Duration: 3 hours   **Max. Marks: 80**

N.B.: 1) Question No.1 is compulsory.
     2) Attempt any **THREE** questions out of remaining **FIVE** questions.
     3) Figures to the right indicates full marks.
     4) Assume suitable data if necessary.

Q1   **20**
  a   What is Cybercrime? Who are Cybercriminals? Explain.
  b   How Cybercrimes differs from most terrestrial crimes?
  c   What are different Security Risks for Organizations?
  d   Outline the challenges for securing data in business perspective.

Q.2
  a   What are illegal activities observed in Cyber Cafe? What are safety and security   **10**
      measures while using the computer in Cyber Cafe?
  b   What is digital evidence? Where one can find it.   **10**

Q.3
  a   Explain different types of Cybercrimes.   **10**
  b   What are basic security precautions to be taken to safeguard Laptops and Wireless   **10**
      devices? Explain.

Q.4
  a   Explain Steps for SQL Injection attack. How to prevent SQL Injection attacks?   **10**
  b   Discuss steps involved in planning of cyberattacks by criminal.   **10**

Q.5
  a   What is vishing attack? How it works? How to protect from vishing attack?   **10**
  b   What is e-commerce? Discuss types of e-commerce.   **10**

Q.6 **Write short notes on any FOUR**   **20**
  a   Cyberstalking and harassment
  b   HIPAA
  c   Buffer overflow attack
  d   Botnets
  e   DOS attack
  f   Mobile/Cell Phone attacks

_____

55703   **Page 1 of 1**

Time:3 Hours   **Marks: 80**

Instructions:
(1) Question 1 is Compulsory.
(2) Assume suitable data wherever required but justify it.
(3) Solve any THREE from Question No. 2 to 6.
(4) Figure to the right indicates full marks.

Q.1   **5 marks each**

(a) Explain Bayes theorem.

(b) Consider two fuzzy sets.

$$\tilde{A} = \left\{ \frac{0.3}{1} + \frac{0.4}{2} + \frac{0.5}{3} + \frac{0.6}{4} \right\}$$

$$\tilde{B} = \left\{ \frac{0.1}{1} + \frac{0.2}{2} + \frac{0.2}{3} + \frac{0.1}{4} \right\}$$

Find the algebraic sum, algebraic product, bounded sum, and bounded difference of the given fuzzy sets.

(c) Explain Mc-Culloch-Pitts neuron with an example.

(d) Explain bootstrap for sampling.

Q.2   **10 marks each**

(a) Explain Ensemble Methods.

(b) Define Cognitive Computing. Draw a neat diagram of components of the cognitive system and explain the components.

Q.3   **10 marks each**

(a) Explain the components of ANN architecture.

(b) Perform a case-study on video recommendation system (data science based)

Q.4   **10 marks each**

(a) Define Defuzzification. Discuss any two methods of defuzzification?

(b) What is the Bayesian Belief Network? Illustrate with an example.

67845   **Page 1 of 2**

Q.5   **10 marks each**

(a) Describe Natural Language Processing in Support of a Cognitive System.

(b) Explain in detail the Long Short-Term Memory Network with an example.

Q.6   **10 marks each**

(a) Define Accuracy, precision, and recall.

Evaluate performance of classifier1 and classifier 2 on the basis of above evaluation parameters, given following confusion matrix, where

F = actual fraud, F'= predicted, N = actual no. fraud and N' = predicted no. fraud

Classifier 1

	F'	N'
F	20	10
N	10	60

Classifier 2

	F'	N'
F	0	15
N	5	80

(b) Write a short note on- Trends in Data Science for audio.

_____

Time: 3 Hours   Total Marks: 80

N.B. (1) Question No.1 is compulsory
     (2) Attempt any three questions out of remaining five questions.

Q.1 (a) What type of data analytics is used in healthcare? (5)
    (b) Which imaging technologies do not use radiation? Explain those technologies
    in brief. (5)
    (c) What you mean by the term Natural Language Processing for clinical/medical
    text data (5)
    (d) Define Advanced Data Analytics for Healthcare with 6(six) real-world
    applications. (5)

Q.2 (a) How could advances in genome analysis lead to more personalised medicine? (10)

    (b) What is visualization? Explain different types of visualization techniques, tools

    with Advantages and Disadvantages. (10)

Q.3 (a) Illustrate Predictive Modelling in Healthcare with few examples (atleast 2) (10)

    (b) Describe: - (10)

      1. BAN
      2. Dense/Mesh area network for smart living environment
      3. SENSOR TECHNOLOGY
      4. Image Registration
      5. Feature Extraction

Q.4 (a) What is validation of clinical prediction models? (10)

    (b) Explain types of Fraud detection in healthcare with the help of example. (10)

Q.5 (a) What are the challenges one may face while processing covid clinical reports? (10)

    (b) Define Data science with applications of healthcare data analytics. (10)

Q.6 (a) Illustrate the process of information extraction from clinical text. (10)

    (b) Define Biomedical Imaging Modalities with their Applications. (10)

_____

X692Y5E5D1AX692Y5E5D1AX692Y5E5D1AX692Y5E5D1A

Duration: 3 Hours   **Maximum Marks: 80**

N.B.: -
1. Question No 1 is Compulsory
2. Solve any three questions from remaining questions
3. Assume suitable data if required and mention it clearly
4. Figures to right indicate full marks

Q1		Solve any four of following	
	[A]	Explain change management for PLM.	5
	[B]	Explain concept of reference model	5
	[C]	Explain reasons for implementing a PDM	5
	[D]	Explain need for Life Cycle Environmental Strategies.	5
	[E]	Explain limitations of Life Cycle Assessment	5
Q2	**[A]**	Explain various End-of-Life Strategies with suitable examples	10
	[B]	Explain various barriers to PDM implementation	10
Q3	**[A]**	Explain various phases of LCA in ISO Standards	10
	[B]	Explain role of Modelling and simulations in Product Design with suitable example.	10

Q4 **[A]** Explain what do you mean by New Product Development (NPD) and explain following
concepts: -
　　i. Product Configuration
　　ii. Variant Management   10
[B] With suitable example explain how will you develop PLM Vision and PLM Strategy.   10

Q5 **[A]** With suitable example explain relationship of Concurrent Engineering and Life Cycle
Approach   10
[B] Explain the concept of Design for Environment with suitable example.   10

Q6		Write Short notes on:-	
	[A]	General Framework for LCCA	10
	[B]	3D CAD systems and realistic rendering techniques	10

****

64942

Duration: 3 Hours   [Max Marks: 80]

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

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

    a. What are technical measures of Information Security

    b. Explain concept of Identification, Authentication.

    c. Illustrate various XSS attacks.

    d. Explain benefits of Cloud computing

    e. List down various Malwares and describe anyone.

2. a. Illustrate an Overview of Certifiable Standards in (How, What, When, Who).term. [10]

    b. Compare Intrusion Detection System (IDS) and Intrusion Prevention System (IPS). [10]

3. a. Explain how availability is calculated including metrics such as Mean Time Between Failure (MTBF) and Mean Time to Repair (MTTR). [10]

    b. Describe OCTAVE: Risk Assessment Framework along with its benefits. [10]

4. a. Describe various Disaster Recovery Techniques. [10]

    b. How are access control methods categorized into administrative, physical, technical and the layering of access control? [10]

5. a. Compare the quantitative and qualitative risk assessment approaches. [10]

    b. Explain Open Web Application Security Project (OWASP) and identify the common issues in Web Apps. [10]

6. a. What are the key characteristics of NIST risk assessment framework? [10]

    b. What are the objectives of IT ACT? Explain in detail IT ACT 2000 and IT ACT 2008. [10]

_____

Time: 3 Hours   **Marks: 80**

N.B.: 1) Question No. 1 is compulsory.

     2) Answer any three out of the remaining questions.

     3) Assume suitable data if necessary.

     4) Figures to the right indicate full marks.

Q1. Attempt any FOUR   20

     (a) Explain Software Testing Life Cycle.

     (b) Discuss different types of software metrics.

     (c) Discuss about IBM Rational Functional Tester as an Automation Testing Tool.

     (d) Explain Error Guessing in Dynamic Testing.

     (e) Discuss the ISO 9000:2000.

Q2. Consider the following program segment: 10

```
main()
{
    int number, index;
1.  printf("Enter a number");
2.  scanf("%d, &number);
3.  index = 2;
4.  while(index <= number – 1)
5.  {
6.      if (number % index == 0)
7.      {
8.          printf("Not a prime number");
9.          break;
10.     }
11.     index++;
12.  }
13.  if(index == number)
14.  printf("Prime number");
15.  } //end main
```

(a) Draw the DD graph for the program.

64961   **Page 1 of 2**

(b) Calculate the cyclomatic complexity of the program using all the methods.

(c) List all independent paths.

(d) Design test cases from independent paths.

Q2. (b) Explain Regression Testing and its types in detail   10

Q3. (a) Explain Test Point Analysis.   10

Q3. (b) Discuss Automation Testing Tool selection and cost criterias.   10

Q4. (a) Explain Agile Testing and its Life Cycle.   10

Q4. (b) Compare the Traditional software and Web based software.   10

Q5. (a) Explain Alpha and Beta Testing.   10

Q5. (b) Discuss Efficient Test Suite Management   10

Q6. (a) Explain the concept of Six Sigma.   10

Q6. (b) Explain the Verification of high level design.   10

_____

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

N.B
1. Q.1 is compulsory
2. Attempt any three from the remaining five questions.
3. Assume suitable data, if required and state it clearly.

Q1 Attempt all   **20M**
   a. Discuss Objective of IRS.
   b. Illustrate different markup languages with its applications.
   c. Explain the process of Structured Text retrieval model.
   d. Illustrate different types of keyword-based queries.

Q 2. Attempt all.   **20M**
   a. Consider the following documents
      D1: I went to the park to play   D2: park is nearby to play
      D3: going to the park is fun   Q: park nearby play
      Apply vector model to rank the above documents.
   b. Write different issues for modeling natural language and find solution for it.

Q3. Attempt all.   **20M**
   a. Explain Suffixes, Suffix Trie and Suffix tree, Suffix array and Supra Index with example.
   b. Define Multimedia information retrieval. Discuss Multimedia indexing and searching.

Q 4. Attempt all.   **20M**
   a. Discuss Huffman Algorithm in detail with suitable example
   b. What is inverted Index? Describe the process of creating an inverted index without stop words for the following example.
      This is a text. A text has many words. Words are made from letters.

Q.5. Attempt all.   **20M**
   a. Discuss various phases of text preprocessing within a document. Discuss any one application for the same.
   a. Explain Probabilistic Retrieval Model. Compare and contrast Belief Network Model and Inference Network Model

Q 6. Write short note   **20M**
   a. User relevance feedback
   b. Information Retrieval in digital libraries
   c. Starting points
   d. Interface support for the search process

_____

[3 hrs]   [80Marks]

Note: 1. Question 1 is compulsory
       2. Answer any three out of remaining questions
       3. Assume suitable data where required

Q1	Solve any 4	
a)	Explain functional blocks of IoT.	5
b)	Explain the importance of IoT Data Analytics.	5
c)	Write a short note on Near Filed Communication.	5
d)	Define the following i) Fog Computing ii) Internet of Behaviour (IoB).	5
e)	Differentiate briefly Physical design of IoT and Logical design of IoT.	5
Q2		
a)	Explain the IOT enabled Home Automation system with respect to sensors, Actuators, framework, protocols, data analysis and security.	10
b)	Explain the following terms i) CoAP ii) Data Lakes.	10
Q3		
a)	Explain the architecture of LoRaWAN with its major Characteristics	10
b)	Illustrate the components of IEEE 802.11 architecture with advantages	10
Q4		
a)	Explain effective Data Visualization methods With suitable example	10
b)	Explain in brief the MQTT Architecture with Advantages.	10
Q5		
a)	State the Comparison's of all Protocols used in IOT for cloud Edge.	10
b)	Describe the Architecture of Advanced Message Queuing Protocol (AMQP) with major application.	10
Q6		
a)	Elaborate briefly the simplified 3 layered IoT architecture with neat diagram,	10
b)	Describe the role of NoSQL in IoT Data Analytics Challenges.	10

X692Y79B4F5X692Y79B4F5X692Y79B4F5X692Y79B4F5