain how Genetic algorithms work.	**10**
	(b)	Explain the following i) Static and Dynamic Environment ii) Single-agent and Multi-agent Environment.	**10**
6.		Write a short note on **any two** of the following.	
	(a)	Expert System Architecture and Applications	**10**
	(b)	Local Search Algorithms	**10**
	(c)	Decision Tree learning	**10**

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Duration – 3hrs   **Marks- 80**

N.B. (1) Question no. 1 is compulsory.
         (2) Attempt any three from remaining five questions.

Q1.
a. Explain the component of Cloud computing.   **05**
b. Discuss cloud service models   **05**
c. Explain benefits associated with virtualization.   **05**
d. Draw Out the comparison between KVM and XEN Hypervisor.   **05**

Q2.
a. Explain the features of open Stack in detail.   **10**
b. What does the acronym PaaS and IaaS mean? How does it relates to Cloud   **10**
       computing?

Q3.
a. Discuss CIA triad of information system security.   **10**
b. What is Everything-as- a-service (XaaS)? Explain in detail.   **10**

Q4.
a. What is VMM? Explain in short implementation levels of virtualization.   **10**
b. Draw and Explain in short cloud computing security architecture?   **10**

Q5.
a. Explain architecture of Mobile Cloud Computing .What are the Benefits and   **10**
       challenges of Mobile Cloud computing?
b. Discuss the role of Cloud Computing in Business and customer applications   **10**

Q6. Write a note on   **20**
1. AAA model.
2. Application of Cloud in multiplayer.
3. Eucalyptus cloud.
4. Application of Cloud in CRM

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Duration: 3hrs   **[Max Marks: 80]**

N.B. : **(1) Question No 1 is Compulsory.**

          (2) Attempt any three questions out of the remaining five.

          (3) All questions carry equal marks.

          (4) Assume suitable data, if required and state it clearly.

1   Attempt **any FOUR**   **[20]**

     a   Differentiate between cybercrime and cyber fraud.

     b   Explain various threats associated with cloud computing.

     c   Explain methods of password cracking

     d   Explain E-contracts and its different types.

     e   Explain different attack vectors in cyber security

2   a   Explain the classification of cybercrimes with examples.   **[10]**

     b   Explain various types of credit card frauds   **[10]**

3   a   Explain different buffer overflow attacks also explain how to mitigate buffer   **[10]**
        overflow attack

     b   Explain electronic banking in India and what are laws related to electronic   **[10]**
        banking in India

4   a   What do you understand by DOS and DDOS attack? Explain in detail.   **[10]**

     b   Write a note on Intellectual Property Aspects in cyber law.   **[10]**

5   a   Explain the objectives and features of IT Act 2000   **[10]**

     b   What are Botnets? How it is exploit by attacker to cause cyber attack?   **[10]**

6   a   Explain SQL injection attack. State different countermeasure to prevent the   **[10]**
        attack.

     b   Explain what is Information Security Standard and Explain HIPAA act in detail   **[10]**

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(3 Hours)   **Total Marks: 80**

Note:

1. **Question No. 1 is compulsory**.
2. Attempt any **THREE** out of the remaining **FIVE** questions.
3. Assume suitable data if necessary.

1	Answer the following (any 4)	**(20)**
	a) Define the terms: Hazard, Vulnerability, Risk	**5**
	b) Discuss the Direct and indirect effects of disasters	**5**
	c) What is Disaster Scenario of India?	**5**
	d) Explain types of Manmade disasters.	**5**
	e) What is Climate Change? What are the effects of Global Warming?	**5**
2	a) What are different types of flood? Enlist structural mitigation measures for flood.	**10**
	b) Explain the types of landslide and factors affecting them. Give a case study for the same.	**10**
3	a) What are different government agencies responsible for various types of disasters?	**10**
	b) Explain roles and responsibilities of NDMA in detail.	**10**
4	a) Discuss the role of GIS and Remote Sensing in disaster management.	**10**
	b) Describe the institutional mechanism setup in India.	**10**
5	a) What is role of NGOs in disaster management? Enlist major NGOs working on disaster management.	**10**
	b) Explain Bio shield and Sea wall in detail with schematic diagram.	**10**
6	a) What is Community Base Disaster Management (CBDM)? Discuss how it is useful in Indian scenario.	**10**
	b) What are Do's and don'ts in Earthquake, Tsunami and Cyclone?	**10**

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Duration: 3hrs   **Max Marks: 80**

N.B. :   (1) Question No 1 is Compulsory.
          (2) Attempt any three questions out of the remaining five.
          (3) All questions carry equal marks.
          (4) Assume suitable data, if required and state it clearly.

1		**Attempt any FOUR**	**[20]**
	A	List the various Communication models in IoT? Explain the communication model that is implemented in CoAP.	[5]
	B	Explain the following REST Architectural Constraints: Stateless Constraint and Cache-able Constraint	[5]
	C	List and Draw the Security Functional Group Components in IoT reference architecture	[5]
	D	List the various components of any IoT System. Explain the role of controller service and Web Service with reference to the components of IoT System.	[5]
	E	Examine how the following electrical parameters can be used as a part of sensing Technology: a) Capacitance and b) reverse saturation current of PN Junction	[5]
2	A	Compare and Contrast the various Phases of Analytics	[10]
	B	Contrast the various Data Categorizations for storage in IoT Systems. Discuss the various Cloud deployment models available.	[10]
3	a	List the various features of CoAP. Explain how PSK provides security measures in relation to DTLS in CoAP	[10]
	b	Compare and contrast CoAP and HTTP	[10]
4	a	Draw the information model for any Weather Monitoring IoT System. Detail any two Entities or Objects or Concepts defined in the domain model specification	[10]
	b	What do you understand by the term 'Functional View Specification'? Detail the any two Functional Groups with relevant example.	[10]
5	a	Compare and Contrast the various Communication APIs	[10]
	b	Discuss the purpose of Online Analytical Processing in Analytics with relevant examples.	[10]
6	a	What do you mean by Pub-Sub model? Detail the operation flow of MQTT protocol.	[10]
	b	Draw the Layered Attacker Model and possible attacks in IoT/M2M	[10]

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Duration: 3hrs [Max Marks: 80]

N.B. : **(1) Question No 1 is Compulsory.**
   (2) Attempt any three questions out of the remaining five.
   (3) All questions carry equal marks.
   (4) Assume suitable data, if required and state it clearly.

1		Attempt **any FOUR**	**[20]**
	a	Explain di/dt protection of SCR.	**[05]**
	b	Explain the Safe Operating Area (SOA) of power MOSFET.	**[05]**
	c	Draw VI characteristics of SCR and hence explain in brief all conducting states.	**[05]**
	d	Explain fly back converter in short.	**[05]**
	e	Explain Half Wave Controlled Rectifier for Resistive load.	**[05]**
2	a	What is commutation of SCR. List the various method and explain one method in brief	**[10]**
	b	List the advantages and disadvantages of the Buck and Boost converter.	**[10]**
3	a	Explain Full Wave Controlled Rectifier for R-L load.	**[10]**
	b	Explain synchronized UJT relaxation oscillator circuit to trigger SCR.	**[10]**
4	a	Describe Buck DC-DC converter with appropriate waveforms.	**[10]**
	b	What is the effect of source inductance on a full wave-controlled rectifier for R load	**[10]**
5	a	Describe the full bridge inverter for inductive load and draw suitable waveforms.	**[10]**
	b	Explain the single-phase AC controller for inductive load.	**[10]**
6	a	Describe the single-phase Cycloconverter for resistive load.	**[10]**
	b	Explain in detail the multiple pulse wave modulating (PWM) technique for single-phase inverters.	**[10]**

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